Northeast Site Solutions
Victoria Masse
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@northeastsitesolutions.com

February 3, 2022

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

RE: Tower Share Application
11 West Peak Drive, Meriden, CT
Latitude: 41.561200 N
Longitude: -72.8441 W
Site#: BOHVN00204B

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 11 West Peak Drive, Meriden, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 117-foot level of the existing 125-foot self-support tower, one (1) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, dated December 7, 2021, Exhibit C. Also included is a structural analysis prepared by Armor Tower Engineering, dated September 22, 2021 confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Petition No. 67 on March 26, 1981. 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 Kevin M. Scarpati, Mayor, Paul Dickson, Acting Director of Planning, Development & Enforcement, as well as the property owner Frontier Communications and EIP Holdings II LLC, tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the tower is 125-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 117-feet.

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

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

4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 15.83% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa 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 self-support tower has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in 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 self-support tower in Meriden. 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 117-foot level of the existing 125-foot tower would have an insignificant visual impact on the area around the self-support 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 share application.

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

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com

Attachments
Cc:
Kevin M. Scarpati, Mayor
City of Meriden
142 East Main Street
Meriden, CT 06450

Paul Dickson, Acting Director of Planning, Development & Enforcement
City of Meriden
142 East Main Street
Meriden, CT 06450

Frontier Communications, Property Owner
401 Merrit 7
Norwalk, CT 06851

EIP Holdings II LLC, Tower Owner
100 Summer Street, Suite 1600
Boston, MA 02110

Exhibit A

Original Facility Approval

STATE OF CONNECTICUT

DEPARTMENT OF BUSINESS REGULATION

POWER FACILITY EVALUATION COUNCIL

Petition No. 67
Wolcott, Connecticut
March 26, 1981

Mr. Doocy, Mr. Clapp, Mr. Wood, and Mr. Reid met Mr. Kischell and Mr. Bailey of the Southern New England Telephone Company to review the first half of Petition No. 67. Telecommunication facilities were viewed in Wolcott, Waterbury, and Meriden. The second half of Petition No. 67 involves facilities in Shelton, Norwalk, and Bridgeport. These were reviewed on March 31, 1981.

The first half of this petition involves the following changes at the Barry Avenue site in Wolcott: (a) replacing an existing 90 foot tall triangular lattice steel tower with an 80 foot tall square lattice steel tower; (b) replacing two microwave dishes and two reflectors with four new microwave dishes; (c) adding a 12' x 16' concrete radio building and a new fuel storage tank at the base of the tower and extending the fence to encompass the new facilities. Additional changes include: (d) adding two microwave antennae to the Waterbury East Tower in Waterbury and another concrete radio building; and (e) adding one microwave antenna to the West Peak tower in Meriden.

The Wolcott site is in a single family dwelling residential area near the top of Clinton Hill. The tower is visible from several locations within the area. The tower base and radio building are partially screened by vegetation from the nearest residence and are not visible from other residences. The new tower will be located several feet northeast of the existing tower at approximately the same ground elevation. The proposed tower will be 80 feet tall and more narrow than the existing tower; it will be square instead of triangular. The new microwave antennae are to be mounted on a platform at the top of the tower.

The soil appears shallow but stable, and a few bedrock outcrops appear on the site. The proposed tower will require new foundations which will be set in soil or bedrock. If the soil is too shallow or the bedrock unsuitable, some blasting may be necessary.

A new concrete building will be constructed at the base of the tower and will accomodate the generator used for emergency power. The existing fence will be extended to enclose this facility.

The existing tower will remain in place for approximately six months or until the new facility is operating properly. Then the existing tower will be dismantled and removed.

According to the SNETCO representatives, this proposal has been approved by the Wolcott Planning and Zoning Commission.

The Waterbury East tower is located adjacent to a water tower and several other cable TV or telecommunication towers on top of Long Hill in Waterbury. The site is surrounded by single and multiple family dwellings, commercial, and industrial properties. Both the telecommunication tower and the water tower are visible

from many viewpoints in the Waterbury area. Two microwave antennae are to be mounted at the 80 foot level to the existing 90 foot tower. Once the new facilities are operating, two narrow 80 foot tall towers presently on the site can be removed. These two towers now support reflectors which relay signals from the Waterbury central office to Wolcott. A new radio building will be constructed at the base of the tower and the existing fence will be extended to surround this new building. The radio building will house an emergency generator, the new radio equipment, and future radio equipment when existing facilities are replaced. An existing building presently storing a temporary generator may be removed after the new building is constructed. According to SNETCO representatives, this proposal has received planning and zoning approval.

The Meriden tower is adjacent to West Peak State Park and several telecommunication towers on the top of West Peak. The existing telecommunication facilities on West Peak are relatively well screened from most locations within the state park, but they are a prominent feature on the ridge top as seen from viewpoints in the Meriden area and can be seen up to many miles away on clear days.

The telephone company's tower presently supports seven microwave antennae. SNETCO proposes to add one microwave dish to the existing tower at the 90 foot level to complete a route from Meriden to the Wolcott Tower. The existing North Branform to Wolcott route will be eliminated, and an antenna at the North Branford tower may be removed when the Meriden to Wolcott route is in service. No additional buildings are proposed at this site.

Duncan C. Reid
Environmentalist
March 30, 1981

STATE OF CONNECTICUT

DEPARTMENT OF BUSINESS REGULATION

POWER FACILITY EVALUATION COUNCIL

Petition No. 67
Norwalk, Connecticut
March 31, 1981

Commissioner Boucher, Mr. Clapp, Christopher Wood and Duncan Reid met Mr. Bailey and Mr. Kischell of the Southern New England Telephone Company to review the second part of Petition No. 67 which involved facilities in Norwalk, Bridgeport, and Shelton. The first part of this petition involves facilities located in Wolcott, Waterbury, and Meriden which were visited on Thursday, March 26th.

In Norwalk one dish is to be mounted on an existing 350 foot tower located at a telephone company service center immediately north of Route 1. The dish will be directed toward the existing tower in Bridgeport. The general area around the Norwalk site appears to be commercial, residential, and industrial. The tower is visible from many locations in the area.

The Bridgeport tower (40 feet tall) is located on top of the Central Office Building in downtown Bridgeport. One dish will be mounted at approximately the 30 foot level and directed tower the new dish in Norwalk. The location of the tower on top of the office building diminishes its visual impact.

The 181 foot tower in Shelton is located in a rural residential area. One 5 foot dish will be removed and a 12 foot dish mounted in the same location and directed toward an existing facility in Derby. A new and large dish is required in Shelton to prevent interference with transmissions from Shelton to New Haven. This tower is visible from selected locations within the immediate area and from some distant viewpoints.

No additional radio buildings, generators, or fuel tanks, are planned for the facilities in Norwalk, Bridgeport, and Shelton.

Duncan C. Reid
Environmentalist
March 31, 1981

Phone 566-5612
State Office Building — Hartford, Connecticut 06115

Exhibit B

Property Card

CITY OF MERIDEN
GIS Services

PROPERTY INFORMATION Location: **11 WEST PEAK DR** Map/Lot: 1214-0352-0021-0000

OWNER INFORMATION

Owner(s):
SOUTHERN NEW ENGLAND TEL CO
C/O FRONTIER COMMUNICATIONS

Owner Address:
ATTN: TAX DEPT 401 MERRIT 7
NORWALK, CT 06851

BUILDING INFORMATION

Card Number: 1

Total Units: 1

OVERVIEW	
Building ID	19560
Finished Area	1,542
Comm/Rental Units	1
Living Units	0
Building Type	MultiPurp
Year Built	1979
Effective Yr Built	
Building Number	1
Condo Name	

INTERIOR DETAILS	
Rooms	
BedRooms	
Full Bath	0
Full Bath Rating	
Half Bath	0
Half Bath Rating	
Kitchens	0
Kitchen Rating	
Fireplaces	0

CONSTRUCTION DETAILS	
Exterior	Concrete Blo
Roof Structure	Gable
Roof Cover	Asphalt
Quality	C+
Heat Fuel	Gas
Heat Type	Forced Air
Prcnt. Heated	100.00
Prcnt. AC	0.00
Stories	1 story
Foundation	Conc Slab

Sub Area Summary

Building ID	Description	Total Area	Fin. Area	Perimeter
19560	1st FLOOR	1,542	1,542	204

Special Features

BuildingID	Description	Quantity	Area	Length	Width	YearBuilt	Quality
19560	SHED FRAME	1	160			1979	Average
19560	FENCE 4	1	400			1979	Average

APPRAISAL INFORMATION

Tax District: 1 **District Name:** OUTER DISTRICT **District Mill Rate:** 40.86

Grand List Year: 2019

Land Appraised	Building Appraised	Yard Appraised	Total Appraised Value	Land Assessed	Building Assessed	Yard Assessed	Special Land Value	Total Assessed Value
$600,000	$137,000	$4,200	$741,200	$420,000	$95,900	$2,940	$0	$518,840

Previous Year: 2018

Land Value	Building Value	Yard Items	Appraised Value	Land Value	Building Value	Yard Items	Assessed Value
$600,000	$137,000	$4,200	$741,200	$420,000	$95,900	$2,940	**$518,840**

LAND INFORMATION

Land Use	Zoning	Land Area	Neighborhood Description
Comm Bldg	R-R	0.82874	N OF W MAIN E&W OF RT 71

*Confirm zoning with Planning Office.
Zoning map is the official document to determine zone.

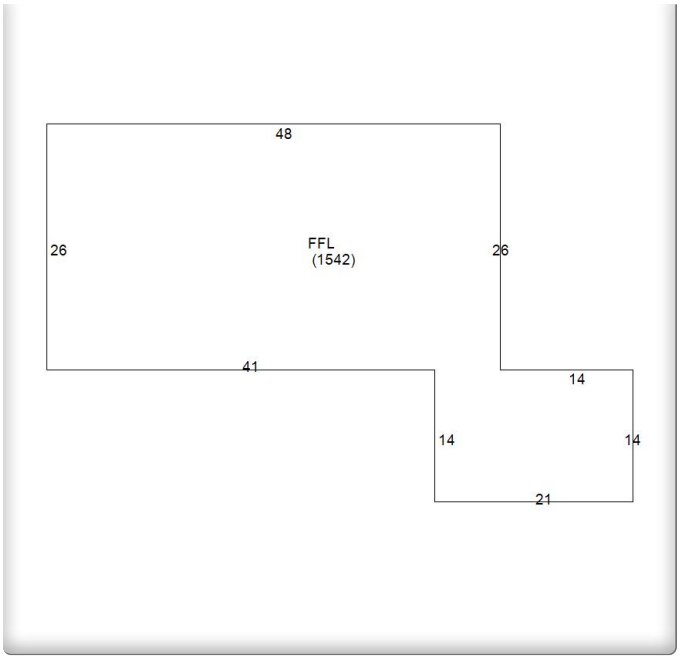
SALES INFORMATION

Sale Date	Sale Price	Book	Page	Grantor	Grantee	Deed Type
3/8/1947	$0	281	483			

ASSESSOR'S PERMIT HISTORY

No data found.

PROPERTY IMAGES



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1214-0352-0021-0000
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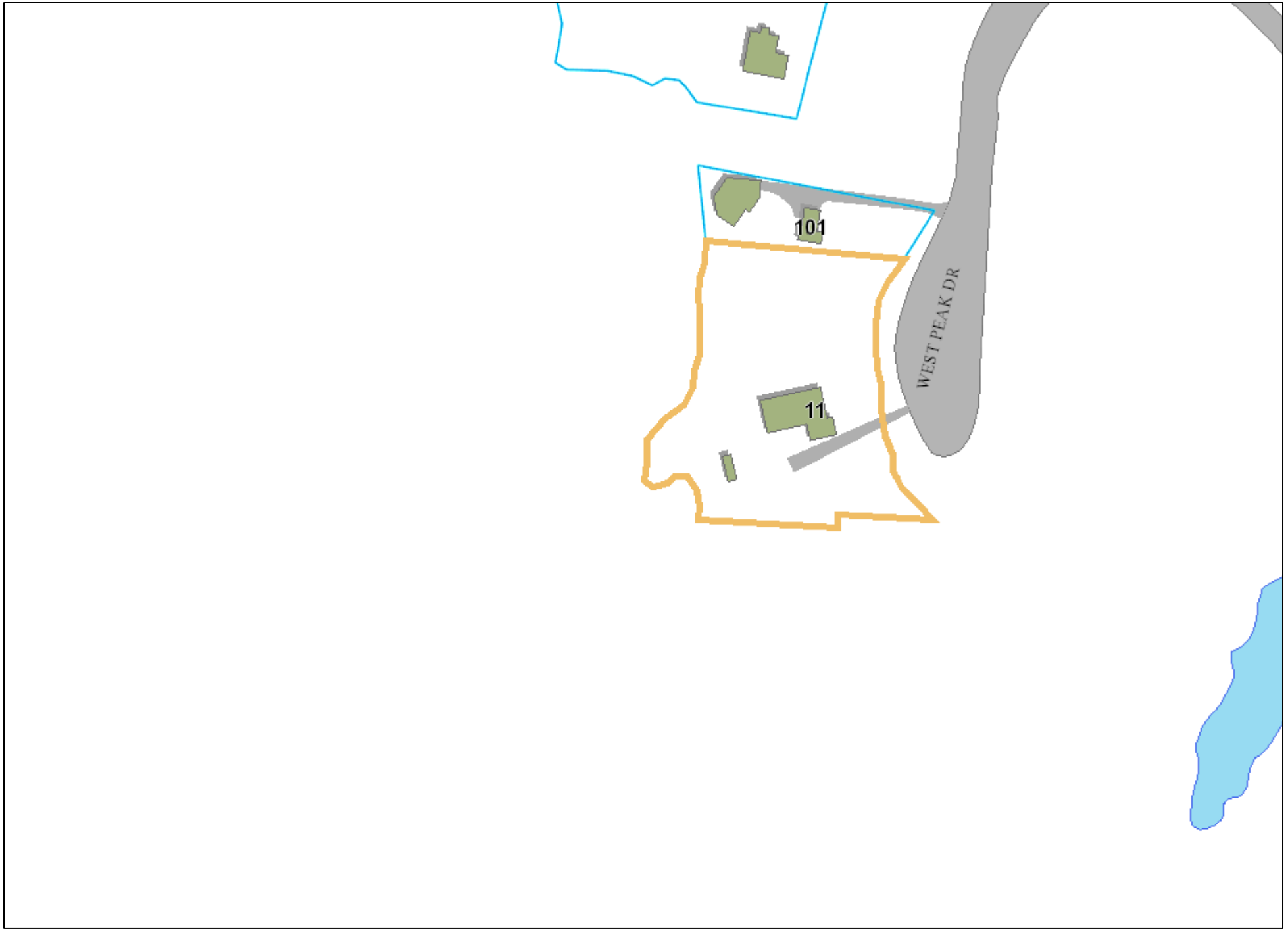


CITY OF MERIDEN

Date: 11/12/2020

CITY OF MERIDEN, CT GIS

11 WEST PEAK DR

1 inch = 100 feet

Exhibit C

Construction Drawings

DISH Wireless L.L.C. SITE ID:

BOHVN00204B

DISH Wireless L.L.C. SITE ADDRESS:

WEST PEAK DRIVE
MERIDEN, CT 06451

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 SECTOR 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 FIBER NID (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

811

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER:	EVEREST
ADDRESS:	WEST PEAK DRIVE MERIDEN, CT 06451
TOWER TYPE:	SELF SUPPORT TOWER
TOWER CO SITE ID:	TBD
TOWER APP NUMBER:	TBD
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 33' 40.01" N 41.561200 N
LONGITUDE (NAD 83):	72° 50' 39.00" W 72.8441 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	TBD
PARCEL NUMBER:	TBD
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	TBD
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

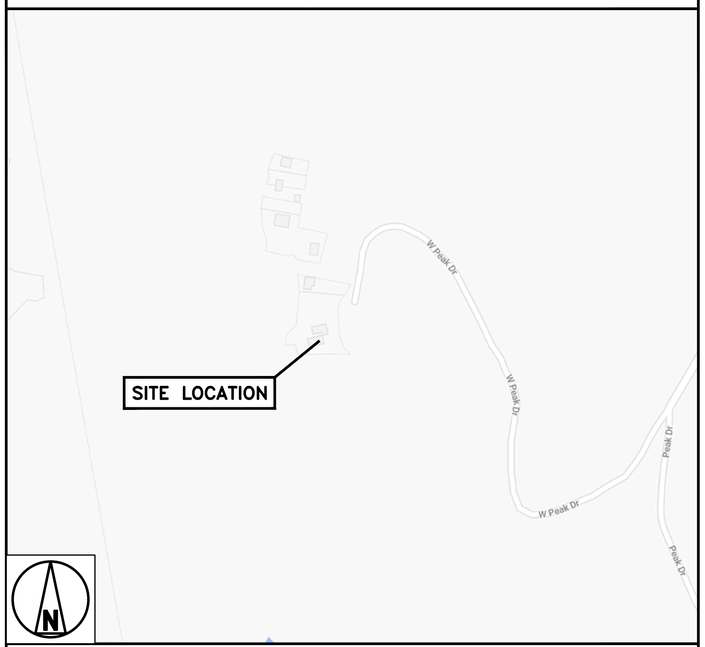
APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	EIP COMMUNICATIONS I, LLC TWO ALLEGHENY CENTER NOVA TOWER 2, SUITE 703 PITTSBURGH PA 15212
SITE DESIGNER:	INFINIGY 1033 WATERVLIET SHAKER RD ALBANY, NY 12205 (518) 690-0790
SITE ACQUISITION:	APRIL PARROTT TBD
CONSTRUCTION MANAGER:	JAVIER SOTO TBD
RF ENGINEER:	SYED ZAIDI TBD

DIRECTIONS

DIRECTIONS FROM MERIDEN MARKHAM MUNICIPAL AIRPORT:

HEAD NORTH ON EVANSVILLE AVE TOWARD BAKER AVE, TURN LEFT ONTO CT-70 / MAIN ST, TURN RIGHT TO STAY ON CT-70 / RIVER RD, TURN RIGHT ONTO OREGON RD, TURN LEFT ONTO COE AVE, TURN RIGHT ONTO ALLEN AVE, TURN RIGHT ONTO JOHNSON AVE, TURN LEFT ONTO W MAIN ST TURN RIGHT ONTO HUBBARD PARK DR, TURNS RESTRICTED AT SPECIFIC TIMES, ROAD RESTRICTED AT SPECIFIC TIMES, ROAD NAME CHANGES TO RESERVOIR AVE, ROAD RESTRICTED AT SPECIFIC TIMES, ROAD NAME CHANGES TO WEST PEAK DR, KEEP STRAIGHT, HEADING TOWARD PARK DR, KEEP STRAIGHT TO GET ONTO PARK DR, ROAD RESTRICTED AT SPECIFIC TIMES, TURN LEFT ONTO W PEAK DR, ROAD RESTRICTED AT SPECIFIC TIMES, ARRIVE AT WEST PEAK DRIVE MERIDEN, CT 06451

VICINITY MAP



NO SCALE

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

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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
12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER
1197-F0001-C

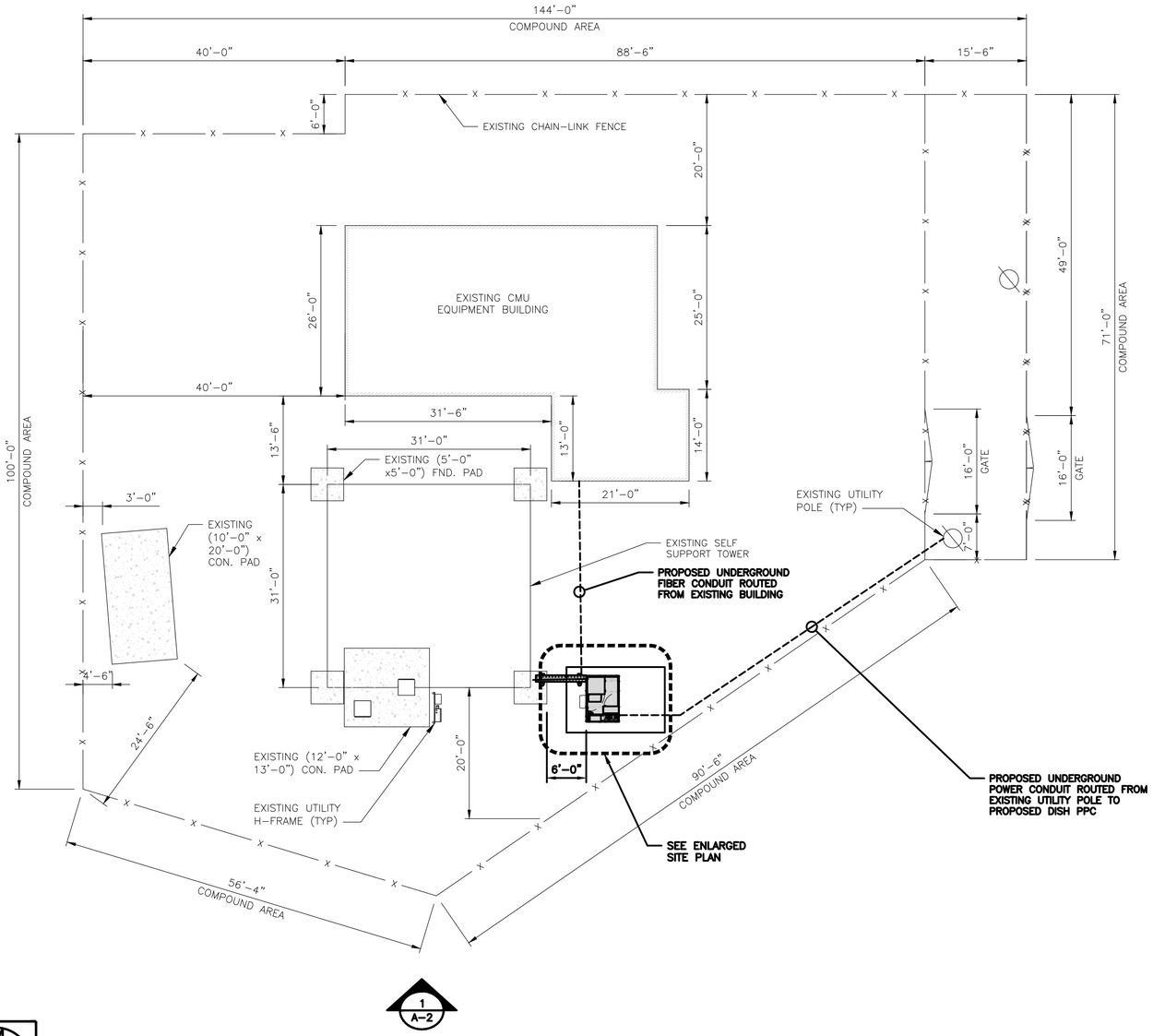
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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



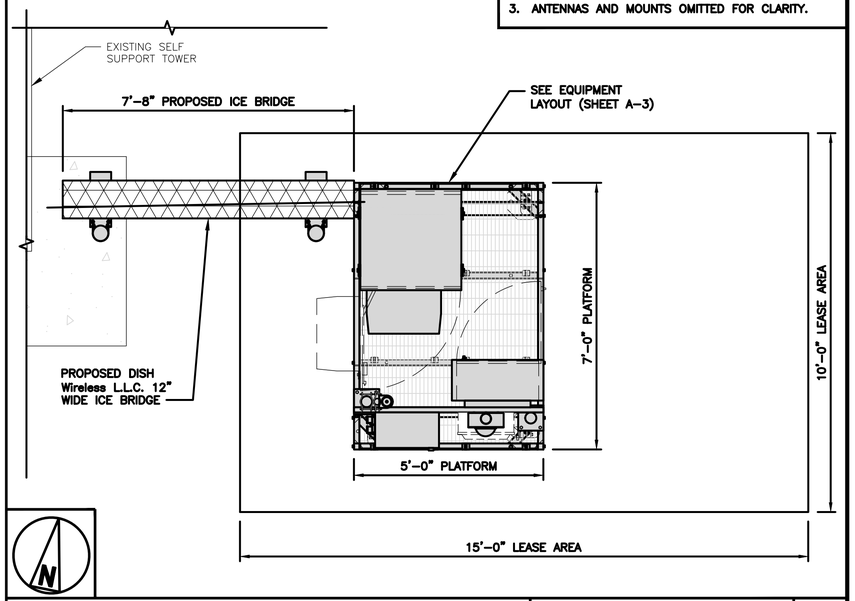
OVERALL SITE PLAN

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

1

NOTES

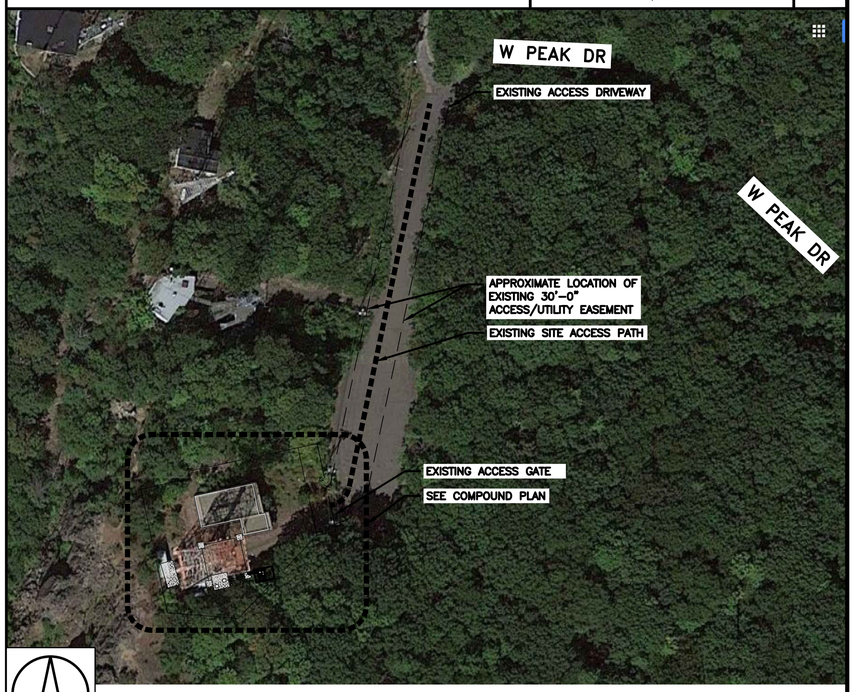
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

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

2



SITE PLAN

60' 30' 0 60' 120'
1"=60'

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

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WWW.INFINIGY.COM

STATE OF CONNECTICUT
SAUHEL SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER

1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE

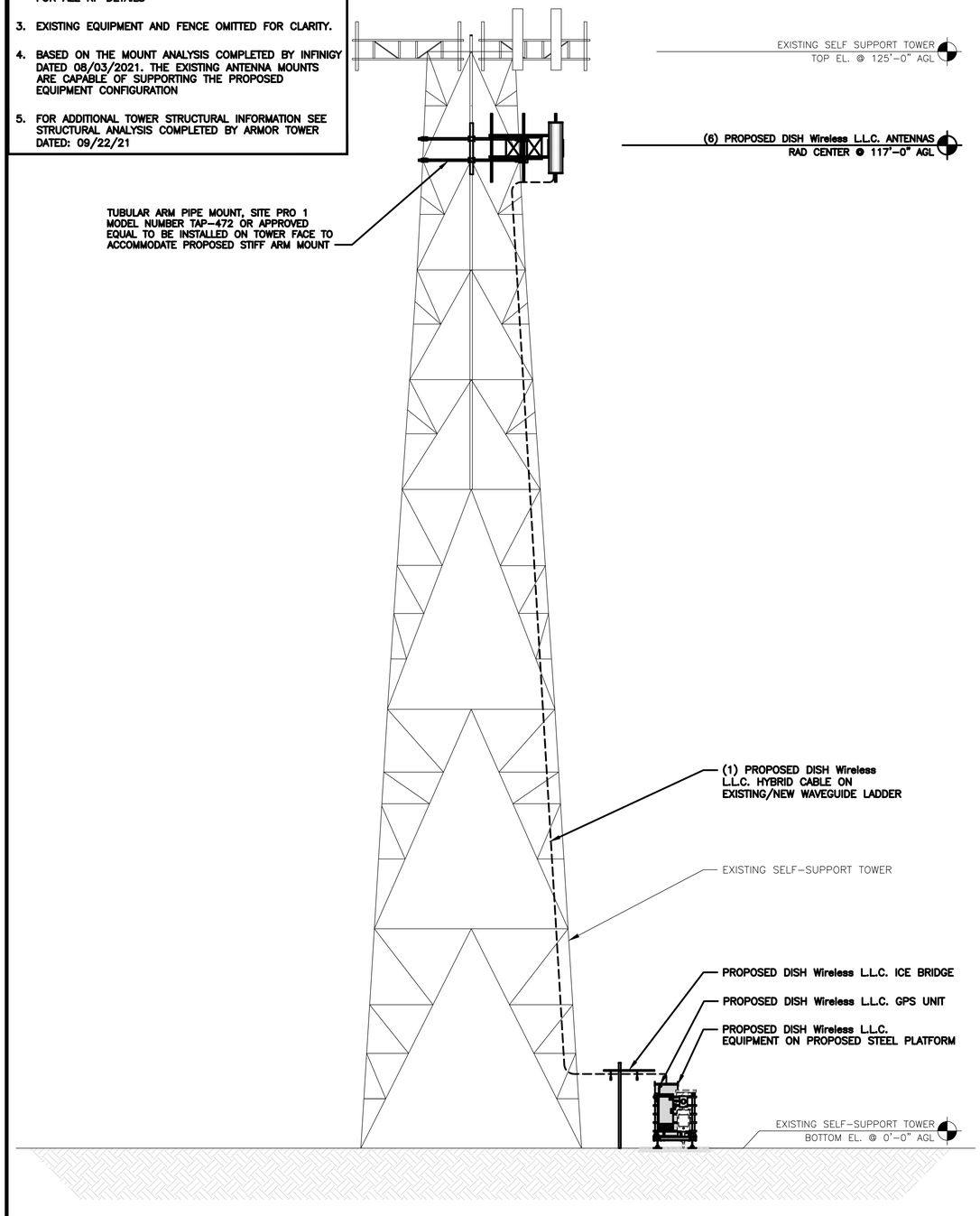
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

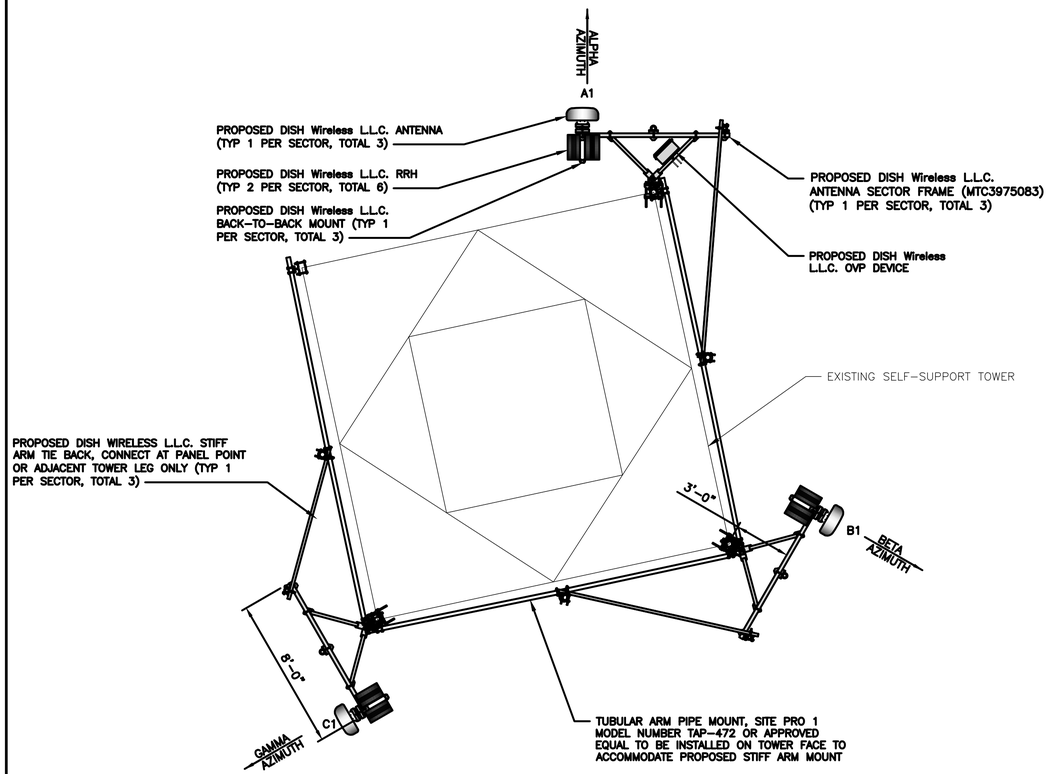
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. BASED ON THE MOUNT ANALYSIS COMPLETED BY INFINIGY DATED 08/03/2021. THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION
5. FOR ADDITIONAL TOWER STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY ARMOR TOWER DATED: 09/22/21



PROPOSED SOUTH ELEVATION

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

1



ANTENNA LAYOUT

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

2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	0°	117'-0"	(1) HIGH-CAPACITY HYBRID CABLE (160' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	120°	117'-0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665-21	5G	72.0" x 20.0"	240°	117'-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.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NSS NORTHEAST SITE SOLUTIONS
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STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

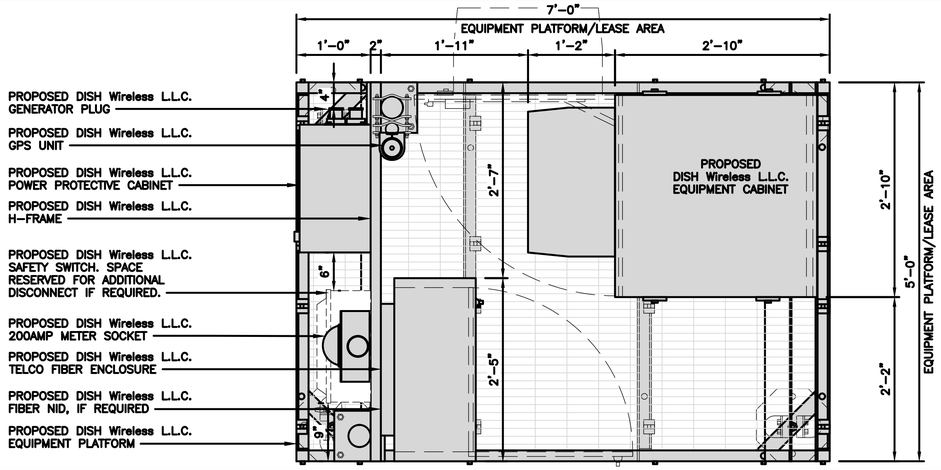
REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER
1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



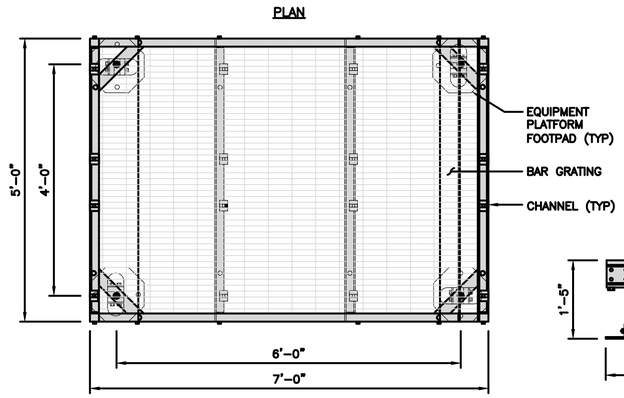
PLATFORM EQUIPMENT PLAN

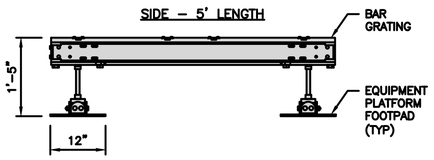
12" 9" 6" 3" 0 1' 2'
1"=1'-0"

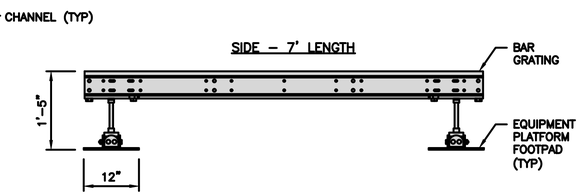
1

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

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

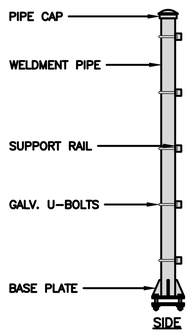




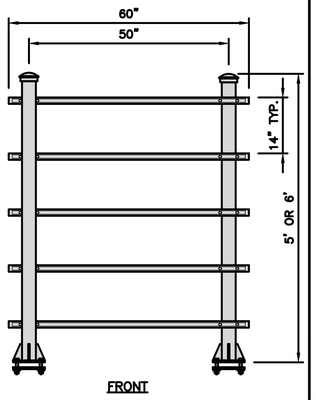


PLATFORM DETAIL | NO SCALE | 2

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



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

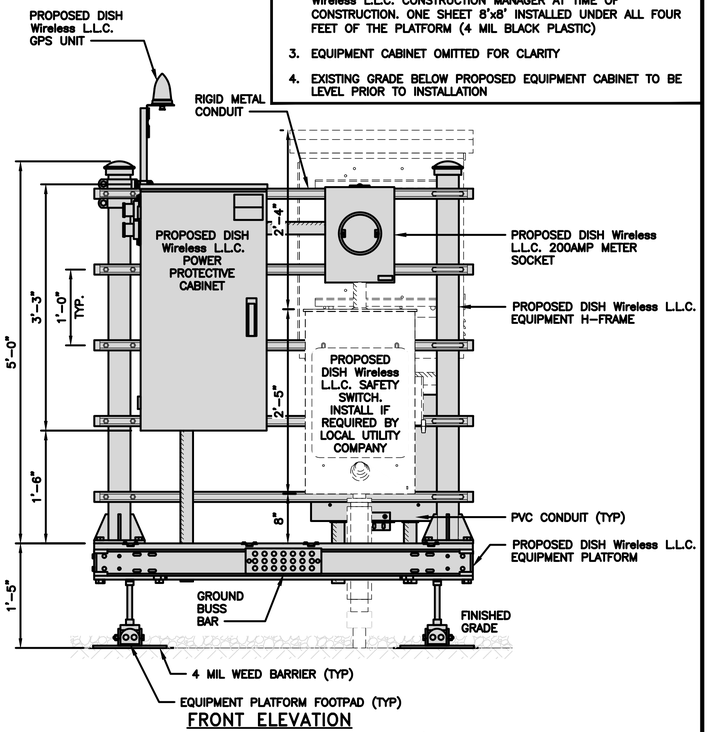


H-FRAME DETAIL | NO SCALE | 3

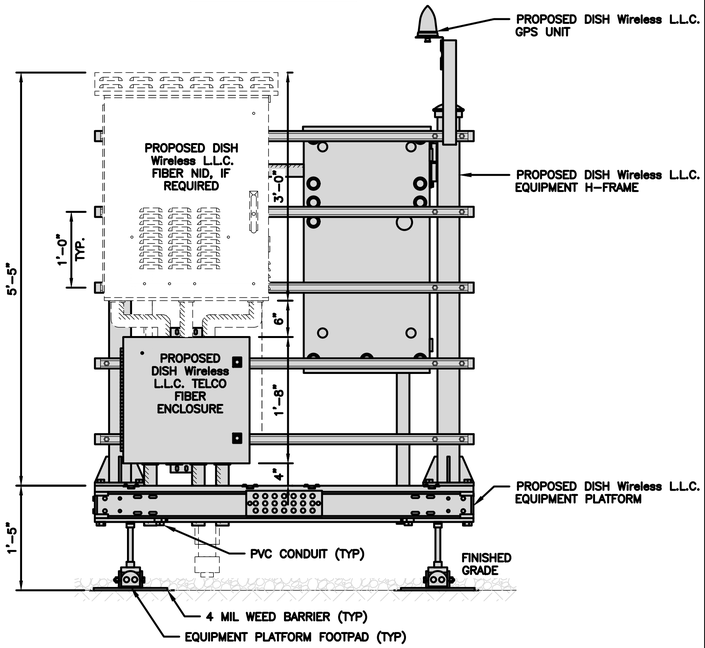
NOT USED | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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PROJECT INFORMATION
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WEST PEAK DRIVE
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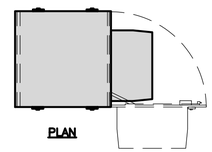
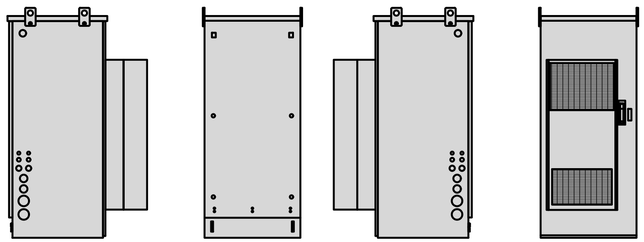
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

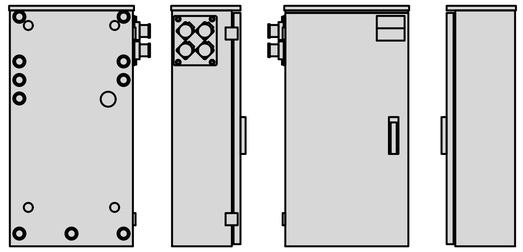
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD):	74"x32"x32"
POWER PLANT:	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 LBS





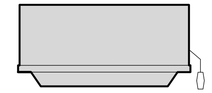
CABINET DETAIL | NO SCALE | 1

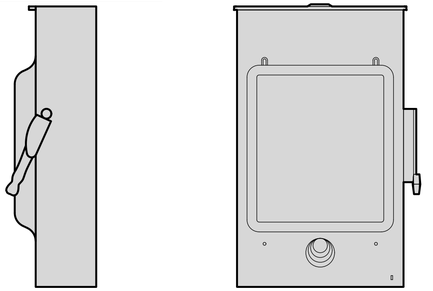
RAYCAP PPC RDIAC–2465–P–240–MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



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

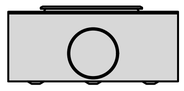
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E–2875

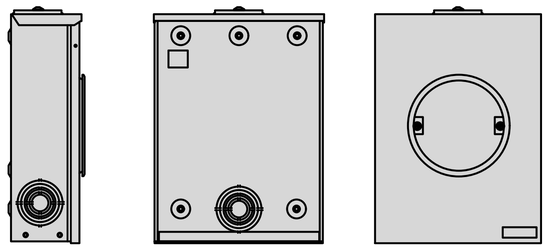




SAFETY SWITCH DETAIL | NO SCALE | 3

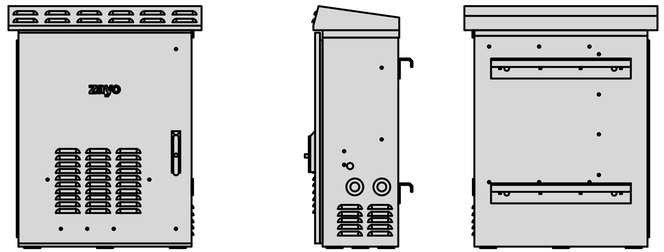
EATON METER SOCKET UNRRS213BEUSE	
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS





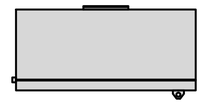
METER SOCKET DETAIL | NO SCALE | 4

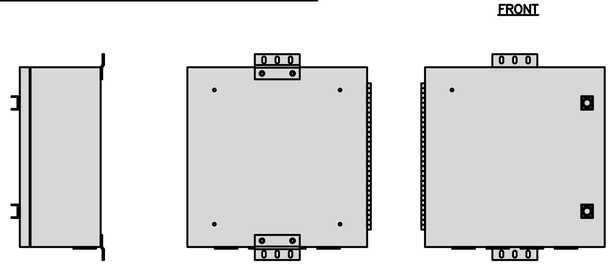
ZAYO 5RU CABINET LEFT SWING DOOR ("LIT" SITES)	
DIMENSIONS (HxWxD)	36.115"x29"x12.9"
WEIGHT	85 LBS
POWER INPUT	20A, –48VDC



NETWORK INTERFACE UNIT DETAIL | NO SCALE | 5

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

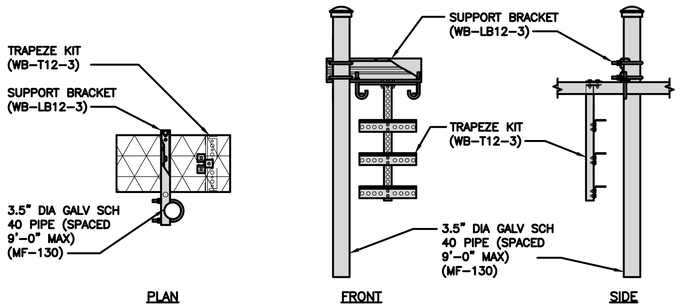




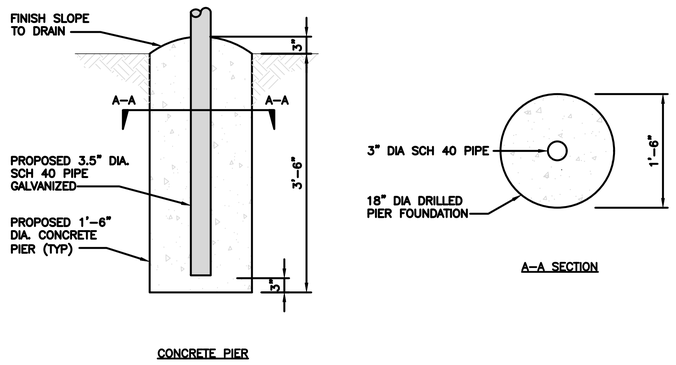
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

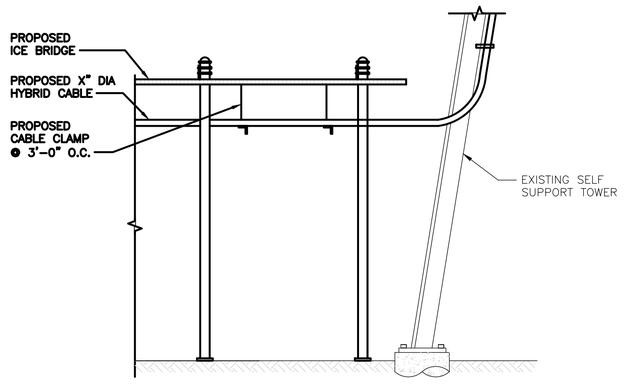
INCLUDED PRODUCTS:
- WB–T12–3 TRAPEZE KIT, 3 RUNGS
- WB–LB12–3 SUPPORT BRACKET
- MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



ICE BRIDGE DETAIL | NO SCALE | 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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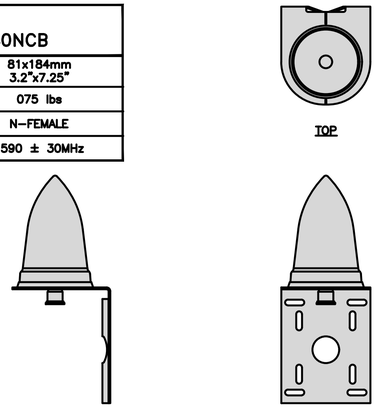
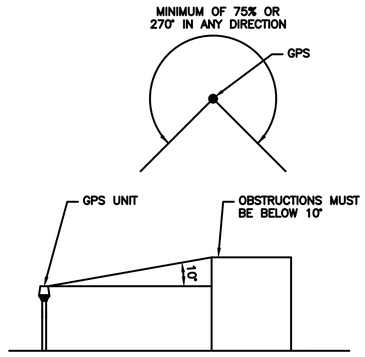
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

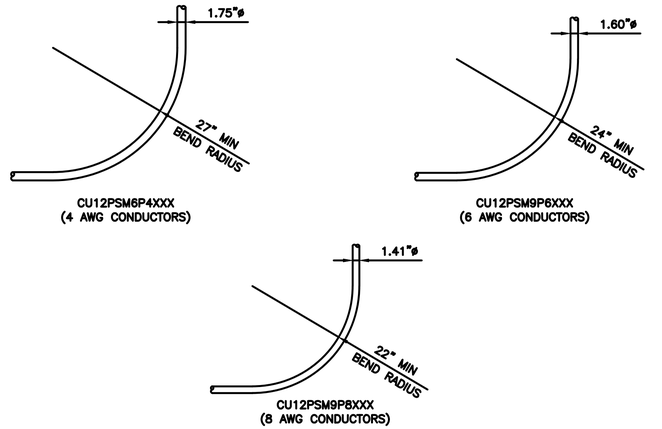
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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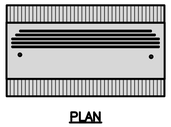
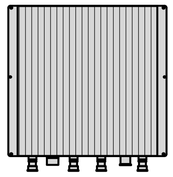
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

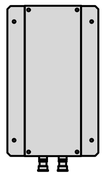
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



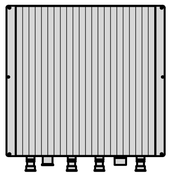
PLAN



BACK



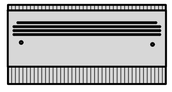
SIDE



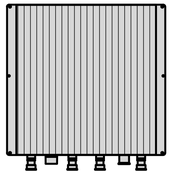
FRONT

RRH DETAIL | NO SCALE | 1

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



PLAN



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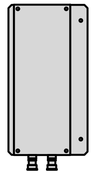
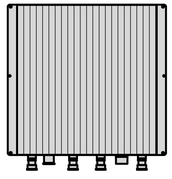


SIDE

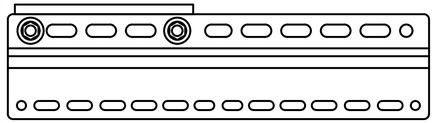


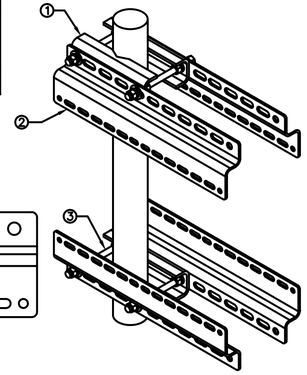
FRONT

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"



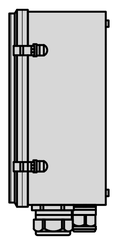


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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



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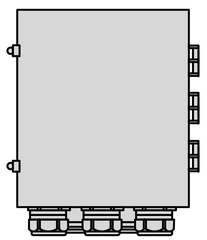
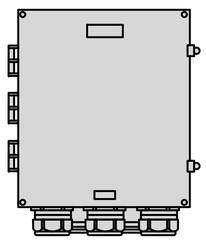


BACK

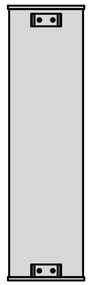


FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 4

JMA WIRELESS MX08FRO665-21 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	82.5 LB (w/ BRACKETS)
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

PLAN



BACK

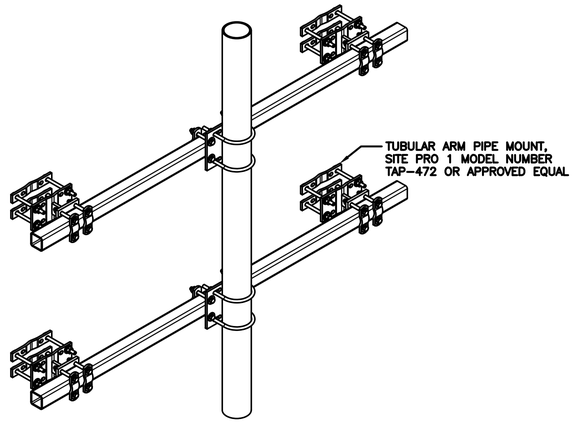
SIDE

FRONT

NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC

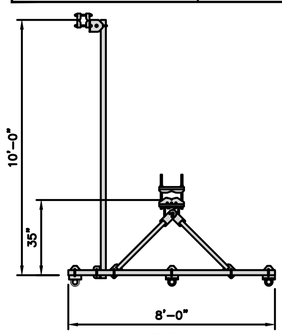
ANTENNA DETAIL | NO SCALE | 5



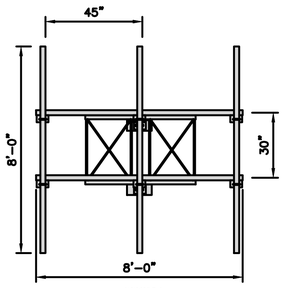
TUBULAR ARM PIPE MOUNT | NO SCALE | 6

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

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



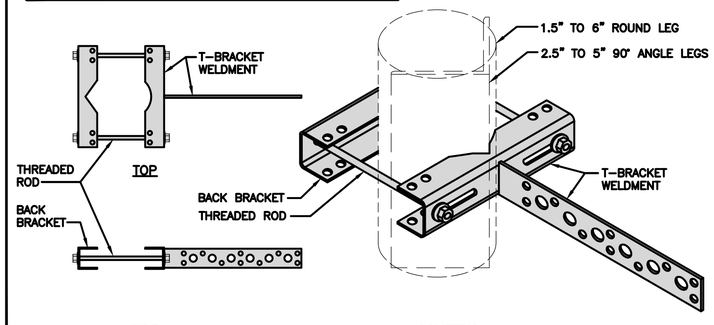
PLAN



FRONT

ANTENNA FRAME DETAIL | NO SCALE | 7

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



SIDE ISOMETRIC

VERTICAL CABLE SUPPORT DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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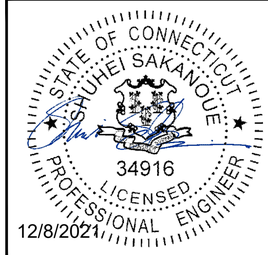

DRAWN BY:	CHECKED BY:	APPROVED BY:
RCD	SS	CJW

RFDS REV #: N/A

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A&E PROJECT NUMBER

1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE

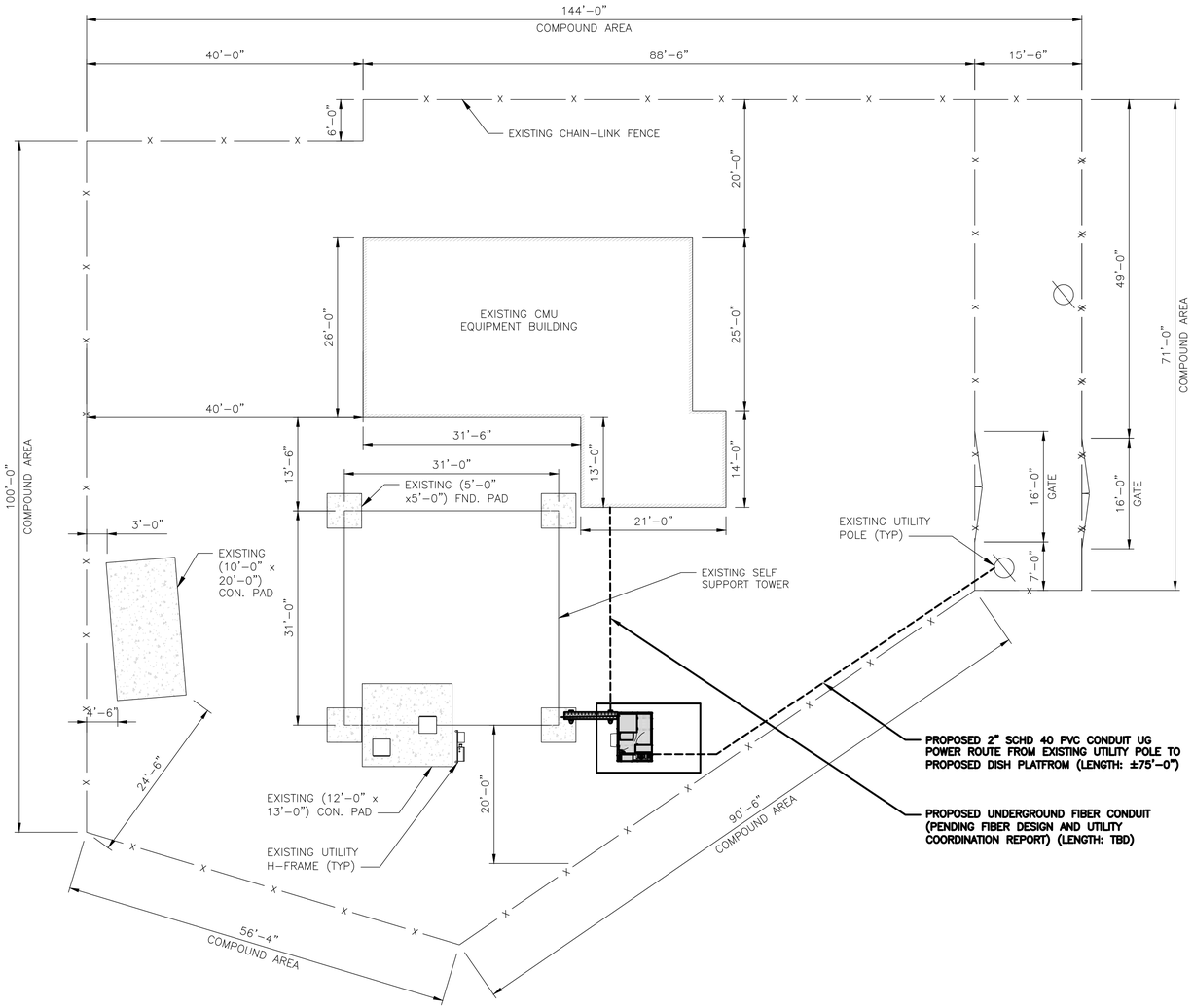
EQUIPMENT DETAILS

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

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

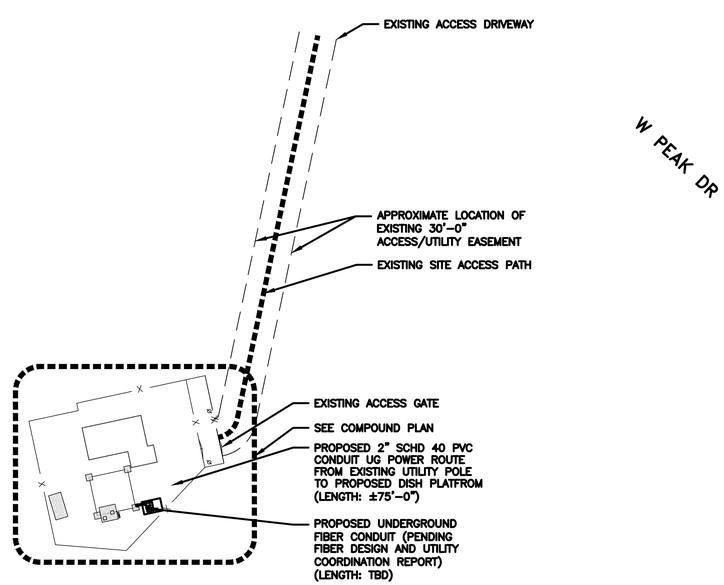
1

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

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

ELECTRICAL NOTES

2



OVERALL UTILITY ROUTE PLAN

60' 30' 0 60' 120'
1"=60'

3

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12/8/2021

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

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1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE

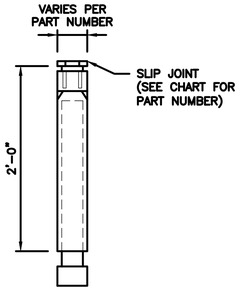
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

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

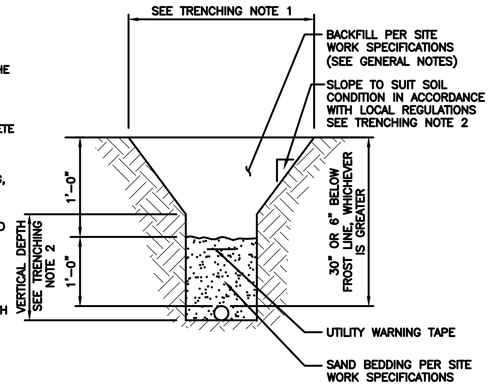


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

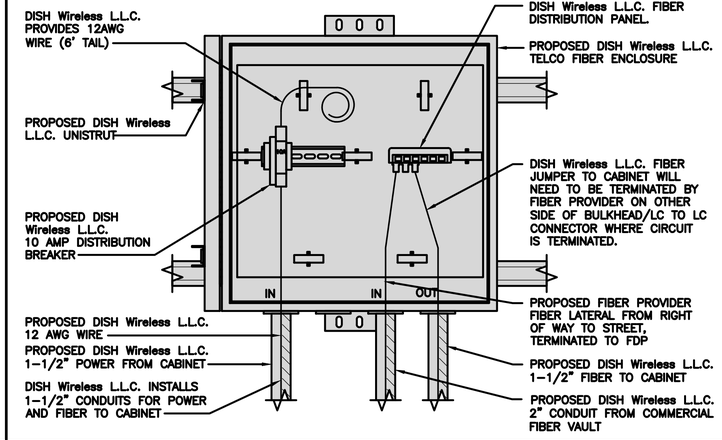
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

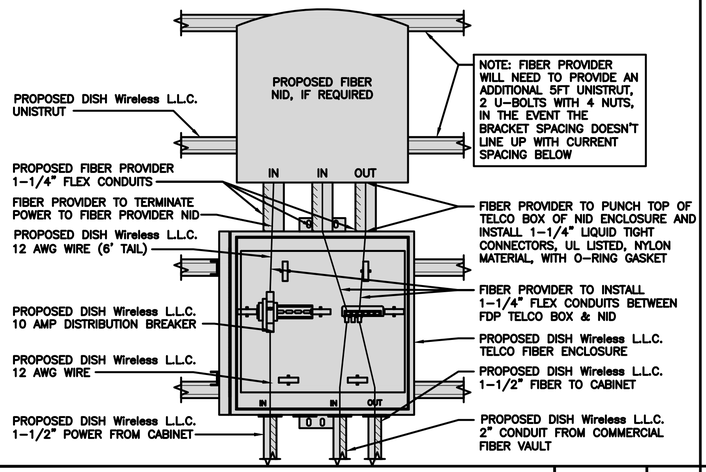
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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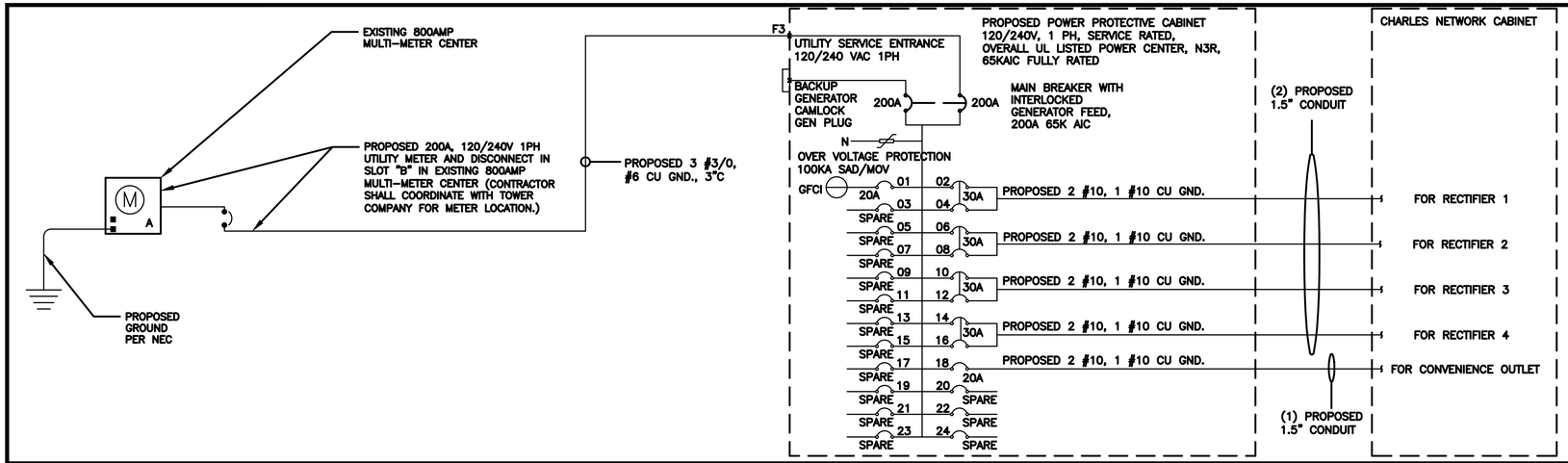
1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



NOTES

THERE ARE A TOTAL OF (10) CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT. ADJUSTABLE FACTOR OF 50% PER NEC TABLE 310.15(B)(3)(a) SHALL APPLY.

#10 FOR 15A/1P BREAKER: 0.5 x 40A = 15.0A
#8 FOR 20A-25A/2P BREAKER: 0.5 x 55A = 27.5A

CONDUIT SIZING: ASSUME 1.5" EMT
AT 40% FILL PER NEC 358, TABLE 4 – 0.814A SQ. IN AREA

WIRES: USING THWN-2, CU. (INCLUDING 3 GROUND WIRES)
#6 – 0.0507 SQ. IN X 8 = 0.4056 SQ. IN
#8 – 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#10 – 0.0211 SQ. IN X 4 = 0.0844 SQ. IN <GROUND
#12 – 0.0133 SQ. IN X 1 = 0.0133 SQ. IN <GROUND
TOTAL = 0.5765 SQ. IN

1.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OR (15) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

CONDUIT SIZING: ASSUME 3.0" SCH 40 PVC
AT 40% FILL PER NEC 352,TABLE 4 – 1.216A SQ. IN AREA

WIRES: USING THHN, CU. (INCLUDING 2 GROUND WIRES)
#3/0 – 0.1318 SQ. IN X 3 = 0.3954 SQ. IN
#2 – 0.0521 SQ. IN X 1 = 0.0521 SQ. IN
TOTAL = 0.4475 SQ. IN

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

(CHARLES ABB GE INFINITY DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE

NO SCALE | 1

PROPOSED 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
–SPARE–				1	A	2		2880		ABB/GE INFINITY RECTIFIER 1
–SPARE–				3	B	4	30A		2880	
–SPARE–				5	A	6		2880		ABB/GE INFINITY RECTIFIER 2
–SPARE–				7	B	8	30A		2880	
–SPARE–				9	A	10		2880		ABB/GE INFINITY RECTIFIER 3
–SPARE–				11	B	12	30A		2880	
–SPARE–				13	A	14		2880		ABB/GE INFINITY RECTIFIER 4
–SPARE–				15	B	16	30A		2880	
–SPARE–				17	A	18	20A	1920		CHARLES GFCI OUTLET
–SPARE–				19	B	20				–SPARE–
–SPARE–				21	A	22				–SPARE–
–SPARE–				23	B	24				–SPARE–
VOLT AMPS								13440	11520	

200A MCB, 1ϕ, 3W, 120/240V	L1	L2	
MB RATING: 65,000 AIC	13440	11520	VOLT AMPS
	140	96	AMPS
	140		MAX AMPS
	175		MAX 125%

PANEL SCHEDULE
(CHARLES ABB GE INFINITY DC PLANT) WITH MULTI-METER CENTER 120V240V 1PH SOURCE

NO SCALE | 2

NOT USED

NO SCALE | 3

FAULT CALCULATIONS

NO SCALE | 4

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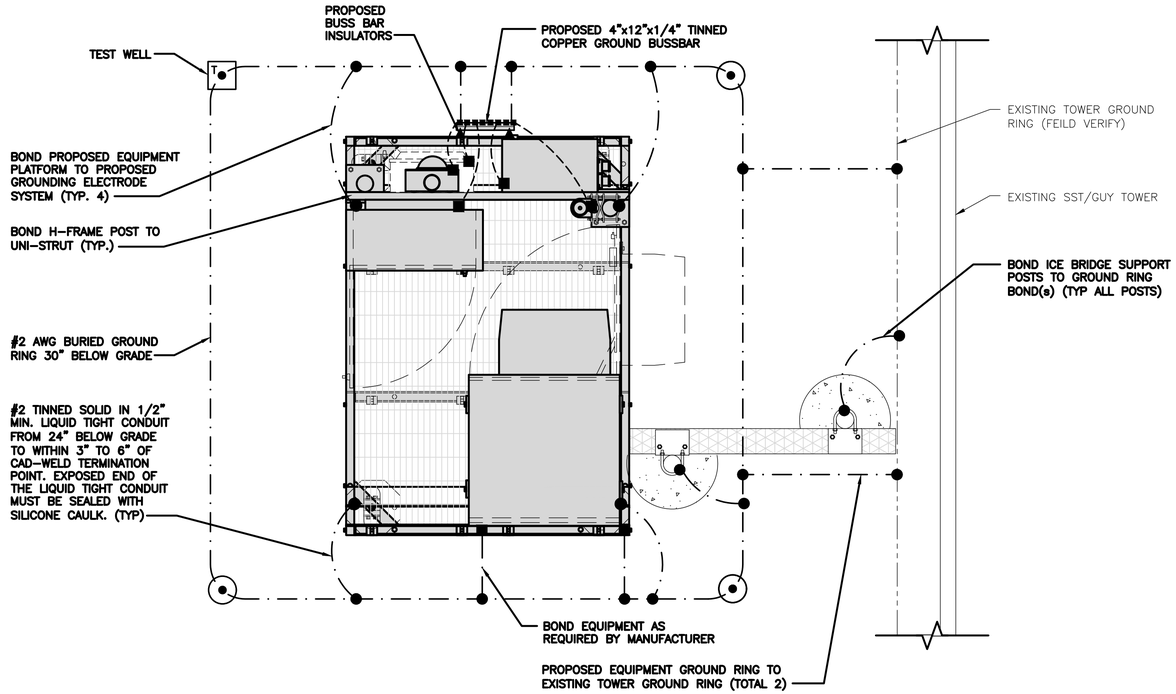
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

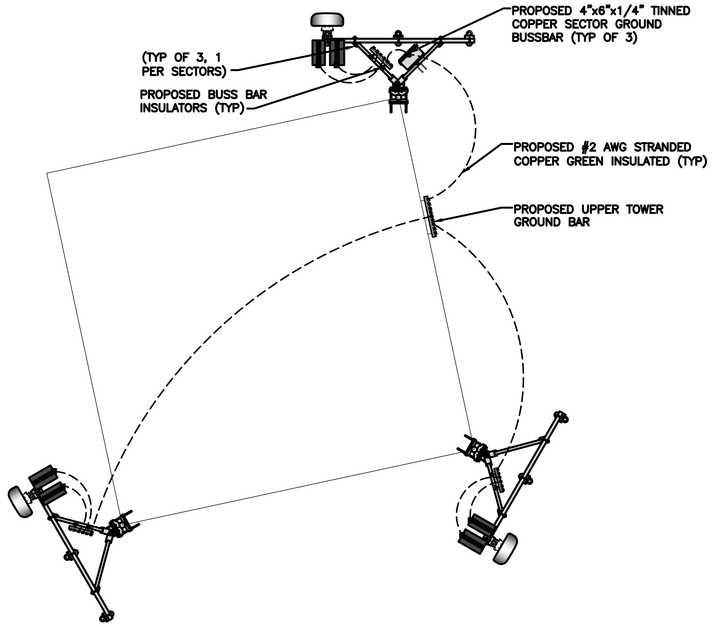
SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GROUNDING KEY NOTES

NO SCALE | 3

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12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER
1197-F0001-C

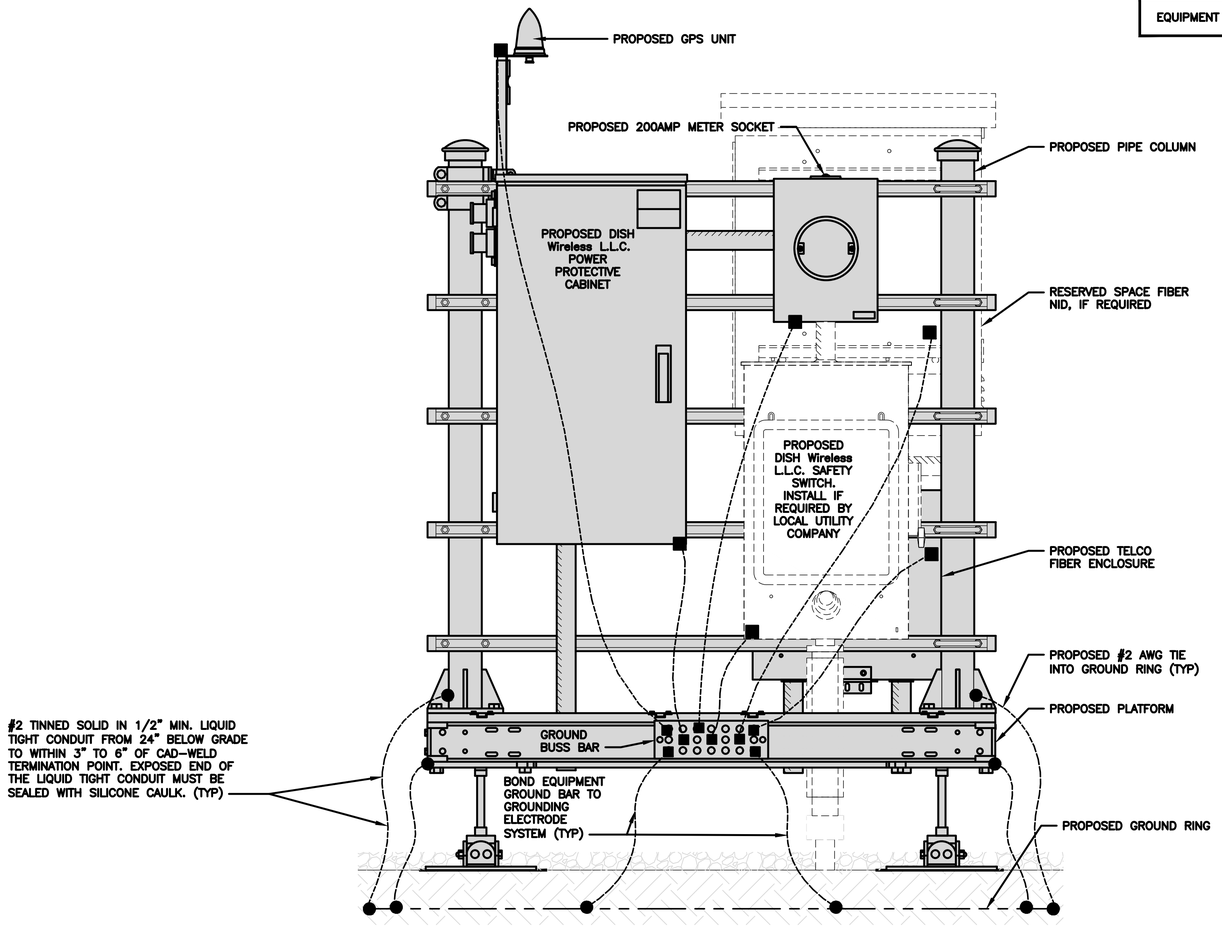
DISH Wireless L.L.C.
PROJECT INFORMATION
BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

NOTES

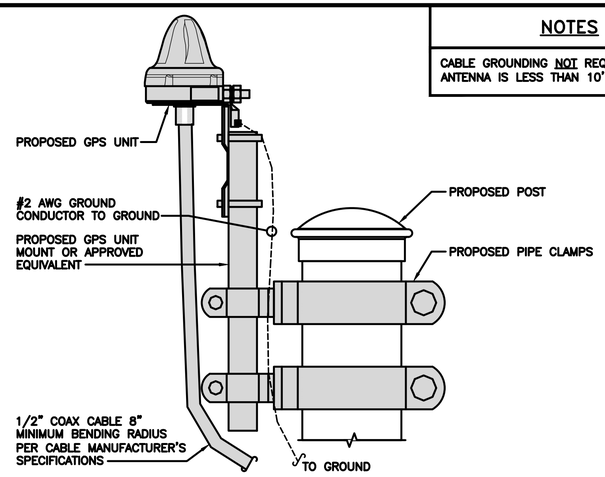
EQUIPMENT CABINET OMITTED FOR CLARITY



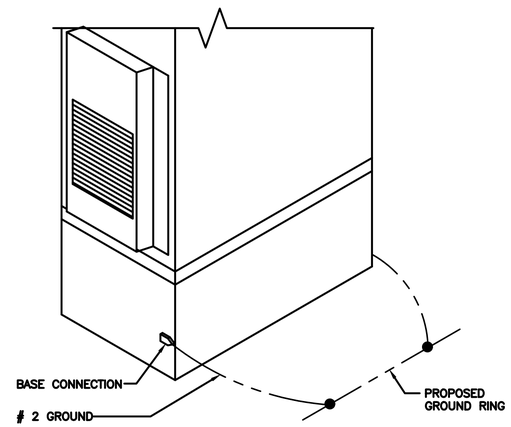
H-FRAME GROUNDING DETAIL | NO SCALE | 1

NOTES

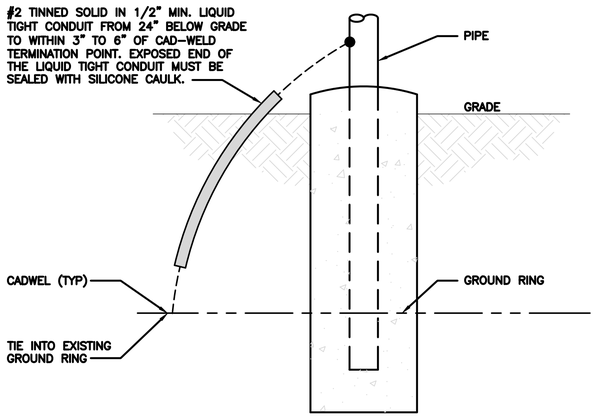
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



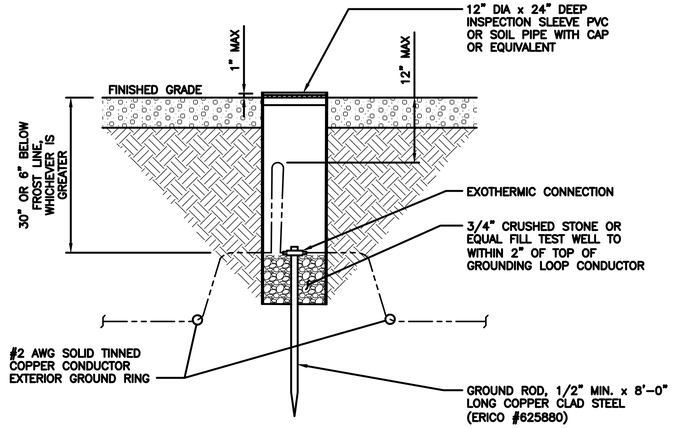
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



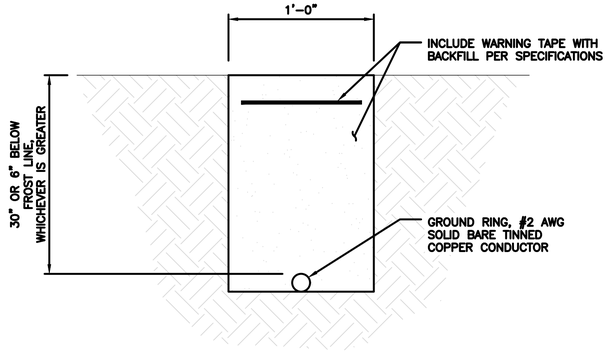
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

DISH Wireless L.L.C. TEMPLATE VERSION 34 – 06/11/2021

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SHEET TITLE

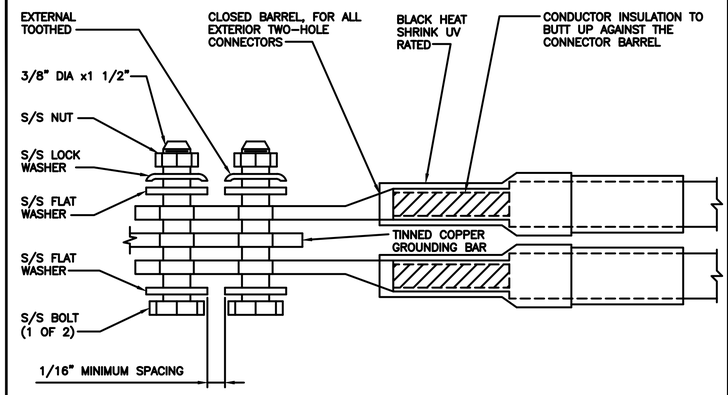
GROUNDING DETAILS

SHEET NUMBER

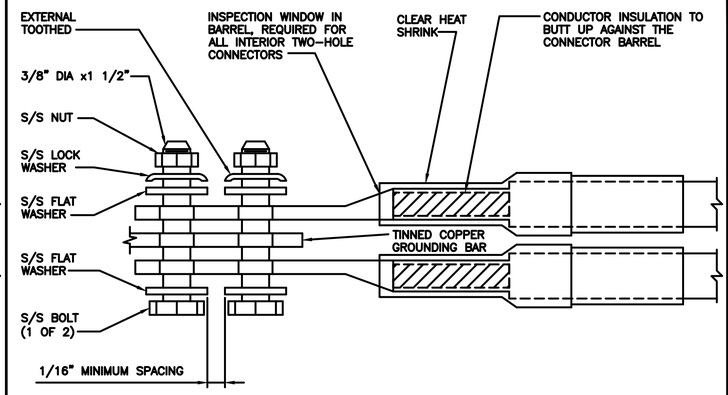
G-2

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).

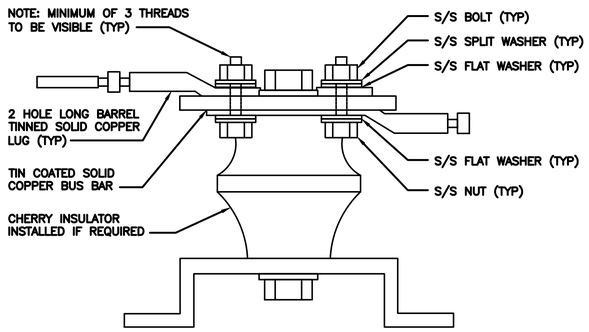
TYPICAL GROUNDING NOTES | NO SCALE | 1



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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SHEET TITLE
GROUNDING DETAILS

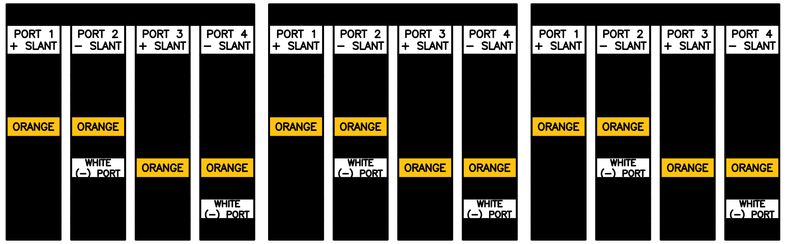
SHEET NUMBER
G-3

RF JUMPER COLOR CODING

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

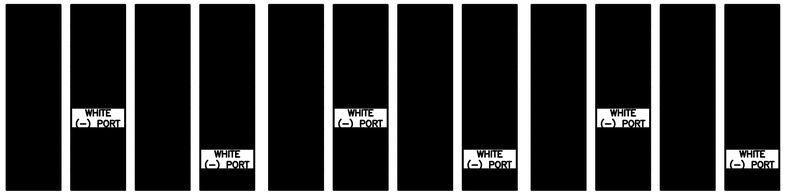
LOW-BAND RRH –
(600MHz N71 BASEBAND) +
(850MHz N26 BAND) +
(700MHz N29 BAND) – OPTIONAL PER MARKET

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)

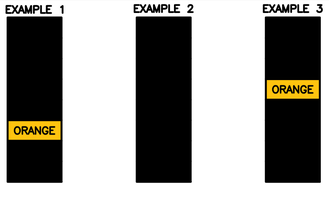


HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS

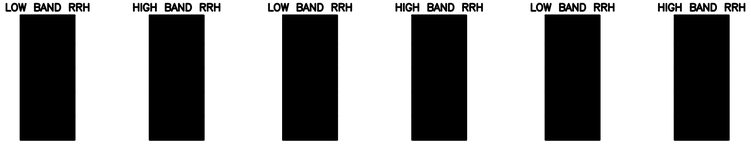
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS

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



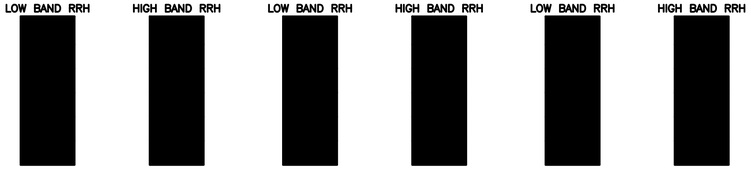
FIBER JUMPERS TO RRHs

LOW-BAND RRH FIBER CABLES HAVE SECTOR
STRIPE ONLY

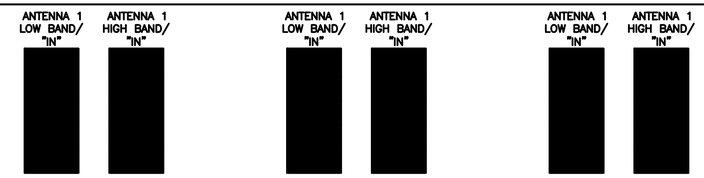


POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



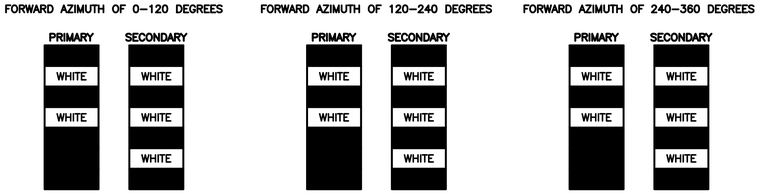
RET MOTORS AT ANTENNAS



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)

CBRS TECH
(3 GHz)

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR

BETA SECTOR

GAMMA SECTOR

COLOR IDENTIFIER	NO SCALE	2

NOT USED	NO SCALE	3

NOT USED	NO SCALE	4

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SHEET TITLE

RF
CABLE COLOR CODES

SHEET NUMBER

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LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH — $

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

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

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

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

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

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

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

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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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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WWW.INFINIGY.COM

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SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER

1197–F0001–C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

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
12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER

1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

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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WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER
12/8/2021

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

RFDS REV #: N/A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	11/01/21	ISSUED FOR PERMIT
1	11/16/21	REVISED FOR PERMIT
2	12/07/21	REVISED FOR PERMIT

A&E PROJECT NUMBER

1197-F0001-C

DISH Wireless L.L.C.
PROJECT INFORMATION

BOHVN00204B
WEST PEAK DRIVE
MERIDEN, CT 06451

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

Reanalysis of a 125 ft Self-Supporting Tower

Site Number Dish Wireless BOHVN00204B
Everest Infrastructure 638281
Site Name: West Peak
County: New Haven, CT
Location: 11 West Peak Drv, Meriden, CT

Checked by:

Patrick Propert
Structural Design Engineer III

STATE OF CONNECTICUT
KENNETH TANG
PEN.0034951
LICENSED
PROFESSIONAL ENGINEER

9/22/2021

EVEREST
INFRASTRUCTURE PARTNERS

Two Allegheny Ctr
Nova Tower 2, Ste 703
Pittsburgh, PA 15212

September 2021

9 North Main Street, 2nd Floor, Cortland, NY 13045
(607)591-5381 Fax: (866)870-0840 www.ArmorTower.com

September 22, 2021

Tom Rigg
Everest Infrastructure Partners
Two Allegheny Ctr
Nova Center 2, Ste 703
Pittsburgh, PA 15212

RE: Dish Wireless – BOHVN00204B
Everest Infrastructure 638281
11 West Peak Drv, Meriden, CT

Tom:

We have completed the structural analysis of the subject tower and **have found it to be adequate within the scope of this analysis to support the proposed antenna loading**. The tower was analyzed according to the code wind and ice parameters outlined in the *Code Requirements Table* following this letter.

The subject tower is a 125' square self-supporting tower consisting of all-bolted sections with angle legs and bracing. Tower face dimensions range from 12'6" at the top to 31'3" at the base. Foundation capacities are based on manufacturer's design details.

The loading used in the analysis consisted of the existing antennas/lines as well as the following for Dish Wireless at 117' on (3) Commscope MTC3975083 antenna frames:

- (3) MX08FRO665-20 antennas
- (3) TA08025-B604 RRUs, (3) TA08025-B605 RRUs
- (1) RDIDC-9181-PF-48 fed with (1) 1-5/8" hybrid cable installed as shown on E-7.

The results of the analysis showed all tower and foundation elements to be loaded within allowable limits with a maximum stress rating of 87%. We recommend a post-construction inspection be completed by a structural engineer to document that tower mounted equipment has been placed in compliance with the requirements of this analysis. For a detailed listing of tower performance, please see pages 13 to 14 of the calculations.

We appreciate the opportunity to provide our professional services to Everest Infrastructure and Dish Wireless and if you have any questions concerning this analysis, please contact us.

Sincerely,

ARMOR TOWER, INC.

Patrick Botimer
Structural Design Engineer V

STATE OF CONNECTICUT
KENNETH TANG
PEN.0034951
LICENSED
PROFESSIONAL ENGINEER

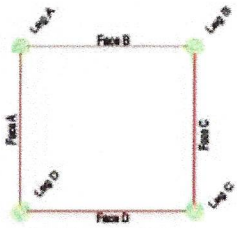
9/22/2021

9 North Main Street, 2nd Floor, Cortland, NY 13045
(607)591-5381 Fax: (866)870-0840 www.ArmorTower.com

CODE REQUIREMENTS

Governing code:	CT State Building Code
Code basis:	2018 IBC
Referenced standard:	ANSI/TIA 222-H
Basic wind speed: (3-sec. gust):	V_{ult}: 118 mph with no ice 50 mph with 1" concurrent ice
County of site location:	**New Haven**
ASCE 7 Special wind region:	No
Structure/Risk Category:	II
Exposure Category:	B
Topographic Category:	3 - hill
Crest Height/Tower Base Elevation	922 ft/1004 ft
Spectral Response:	S_s=0.200, S_1=0.055

PRIMARY ASSUMPTIONS CONSIDERED IN THIS PROJECT

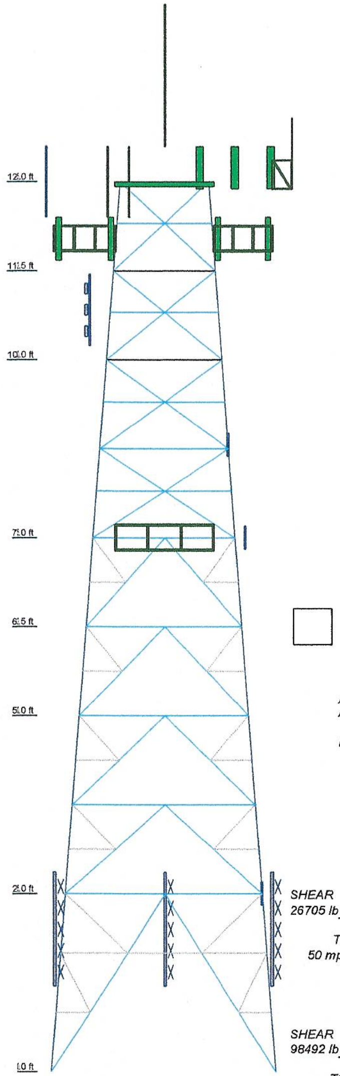


1. Leg A is assumed to be oriented Northeast.
2. Allowable steel stresses are defined by AISC-LRFD-99/360-16 and all welds conform to AWS D1.1 specification.
3. If reserved antennas/feed lines by other carriers or the tower owner are to be considered in this analysis, it is the responsibility of Everest Infrastructure and its affiliates to provide this information.
4. Any deviation from the analyzed antenna loading will require a re-analysis of the tower for verification of structural integrity. This analysis has considered the proposed feed lines to be stacked and located as shown on drawing E-7.
5. This analysis assumes all tower members are galvanized adequately to prevent corrosion of the steel and that all tower members are in "like new" condition with no physical deterioration. This analysis also assumes the tower has been maintained properly per TIA 222-H Annex J recommended inspection and maintenance procedures for tower owners and is in a plumb condition. Armor Tower has not completed a condition assessment of the tower.
6. No accounting for residual stresses due to incorrect tower erection can be made. This analysis assumes all bolts are appropriately tightened providing necessary connection continuity and that the installation of the tower was performed by a qualified tower erector.
7. No conclusions, expressed or implied, shall indicate that Armor Tower has made an evaluation of the original design, materials, fabrication, or potential installation or erection deficiencies. Any information contrary to that assumed for the purpose of preparing this analysis could alter the findings and conclusions stated herein.
8. Tower member sizes and geometry are based on a tower mapping completed by this office in 2017. Field measurements included NDT-ultrasonic thickness testing. Existing antenna loading is based on our 2017 tower analysis. It is our assumption that this data is complete and accurately reflects the existing conditions of the tower and equipment. Armor Tower has not been commissioned to field-

validate this data. Armor Tower reserves the right to add to or modify this report as more information becomes available. Proposed equipment was outlined in *638281_Dish Colo App (EIP)_9.7.2021.xlsx*.

9. The investigation of the load carrying capacities of the antenna supporting frames/mounts is outside the scope of this analysis. Antenna mount certification has been completed by others.
10. Armor Tower can assist the contractor in providing a Class IV rigging plan for equipment lifting.

Section	T7	T6	T5	T4	T3	T2	T1
Legs	L8x8x7/8	L6x6x7/8	L6x6x3/4		L6x6x5/8	L6x6x1/2	
Leg Grade	A36						
Diagonals	2L3x3 1/2x3/8x3/8	2L2 1/2x2 1/2x1/4x3/8			L4x3x1/4	L3x3 1/2x1/4	L3 1/2x3 1/2x1/4
Diagonal Grade	A36						
Top Girts	N.A.				2L3x2 1/2x1/4x3/8	A	C9x13.4
Horizontals	2L3x2 1/2x5/16x3/8	2L2 1/2x2 1/2x1/4x3/8		2L3x2 1/2x1/4x3/8		N.A.	
Sec. Horizontals	N.A.				L3x2 1/2x1/4	C6x8.2	L2 1/2x2x1/4
Red. Horizontals	L2 1/2x2x3/16	L2x2x3/16			N.A.		
Red. Diagonals	L2-1/2x2-1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2x3/16		N.A.		
Red. Sub-Horiz	2L3x2 1/2x1/4x3/8	N.A.					
Inner Bracing	L2 1/2x2 1/2x1/4	2L2 1/2x2 1/2x3/16x3/8	2L2 1/2x2x3/16x3/8		N.A.		
Face Width (ft) 31.25	27.5	23.75	21.875	20	16.25	14.375	12.5
# Panels @ (ft)	1 @ 25	8 @ 12.5					
Weight (lb) 43788.7	12597.6	9402.8	4262.2	4160.4	6724.6	3673.2	2878.0



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT
DOWN: 188810 lb
SHEAR: 40273 lb

UPLIFT: -146035 lb
SHEAR: 33615 lb

AXIAL 185924 lb
SHEAR 26705 lb
MOMENT 2195375 lb-ft
TORQUE 43820 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 96300 lb
SHEAR 98492 lb
MOMENT 7281365 lb-ft
TORQUE 152113 lb-ft
REACTIONS - 118 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	140	3"Sch40 x 10ft	125
BA40-67-DIN UHF Omni Dipole	129	Top Platform - West Peak	125
4' Sidearm Mount	129	2L 2 1/2x2 1/2x1/4x3/8 @ 10ft (Knee Bracing)	119
12' GENERIC BOOM	127	MX08FRO665-20 w. Mtg Pipe (P-DW-Alpha)	117
12' GENERIC BOOM	127	MX08FRO665-20 w. Mtg Pipe (P-DW-Beta)	117
12' GENERIC BOOM	127	MX08FRO665-20 w. Mtg Pipe (P-DW-Gamma)	117
Ericsson AIR 6449 B41 w. MtgPipe (TMO-Alpha)	127	TA08025-B604 RRU (P-DW-Alpha)	117
Ericsson AIR 6449 B41 w. MtgPipe (TMO-Beta)	127	TA08025-B604 RRU (P-DW-Beta)	117
Ericsson AIR 6449 B41 w. MtgPipe (TMO-Gamma)	127	TA08025-B604 RRU (P-DW-Gamma)	117
APXVAARR24_43-U-NA20 w. MtgPipe (TMO-Alpha)	127	TA08025-B605 RRU (P-DW-Alpha)	117
APXVAARR24_43-U-NA20 w. MtgPipe (TMO-Beta)	127	TA08025-B605 RRU (P-DW-Beta)	117
APXVAARR24_43-U-NA20 w. MtgPipe (TMO-Gamma)	127	TA08025-B605 RRU (P-DW-Gamma)	117
Ericsson AIR32 (B2A/B66A) w. Mtg Pipe (TMO-Alpha)	127	RDIDC-9181-PF-48 (P-DW-Alpha)	117
Ericsson AIR32 (B2A/B66A) w. Mtg Pipe (TMO-Beta)	127	Commscope MTC3975083 8'SectorFrame (P-DW-Alpha)	117
Ericsson AIR32 (B2A/B66A) w. Mtg Pipe (TMO-Gamma)	127	Commscope MTC3975083 8'SectorFrame (P-DW-Beta)	117
KRY 112 144/1 Double TMA (TMO-Alpha)	127	Commscope MTC3975083 8'SectorFrame (P-DW-Gamma)	117
KRY 112 144/1 Double TMA (TMO-Beta)	127	Full Access Platform	107
KRY 112 144/1 Double TMA (TMO-Gamma)	127	SD235-SF2P4SNM VHF Dipole	107
Ericsson Radio 4449 B85/B71 (TMO-Alpha)	127	Mount Frames	88
Ericsson Radio 4449 B85/B71 (TMO-Beta)	127	Rest Platform-Half	88
Ericsson Radio 4449 B85/B71 (TMO-Gamma)	127	Mount Frames	75
Ericsson RRUS 4415 B25 (TMO-Alpha)	127	Rest Platform-full	75
Ericsson RRUS 4415 B25 (TMO-Beta)	127	Rest Platform-full	75
Ericsson RRUS 4415 B25 (TMO-Gamma)	127	Mount Frames	75
Commscope SDX1926Q-43 Diplexer (TMO-Alpha)	127	22' Protection Frame/ Shield	34 - 12
Commscope SDX1926Q-43 Diplexer (TMO-Beta)	127	22' Protection Frame/ Shield	34 - 12
Commscope SDX1926Q-43 Diplexer (TMO-Gamma)	127	Old Hardline cage	28 - 12
3"Sch40 x 10ft	125	Old Hardline cage	28 - 12
3"Sch40 x 10ft	125	Old Hardline cage	28 - 12
3"Sch40 x 10ft	125	Rest Platform-Half	25

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L 3 1/2 x 3 x 7/16 x 3/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

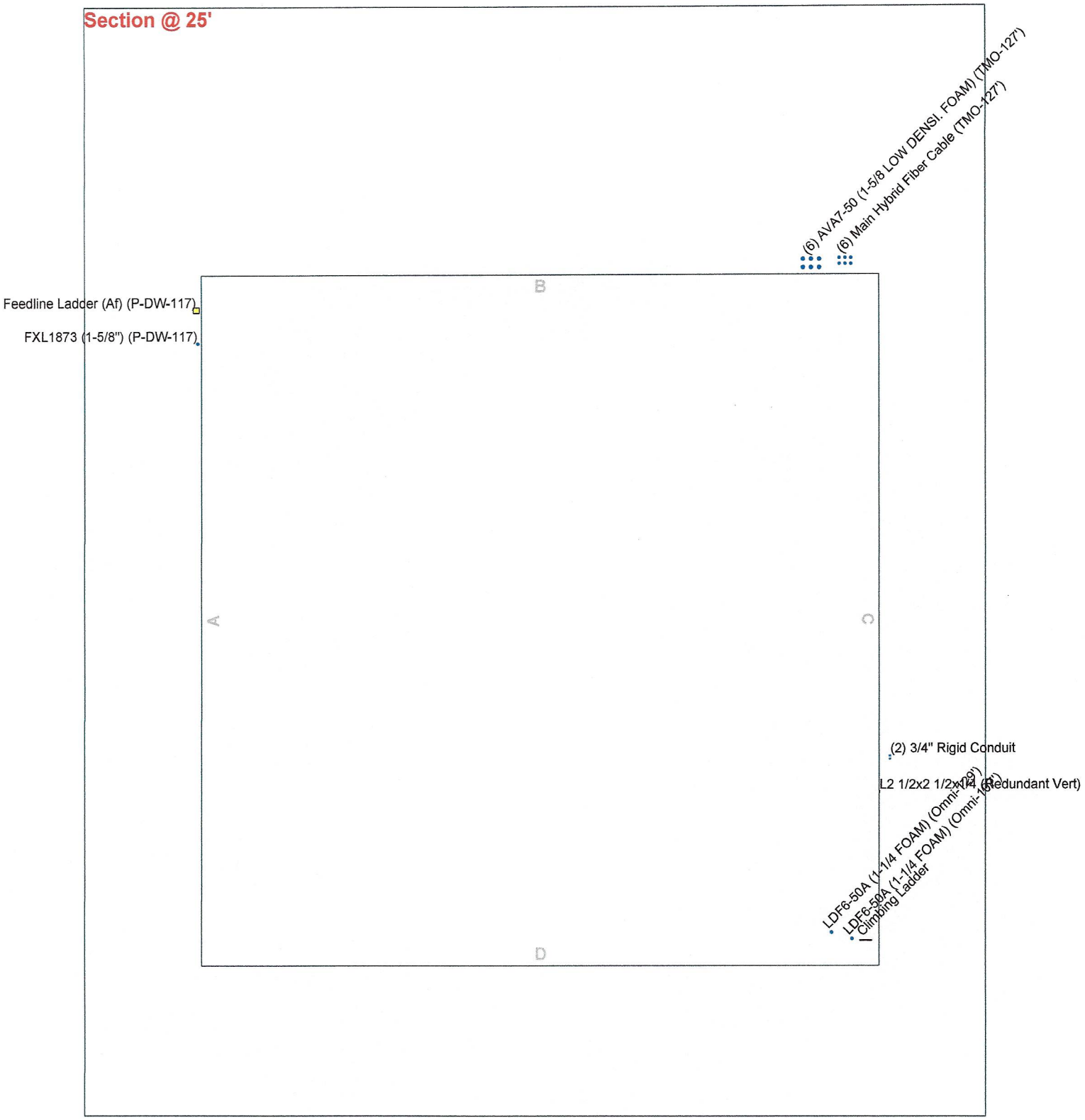
1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 118 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 3 with Crest Height of 650.00 ft
7. Connections use galvanized A307 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
8. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
9. (P)roposed/(E)xisting/(P)roposed equipment.
10. TOWER RATING: 87.4%

ARMOR TOWER
Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Job:	**125' SQR SELF-SUPPORTING TOWER ANALYSIS**
Project:	**Dish Wireless BOHVN00204B West Peak/Meriden, CT**
Client: Everest Infrastructure - 638281	Drawn by: PB · App'd:
Code: TIA-222-H	Date: 09/22/21 · Scale: NTS
Path:	Dwg No. E-1

Feed Line Plan
25'

Round Flat App In Face App Out Face



ARMOR TOWER
Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Job:	***125' SQR SELF-SUPPORTING TOWER ANALYSIS***		
Project:	***Dish Wireless BOHVN00204A West Peak/Meriden, CT***		
Client: Everest Infrastructure - 638281	Drawn by: PB	App'd:	
Code: TIA-222-H	Date: 09/22/21	Scale: NTS	
Path:		Dwg No. E-7	

ARMOR TOWER ENGINEERING

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Job	Page
125' SQR SELF-SUPPORTING TOWER ANALYSIS .	1 of 29
Project	**Date**
Dish Wireless BOHVN00204B West Peak/Meriden, CT	08:21:04 09/22/21
Client	**Designed by**
Everest Infrastructure - 638281	PB

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 125.00 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 12.50 ft at the top and 31.25 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 1004.00 ft.
Basic wind speed of 118 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 3.
Crest Height: 650.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Connections use galvanized A307 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
(P)roposed/(E)xisting/(P)roposed equipment.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

ARMOR TOWER ENGINEERING

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9 North Main
Cortland, NY 13045
Phone: 607-591-5381
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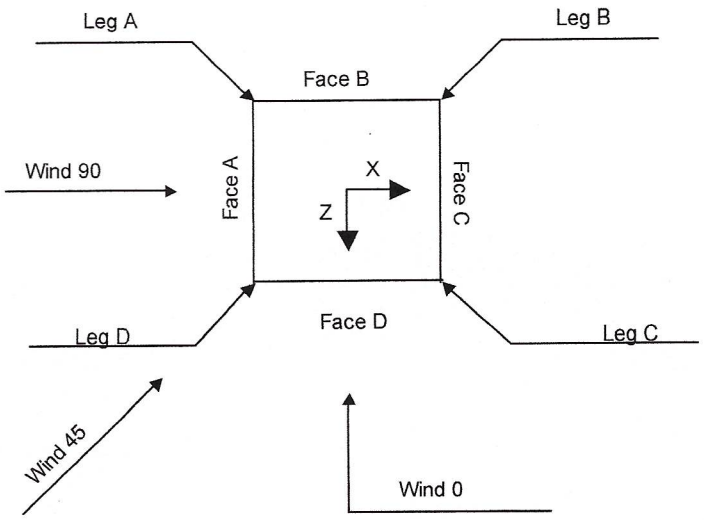
Job	Page
125' SQR SELF-SUPPORTING TOWER ANALYSIS .	2 of 29
Project Dish Wireless BOHVN00204B West Peak/Meriden, CT	**Date** 08:21:04 09/22/21
Client Everest Infrastructure - 638281	**Designed by** PB



Square Tower

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	125.00-112.50			12.50	1	12.50
T2	112.50-100.00			14.38	1	12.50
T3	100.00-75.00			16.25	1	25.00
T4	75.00-62.50			20.00	1	12.50
T5	62.50-50.00			21.88	1	12.50
T6	50.00-25.00			23.75	1	25.00
T7	25.00-0.00			27.50	1	25.00

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	125.00-112.50	12.50	X Brace	No	Yes	0.0000	0.0000
T2	112.50-100.00	12.50	X Brace	No	Yes	0.0000	0.0000
T3	100.00-75.00	12.50	X Brace	No	Yes	0.0000	0.0000
T4	75.00-62.50	12.50	K1 Down	No	Yes	0.0000	0.0000
T5	62.50-50.00	12.50	K1 Down	No	Yes	0.0000	0.0000
T6	50.00-25.00	12.50	K1 Down	No	Yes	0.0000	0.0000
T7	25.00-0.00	25.00	K2 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 125.00-112.50	Equal Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T2 112.50-100.00	Equal Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x3 1/2x1/4	A36 (36 ksi)
T3 100.00-75.00	Equal Angle	L6x6x5/8	A36 (36 ksi)	Single Angle	L4x3x1/4	A36 (36 ksi)
T4 75.00-62.50	Equal Angle	L6x6x3/4	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4x3/8	A36 (36 ksi)
T5 62.50-50.00	Equal Angle	L6x6x3/4	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4x3/8	A36 (36 ksi)
T6 50.00-25.00	Equal Angle	L6x6x7/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4x3/8	A36 (36 ksi)
T7 25.00-0.00	Equal Angle	L8x8x7/8	A36 (36 ksi)	Double Angle	2L3x3 1/2x3/8x3/8	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 125.00-112.50	Channel	C9x13.4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T2 112.50-100.00	Double Angle	2L 3 1/2 x 3 x 7/16 x 3/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T3 100.00-75.00	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T3 100.00-75.00	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T4 75.00-62.50	None	Wide Flange		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T5 62.50-50.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4x3/8	A36 (36 ksi)
T6 50.00-25.00	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4x3/8	A36 (36 ksi)
T7 25.00-0.00	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x5/16x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 125.00-112.50	Single Angle	L2 1/2x2x1/4	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T2 112.50-100.00	Channel	C6x8.2	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T3 100.00-75.00	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T4 75.00-62.50	Solid Round		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T5 62.50-50.00	Solid Round		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T6 50.00-25.00	Solid Round		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x3/16x3/8	A36 (36 ksi)
T7 25.00-0.00	Solid Round		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T4	A36	Horizontal (1)	Equal Angle	L2x2x3/16	0.9
75.00-62.50	(36 ksi)	Diagonal (1)	Single Angle	L2 1/2x2x3/16	0.9
T5	A36	Horizontal (1)	Equal Angle	L2x2x3/16	0.9
62.50-50.00	(36 ksi)	Diagonal (1)	Single Angle	L2 1/2x2x3/16	0.9
T6	A36	Horizontal (1)	Equal Angle	L2x2x3/16	0.9
50.00-25.00	(36 ksi)	Diagonal (1)	Single Angle	L2 1/2x2 1/2x3/16	0.9
T7 25.00-0.00	A36	Horizontal (1)	Arbitrary Shape	L2 1/2x2x3/16	0.9
	(36 ksi)	Horizontal (2)		2L2 1/2x2 1/2x1/4x3/8	
		Diagonal (1)	Arbitrary Shape	L2-1/2x2-1/2x3/16	0.9
		Diagonal (2)		2L2 1/2x2x1/4x3/8	
		Sub-Horizontal	Double Angle	2L3x2 1/2x1/4x3/8	1

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 125.00-112.50	4.80	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000
T2 112.50-100.00	4.80	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000
T3 100.00-75.00	6.10	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000
T4 75.00-62.50	3.50	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000
T5 62.50-50.00	3.50	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000
T6 50.00-25.00	3.50	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

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
T7 25.00-0.00	9.80	0.3750	A36 (36 ksi)	1	1	1.03	24.0000	24.0000	24.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X / Y	K Brace Diags X / Y	Single Diags X / Y	Girts X / Y	Horiz. X / Y	Sec. Horiz. X / Y	Inner Brace X / Y
T1	No	No	1	0.9	1	1	1	1	1	1
125.00-112.50				0.9	1	1	1	1	1	1
T2	No	No	1	0.9	1	1	1	1	1	1
112.50-100.00				0.9	1	1	1	1	1	1
T3	No	No	1	0.9	1	1	1	1	1	1
100.00-75.00				0.9	1	1	1	1	1	1
T4	No	No	1	1	0.9	1	1	0.9	1	0.5
75.00-62.50				1	0.9	1	1	0.9	1	0.5
T5	No	No	1	1	0.9	1	1	0.9	1	0.5
62.50-50.00				1	0.9	1	1	0.9	1	0.5
T6	No	No	1	1	0.9	1	1	0.9	1	0.5
50.00-25.00				1	0.9	1	1	0.9	1	0.5
T7 25.00-0.00	No	No	1	1	0.9	1	1	0.9	1	0.5
				1	0.9	1	1	0.9	1	0.5

[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	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
125.00-112.50														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
112.50-100.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.00-75.00														
T4 75.00-62.50	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 62.50-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 50.00-25.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 25.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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 125.00-112.50	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 112.50-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 100.00-75.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 75.00-62.50	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 62.50-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 50.00-25.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 25.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 125.00-112.50	8.0000	8.0000	8.0000	8.0000	0.0000	0.0000	0.0000	0.0000
T2 112.50-100.00	8.0000	8.0000	8.0000	8.0000	0.0000	0.0000	0.0000	0.0000
T3 100.00-75.00	8.0000	8.0000	8.0000	8.0000	0.0000	0.0000	0.0000	0.0000
T4 75.00-62.50	0.0000	0.0000	0.0000	0.0000	5.0000	5.0000	10.0000	5.0000
T5 62.50-50.00	0.0000	0.0000	0.0000	0.0000	5.0000	5.0000	10.0000	5.0000
T6 50.00-25.00	0.0000	0.0000	0.0000	0.0000	5.0000	5.0000	10.0000	5.0000
T7 25.00-0.00	0.0000	0.0000	0.0000	0.0000	5.0000	5.0000	10.0000	5.0000

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 125.00-112.50	Sleeve DS	0.7500 A307	16	0.7500 A307	5	0.7500 A307	4	0.0000 A325N	0	0.7500 A307	0	0.7500 A307	3	0.7500 A307	2
T2 112.50-100.00	Sleeve DS	0.7500 A307	0	0.7500 A307	4	0.7500 A307	3	0.6250 A325N	0	0.7500 A307	0	0.7500 A307	3	0.7500 A307	2
T3 100.00-75.00	Sleeve DS	0.7500 A307	16	0.7500 A307	4	0.7500 A307	3	0.6250 A325N	0	0.6250 A325N	0	0.7500 A307	3	0.7500 A307	2
T4 75.00-62.50	Sleeve DS	0.7500 A307	0	0.7500 A307	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A307	2	0.7500 A307	0
T5 62.50-50.00	Sleeve DS	0.7500 A307	20	0.7500 A307	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A307	2	0.7500 A307	0

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.
T6 50.00-25.00	Sleeve DS	0.7500 A307	24	0.7500 A307	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A307	2	0.7500 A307	0
T7 25.00-0.00	Sleeve DS	0.7500 A307	28	0.7500 A307	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A307	2	0.7500 A307	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
Climbing Ladder **	D	No	No	Af (CaAa)	125.00 - 0.00	-12.0000	-0.48	1	1	6.0000	6.0000		7.80
TMobile *(18) coax existing, (12) 2B removed AVA7-50 (1-5/8 LOW DENSI. FOAM) (TMO-127')	B	No	No	Ar (CaAa)	125.00 - 0.00	2.0000	0.4	6	3	1.9800	1.9800		0.72
Main Hybrid Fiber Cable (TMO-127') *	B	No	No	Ar (CaAa)	125.00 - 0.00	4.0000	0.45	6	3	1.4300	1.4300		1.63
LDF6-50A (1-1/4 FOAM) (Omni-129')	D	No	No	Ar (CaAa)	125.00 - 0.00	-15.0000	-0.43	1	1	1.5500	1.5500		0.66
LDF6-50A (1-1/4 FOAM) (Omni-107')	D	No	No	Ar (CaAa)	107.00 - 0.00	-12.0000	-0.46	1	1	1.5500	1.5500		0.66
3/4" Rigid Conduit ** ** ** **	C	No	No	Ar (CaAa)	125.00 - 0.00	5.0000	0.2	2	2	0.7500	0.7500		0.80
L2 1/2x2 1/2x1/4 (Redundant Vert) *	C	No	No	Af (CaAa)	75.00 - 25.00	0.0000	0.25	1	1	1.2500	1.2500		2.00
*Proposed Dish Wireless Sept2021 FXL1873 (1-5/8") (P-DW-117)	A	No	No	Ar (CaAa)	117.00 - 5.00	1.0000	0.4	1	1	1.6250	1.6250		0.67
Feedline Ladder (Af) (P-DW-117)	A	No	No	Af (CaAa)	117.00 - 5.00	1.0000	0.45	1	1	3.0000	3.0000		8.40

Feed Line/Linear Appurtenances - Entered As Area

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

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 lb*
T1	125.00-112.50	A	0.000	0.000	2.981	0.000	40.81
		B	0.000	0.000	25.575	0.000	176.25
		C	0.000	0.000	1.875	0.000	20.00
		D	0.000	0.000	14.438	0.000	105.75
T2	112.50-100.00	A	0.000	0.000	8.281	0.000	113.38
		B	0.000	0.000	25.575	0.000	176.25
		C	0.000	0.000	1.875	0.000	20.00
		D	0.000	0.000	15.522	0.000	110.37
T3	100.00-75.00	A	0.000	0.000	16.563	0.000	226.75
		B	0.000	0.000	51.150	0.000	352.50
		C	0.000	0.000	3.750	0.000	40.00
		D	0.000	0.000	32.750	0.000	228.00
T4	75.00-62.50	A	0.000	0.000	8.281	0.000	113.38
		B	0.000	0.000	25.575	0.000	176.25
		C	0.000	0.000	4.479	0.000	45.00
		D	0.000	0.000	16.375	0.000	114.00
T5	62.50-50.00	A	0.000	0.000	8.281	0.000	113.38
		B	0.000	0.000	25.575	0.000	176.25
		C	0.000	0.000	4.479	0.000	45.00
		D	0.000	0.000	16.375	0.000	114.00
T6	50.00-25.00	A	0.000	0.000	16.563	0.000	226.75
		B	0.000	0.000	51.150	0.000	352.50
		C	0.000	0.000	8.958	0.000	90.00
		D	0.000	0.000	32.750	0.000	228.00
T7	25.00-0.00	A	0.000	0.000	13.250	0.000	181.40
		B	0.000	0.000	51.150	0.000	352.50
		C	0.000	0.000	3.750	0.000	40.00
		D	0.000	0.000	32.750	0.000	228.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	*Tower Elevation ft*	*Face or Leg*	*Ice Thickness in*	*A_R ft^2*	*A_F ft^2*	*C_AA_A In Face ft^2*	*C_AA_A Out Face ft^2*	*Weight lb*
T1	125.00-112.50	A	1.388	0.000	0.000	5.481	0.000	105.75

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

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 lb
		B		0.000	0.000	43.078	0.000	875.73
		C		0.000	0.000	9.595	0.000	88.91
		D		0.000	0.000	21.380	0.000	287.90
T2	112.50-100.00	A	1.382	0.000	0.000	15.194	0.000	292.68
		B		0.000	0.000	43.026	0.000	873.71
		C		0.000	0.000	9.569	0.000	88.50
		D		0.000	0.000	24.370	0.000	326.13
T3	100.00-75.00	A	1.370	0.000	0.000	30.265	0.000	581.08
		B		0.000	0.000	85.840	0.000	1739.26
		C		0.000	0.000	19.032	0.000	175.35
		D		0.000	0.000	53.304	0.000	708.08
T4	75.00-62.50	A	1.352	0.000	0.000	15.044	0.000	287.42
		B		0.000	0.000	42.765	0.000	863.67
		C		0.000	0.000	15.424	0.000	164.85
		D		0.000	0.000	26.518	0.000	349.73
T5	62.50-50.00	A	1.336	0.000	0.000	14.960	0.000	284.51
		B		0.000	0.000	42.619	0.000	858.09
		C		0.000	0.000	15.309	0.000	162.65
		D		0.000	0.000	26.393	0.000	345.72
T6	50.00-25.00	A	1.298	0.000	0.000	29.541	0.000	556.02
		B		0.000	0.000	84.580	0.000	1691.09
		C		0.000	0.000	30.099	0.000	315.52
		D		0.000	0.000	52.218	0.000	673.50
T7	25.00-0.00	A	1.182	0.000	0.000	22.707	0.000	413.97
		B		0.000	0.000	82.568	0.000	1615.49
		C		0.000	0.000	17.397	0.000	150.89
		D		0.000	0.000	50.483	0.000	620.40

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	125.00-112.50	11.0240	-6.4511	14.1851	-6.1814
T2	112.50-100.00	10.7780	-8.0878	12.9472	-8.0533
T3	100.00-75.00	12.6430	-8.7426	15.1302	-7.9929
T4	75.00-62.50	16.1750	-9.7824	20.8070	-6.9529
T5	62.50-50.00	17.3807	-10.4368	22.0911	-7.3038
T6	50.00-25.00	19.3789	-11.5430	24.0358	-7.8829
T7	25.00-0.00	19.1883	-11.3065	22.3044	-9.2873

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Climbing Ladder	112.50 - 125.00	0.6000	0.6000
T1	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	112.50 - 125.00	0.6000	0.6000
T1	6	Main Hybrid Fiber Cable	112.50 - 125.00	0.6000	0.6000

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T1	8	LDF6-50A (1-1/4 FOAM)	112.50 - 125.00	0.6000	0.6000
T1	10	3/4" Rigid Conduit	112.50 - 125.00	0.6000	0.6000
T1	22	FXL1873 (1-5/8")	112.50 - 117.00	0.6000	0.6000
T1	23	Feedline Ladder (Af)	112.50 - 117.00	0.6000	0.6000
T2	1	Climbing Ladder	100.00 - 112.50	0.6000	0.6000
T2	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	100.00 - 112.50	0.6000	0.6000
T2	6	Main Hybrid Fiber Cable	100.00 - 112.50	0.6000	0.6000
T2	8	LDF6-50A (1-1/4 FOAM)	100.00 - 112.50	0.6000	0.6000
T2	9	LDF6-50A (1-1/4 FOAM)	100.00 - 107.00	0.6000	0.6000
T2	10	3/4" Rigid Conduit	100.00 - 112.50	0.6000	0.6000
T2	22	FXL1873 (1-5/8")	100.00 - 112.50	0.6000	0.6000
T2	23	Feedline Ladder (Af)	100.00 - 112.50	0.6000	0.6000
T3	1	Climbing Ladder	75.00 - 100.00	0.6000	0.6000
T3	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	75.00 - 100.00	0.6000	0.6000
T3	6	Main Hybrid Fiber Cable	75.00 - 100.00	0.6000	0.6000
T3	8	LDF6-50A (1-1/4 FOAM)	75.00 - 100.00	0.6000	0.6000
T3	9	LDF6-50A (1-1/4 FOAM)	75.00 - 100.00	0.6000	0.6000
T3	10	3/4" Rigid Conduit	75.00 - 100.00	0.6000	0.6000
T3	22	FXL1873 (1-5/8")	75.00 - 100.00	0.6000	0.6000
T3	23	Feedline Ladder (Af)	75.00 - 100.00	0.6000	0.6000
T4	1	Climbing Ladder	62.50 - 75.00	0.6000	0.6000
T4	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	62.50 - 75.00	0.6000	0.6000
T4	6	Main Hybrid Fiber Cable	62.50 - 75.00	0.6000	0.6000
T4	8	LDF6-50A (1-1/4 FOAM)	62.50 - 75.00	0.6000	0.6000
T4	9	LDF6-50A (1-1/4 FOAM)	62.50 - 75.00	0.6000	0.6000
T4	10	3/4" Rigid Conduit	62.50 - 75.00	0.6000	0.6000
T4	19	L2 1/2x2 1/2x1/4	62.50 - 75.00	1.0000	1.0000
T4	22	FXL1873 (1-5/8")	62.50 - 75.00	0.6000	0.6000
T4	23	Feedline Ladder (Af)	62.50 - 75.00	0.6000	0.6000
T5	1	Climbing Ladder	50.00 - 62.50	0.6000	0.6000
T5	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	50.00 - 62.50	0.6000	0.6000
T5	6	Main Hybrid Fiber Cable	50.00 - 62.50	0.6000	0.6000
T5	8	LDF6-50A (1-1/4 FOAM)	50.00 - 62.50	0.6000	0.6000
T5	9	LDF6-50A (1-1/4 FOAM)	50.00 - 62.50	0.6000	0.6000
T5	10	3/4" Rigid Conduit	50.00 - 62.50	0.6000	0.6000
T5	19	L2 1/2x2 1/2x1/4	50.00 - 62.50	1.0000	1.0000
T5	22	FXL1873 (1-5/8")	50.00 - 62.50	0.6000	0.6000
T5	23	Feedline Ladder (Af)	50.00 - 62.50	0.6000	0.6000
T6	1	Climbing Ladder	25.00 - 50.00	0.6000	0.6000
T6	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	25.00 - 50.00	0.6000	0.6000
T6	6	Main Hybrid Fiber Cable	25.00 - 50.00	0.6000	0.6000
T6	8	LDF6-50A (1-1/4 FOAM)	25.00 - 50.00	0.6000	0.6000
T6	9	LDF6-50A (1-1/4 FOAM)	25.00 - 50.00	0.6000	0.6000
T6	10	3/4" Rigid Conduit	25.00 - 50.00	0.6000	0.6000
T6	19	L2 1/2x2 1/2x1/4	25.00 - 50.00	1.0000	1.0000
T6	22	FXL1873 (1-5/8")	25.00 - 50.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	23	Feedline Ladder (Af)	25.00 - 50.00	0.6000	0.6000
T7	1	Climbing Ladder	0.00 - 25.00	0.6000	0.6000
T7	5	AVA7-50 (1-5/8 LOW DENSI. FOAM)	0.00 - 25.00	0.6000	0.6000
T7	6	Main Hybrid Fiber Cable	0.00 - 25.00	0.6000	0.6000
T7	8	LDF6-50A (1-1/4 FOAM)	0.00 - 25.00	0.6000	0.6000
T7	9	LDF6-50A (1-1/4 FOAM)	0.00 - 25.00	0.6000	0.6000
T7	10	3/4" Rigid Conduit	0.00 - 25.00	0.6000	0.6000
T7	22	FXL1873 (1-5/8")	5.00 - 25.00	0.6000	0.6000
T7	23	Feedline Ladder (Af)	5.00 - 25.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon Lighting	A	None			0.0000	140.00	No Ice	2.70	2.70	50.00
							1/2" Ice	3.10	3.10	70.00
							1" Ice	3.50	3.50	90.00
**										
Top Platform - West Peak	C	None			0.0000	125.00	No Ice	147.00	147.00	9100.00
							1/2" Ice	198.00	198.00	12300.00
							1" Ice	249.00	249.00	15500.00
2L 2 1/2x2 1/2x1/4x3/8 @ 10ft	A	None			0.0000	119.00	No Ice	62.30	62.30	1360.00
							1/2" Ice	84.10	84.10	1850.00
(Knee Bracing)							1" Ice	105.90	105.90	2340.00
**										
Full Access Platform	C	None			0.0000	107.00	No Ice	100.00	100.00	5100.00
							1/2" Ice	135.00	135.00	6900.00
							1" Ice	170.00	170.00	8700.00
SD235-SF2PASNM VHF Dipole	A	From Leg	5.00		0.0000	107.00	No Ice	3.43	3.43	25.00
			1.00				1/2" Ice	5.68	5.68	37.00
			0.00				1" Ice	7.93	7.93	49.00
**										
T-Mobile										
12' GENERIC BOOM	A	From Leg	10.00		45.0000	127.00	No Ice	16.60	16.60	560.00
			8.00				1/2" Ice	19.80	19.80	700.00
			0.00				1" Ice	23.00	23.00	840.00
12' GENERIC BOOM	C	From Leg	10.00		45.0000	127.00	No Ice	16.60	16.60	560.00
			10.00				1/2" Ice	19.80	19.80	700.00
			0.00				1" Ice	23.00	23.00	840.00
12' GENERIC BOOM	D	From Leg	10.00		45.0000	127.00	No Ice	16.60	16.60	560.00
			-10.00				1/2" Ice	19.80	19.80	700.00
			0.00				1" Ice	23.00	23.00	840.00
*										
*Proposed TMobile Sept2020										
Ericsson AIR 6449 B41 w. MtgPipe	A	From Face	10.00		0.0000	127.00	No Ice	5.72	3.00	135.95
			8.00				1/2" Ice	6.03	3.41	182.56
(TMO-Alpha)			0.00				1" Ice	6.36	3.84	234.46
Ericsson AIR 6449 B41 w. MtgPipe	C	From Face	10.00		0.0000	127.00	No Ice	5.72	3.00	135.95
			10.00				1/2" Ice	6.03	3.41	182.56

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(TMO-Beta)			0.00			1" Ice	6.36	3.84	234.46
Ericsson AIR 6449 B41 w.	D	From Face	10.00	0.0000	127.00	No Ice	5.72	3.00	135.95
MtgPipe			-10.00			1/2" Ice	6.03	3.41	182.56
(TMO-Gamma)			0.00			1" Ice	6.36	3.84	234.46
APXVAARR24_43-U-NA20	A	From Face	10.00	0.0000	127.00	No Ice	20.24	10.79	182.20
w. MtgPipe			8.00			1/2" Ice	20.89	12.21	315.89
(TMO-Alpha)			0.00			1" Ice	21.55	13.49	460.20
APXVAARR24_43-U-NA20	C	From Face	10.00	0.0000	127.00	No Ice	20.24	10.79	182.20
w. MtgPipe			10.00			1/2" Ice	20.89	12.21	315.89
(TMO-Beta)			0.00			1" Ice	21.55	13.49	460.20
APXVAARR24_43-U-NA20	D	From Face	10.00	0.0000	127.00	No Ice	20.24	10.79	182.20
w. MtgPipe			-10.00			1/2" Ice	20.89	12.21	315.89
(TMO-Gamma)			0.00			1" Ice	21.55	13.49	460.20
Ericsson AIR32 (B2A/B66A)	A	From Face	10.00	0.0000	127.00	No Ice	6.51	5.58	146.80
w. Mtg Pipe			8.00			1/2" Ice	6.89	6.18	203.30
(TMO-Alpha)			0.00			1" Ice	7.27	6.80	266.34
Ericsson AIR32 (B2A/B66A)	C	From Face	10.00	0.0000	127.00	No Ice	6.51	5.58	146.80
w. Mtg Pipe			10.00			1/2" Ice	6.89	6.18	203.30
(TMO-Beta)			0.00			1" Ice	7.27	6.80	266.34
Ericsson AIR32 (B2A/B66A)	D	From Face	10.00	0.0000	127.00	No Ice	6.51	5.58	146.80
w. Mtg Pipe			-10.00			1/2" Ice	6.89	6.18	203.30
(TMO-Gamma)			0.00			1" Ice	7.27	6.80	266.34
KRY 112 144/1 Double TMA	A	From Face	10.00	0.0000	127.00	No Ice	0.35	0.16	11.00
(TMO-Alpha)			8.00			1/2" Ice	0.43	0.22	14.10
			0.00			1" Ice	0.51	0.28	18.42
KRY 112 144/1 Double TMA	C	From Face	10.00	0.0000	127.00	No Ice	0.35	0.16	11.00
(TMO-Beta)			10.00			1/2" Ice	0.43	0.22	14.10
			0.00			1" Ice	0.51	0.28	18.42
KRY 112 144/1 Double TMA	D	From Face	10.00	0.0000	127.00	No Ice	0.35	0.16	11.00
(TMO-Gamma)			-10.00			1/2" Ice	0.43	0.22	14.10
			0.00			1" Ice	0.51	0.28	18.42
Ericsson Radio 4449	A	From Face	10.00	0.0000	127.00	No Ice	0.00	0.00	0.00
B85/B71			8.00			1/2" Ice	0.00	0.00	0.00
(TMO-Alpha)			0.00			1" Ice	0.00	0.00	0.00
Ericsson Radio 4449	C	From Face	10.00	0.0000	127.00	No Ice	0.00	0.00	0.00
B85/B71			10.00			1/2" Ice	0.00	0.00	0.00
(TMO-Beta)			0.00			1" Ice	0.00	0.00	0.00
Ericsson Radio 4449	D	From Face	10.00	0.0000	127.00	No Ice	0.00	0.00	0.00
B85/B71			-10.00			1/2" Ice	0.00	0.00	0.00
(TMO-Gamma)			0.00			1" Ice	0.00	0.00	0.00
Ericsson RRUS 4415 B25	A	From Face	10.00	0.0000	127.00	No Ice	1.64	0.68	46.00
(TMO-Alpha)			8.00			1/2" Ice	1.80	0.79	58.43
			0.00			1" Ice	1.97	0.91	73.23
Ericsson RRUS 4415 B25	C	From Face	10.00	0.0000	127.00	No Ice	1.64	0.68	46.00
(TMO-Beta)			10.00			1/2" Ice	1.80	0.79	58.43
			0.00			1" Ice	1.97	0.91	73.23
Ericsson RRUS 4415 B25	D	From Face	10.00	0.0000	127.00	No Ice	1.64	0.68	46.00
(TMO-Gamma)			-10.00			1/2" Ice	1.80	0.79	58.43
			0.00			1" Ice	1.97	0.91	73.23
Commscope SDX1926Q-43	A	From Face	10.00	0.0000	127.00	No Ice	0.24	0.17	6.20
Diplexer			8.00			1/2" Ice	0.31	0.22	8.67
(TMO-Alpha)			0.00			1" Ice	0.38	0.29	12.24
Commscope SDX1926Q-43	B	From Face	10.00	0.0000	127.00	No Ice	0.24	0.17	6.20
Diplexer			10.00			1/2" Ice	0.31	0.22	8.67
(TMO-Beta)			0.00			1" Ice	0.38	0.29	12.24
Commscope SDX1926Q-43	D	From Face	10.00	0.0000	127.00	No Ice	0.24	0.17	6.20
Diplexer			-10.00			1/2" Ice	0.31	0.22	8.67

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
(TMO-Gamma)			0.00			1" Ice	0.38	0.29	12.24
*									
*									
3"Sch40 x 10ft	A	From Face	10.00	0.0000	125.00	No Ice	2.92	2.92	75.00
			5.00			1/2" Ice	4.54	4.54	99.95
			0.00			1" Ice	5.30	5.30	131.52
3"Sch40 x 10ft	A	From Face	10.00	0.0000	125.00	No Ice	2.92	2.92	75.00
			8.00			1/2" Ice	4.54	4.54	99.95
			0.00			1" Ice	5.30	5.30	131.52
3"Sch40 x 10ft	D	From Face	10.00	0.0000	125.00	No Ice	2.92	2.92	75.00
			5.00			1/2" Ice	4.54	4.54	99.95
			0.00			1" Ice	5.30	5.30	131.52
3"Sch40 x 10ft	D	From Face	10.00	0.0000	125.00	No Ice	2.92	2.92	75.00
			8.00			1/2" Ice	4.54	4.54	99.95
			0.00			1" Ice	5.30	5.30	131.52
*Proposed TMobile Sept2020									
*									
*									
BA40-67-DIN UHF Omni Dipole	C	From Leg	10.00	0.0000	129.00	No Ice	2.00	2.00	11.00
			-5.00			1/2" Ice	3.30	3.30	18.00
			0.00			1" Ice	4.60	4.60	25.00
4' Sidearm Mount	C	From Leg	10.00	0.0000	129.00	No Ice	0.51	2.54	43.00
			-5.00			1/2" Ice	0.96	4.03	64.00
			0.00			1" Ice	1.41	5.52	85.00
**									
Mount Frames	D	From Face	2.00	0.0000	75.00	No Ice	30.00	20.00	750.00
			-7.00			1/2" Ice	40.50	27.00	1012.50
			0.00			1" Ice	51.00	34.00	1275.00
Mount Frames	C	From Face	2.00	0.0000	75.00	No Ice	30.00	20.00	750.00
			7.00			1/2" Ice	40.50	27.00	1012.50
			0.00			1" Ice	51.00	34.00	1275.00
Mount Frames	D	From Face	2.00	0.0000	88.00	No Ice	30.00	20.00	750.00
			-6.00			1/2" Ice	40.50	27.00	1012.50
			0.00			1" Ice	51.00	34.00	1275.00
**									
**									
Rest Platform-Half	C	From Face	0.00	0.0000	25.00	No Ice	35.20	22.00	1066.60
			10.00			1/2" Ice	47.00	27.00	1523.70
			0.00			1" Ice	58.80	33.00	1980.80
Rest Platform-full	D	From Face	1.50	0.0000	75.00	No Ice	40.90	38.00	1235.80
			0.00			1/2" Ice	52.70	44.00	1765.40
			0.00			1" Ice	64.50	50.00	2295.00
Rest Platform-full	C	From Face	1.50	0.0000	75.00	No Ice	40.90	38.00	1235.80
			0.00			1/2" Ice	52.70	44.00	1765.40
			0.00			1" Ice	64.50	50.00	2295.00
Rest Platform-Half	C	From Face	0.00	0.0000	88.00	No Ice	35.20	22.00	1066.60
			5.00			1/2" Ice	47.00	27.00	1523.70
			0.00			1" Ice	58.80	32.00	1980.80
**									
22' Protection Frame/ Shield	C	From Face	1.00	0.0000	34.00 - 12.00	No Ice	69.20	31.70	1000.00
			-9.50			1/2" Ice	93.42	42.80	1350.00
			0.00			1" Ice	117.64	53.89	1700.00
22' Protection Frame/ Shield	A	From Face	1.00	0.0000	34.00 - 12.00	No Ice	69.20	31.70	1000.00
			-9.50			1/2" Ice	93.42	42.80	1350.00
			0.00			1" Ice	117.64	53.89	1700.00
**									
Old Hardline cage	A	From Face	1.00	0.0000	28.00 - 12.00	No Ice	31.50	9.40	790.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	42.52	12.69	1066.50
			0.00			1" Ice	53.55	15.98	1343.00
Old Hardline cage	C	From Face	1.00	0.0000	28.00 - 12.00	No Ice	31.50	9.40	790.00
			0.00			1/2" Ice	42.52	12.69	1066.50
			0.00			1" Ice	53.55	15.98	1343.00
Old Hardline cage	C	From Centroid-Face	0.00	0.0000	28.00 - 12.00	No Ice	31.50	9.40	790.00
			0.00			1/2" Ice	42.52	12.69	1066.50
			0.00			1" Ice	53.55	15.98	1343.00
*									
*Proposed Dish Wireless Sept2021									
MX08FRO665-20 w. Mtg Pipe	A	From Leg	3.00	0.0000	117.00	No Ice	12.49	7.29	93.90
			0.00			1/2" Ice	12.99	8.25	183.58
(P-DW-Alpha)			0.00			1" Ice	13.49	9.08	281.61
MX08FRO665-20 w. Mtg Pipe	B	From Leg	3.00	0.0000	117.00	No Ice	12.49	7.29	93.90
			0.00			1/2" Ice	12.99	8.25	183.58
(P-DW-Beta)			0.00			1" Ice	13.49	9.08	281.61
MX08FRO665-20 w. Mtg Pipe	C	From Leg	3.00	0.0000	117.00	No Ice	12.49	7.29	93.90
			0.00			1/2" Ice	12.99	8.25	183.58
(P-DW-Gamma)			0.00			1" Ice	13.49	9.08	281.61
TA08025-B604 RRU	A	From Leg	3.00	0.0000	117.00	No Ice	1.98	1.04	64.00
(P-DW-Alpha)			0.00			1/2" Ice	2.15	1.18	80.85
			0.00			1" Ice	2.33	1.32	100.41
TA08025-B604 RRU	B	From Leg	3.00	0.0000	117.00	No Ice	1.98	1.04	64.00
(P-DW-Beta)			0.00			1/2" Ice	2.15	1.18	80.85
			0.00			1" Ice	2.33	1.32	100.41
TA08025-B604 RRU	C	From Leg	3.00	0.0000	117.00	No Ice	1.98	1.04	64.00
(P-DW-Gamma)			0.00			1/2" Ice	2.15	1.18	80.85
			0.00			1" Ice	2.33	1.32	100.41
TA08025-B605 RRU	A	From Leg	3.00	0.0000	117.00	No Ice	1.98	1.20	75.00
(P-DW-Alpha)			0.00			1/2" Ice	2.15	1.34	93.09
			0.00			1" Ice	2.33	1.49	113.96
TA08025-B605 RRU	B	From Leg	3.00	0.0000	117.00	No Ice	1.98	1.20	75.00
(P-DW-Beta)			0.00			1/2" Ice	2.15	1.34	93.09
			0.00			1" Ice	2.33	1.49	113.96
TA08025-B605 RRU	C	From Leg	3.00	0.0000	117.00	No Ice	1.98	1.20	75.00
(P-DW-Gamma)			0.00			1/2" Ice	2.15	1.34	93.09
			0.00			1" Ice	2.33	1.49	113.96
RDIDC-9181-PF-48	A	From Leg	3.00	0.0000	117.00	No Ice	2.31	1.29	22.00
(P-DW-Alpha)			0.00			1/2" Ice	2.50	1.45	41.25
			0.00			1" Ice	2.70	1.61	63.41
Commscope MTC3975083	A	From Leg	2.00	0.0000	117.00	No Ice	10.80	6.50	352.00
8'SectorFrame			0.00			1/2" Ice	13.60	8.20	440.00
(P-DW-Alpha)			0.00			1" Ice	16.40	9.90	528.00
Commscope MTC3975083	B	From Leg	2.00	0.0000	117.00	No Ice	10.80	6.50	352.00
8'SectorFrame			0.00			1/2" Ice	13.60	8.20	440.00
(P-DW-Beta)			0.00			1" Ice	16.40	9.90	528.00
Commscope MTC3975083	C	From Leg	2.00	0.0000	117.00	No Ice	10.80	6.50	352.00
8'SectorFrame			0.00			1/2" Ice	13.60	8.20	440.00
(P-DW-Gamma)			0.00			1" Ice	16.40	9.90	528.00

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

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 45 deg - No Ice
5	0.9 Dead+1.0 Wind 45 deg - No Ice
6	1.2 Dead+1.0 Wind 90 deg - No Ice
7	0.9 Dead+1.0 Wind 90 deg - No Ice
8	1.2 Dead+1.0 Wind 135 deg - No Ice
9	0.9 Dead+1.0 Wind 135 deg - No Ice
10	1.2 Dead+1.0 Wind 180 deg - No Ice
11	0.9 Dead+1.0 Wind 180 deg - No Ice
12	1.2 Dead+1.0 Wind 225 deg - No Ice
13	0.9 Dead+1.0 Wind 225 deg - No Ice
14	1.2 Dead+1.0 Wind 270 deg - No Ice
15	0.9 Dead+1.0 Wind 270 deg - No Ice
16	1.2 Dead+1.0 Wind 315 deg - No Ice
17	0.9 Dead+1.0 Wind 315 deg - No Ice
18	1.2 Dead+1.0 Ice+1.0 Temp
19	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
20	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
21	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
22	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
23	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
24	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
25	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
26	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 45 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 135 deg - Service
31	Dead+Wind 180 deg - Service
32	Dead+Wind 225 deg - Service
33	Dead+Wind 270 deg - Service
34	Dead+Wind 315 deg - Service

Maximum Reactions

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Leg D	Max. Vert	12	184734.21	29802.84	-26564.79
	Max. H_x	12	184734.21	29802.84	-26564.79
	Max. H_z	5	-143522.23	-24890.48	22191.00
	Min. Vert	5	-143522.23	-24890.48	22191.00
	Min. H_x	5	-143522.23	-24890.48	22191.00
	Min. H_z	12	184734.21	29802.84	-26564.79
Leg C	Max. Vert	8	188809.90	-28397.97	-28555.78
	Max. H_x	17	-142170.30	23485.04	23568.76
	Max. H_z	17	-142170.30	23485.04	23568.76
	Min. Vert	17	-142170.30	23485.04	23568.76
	Min. H_x	8	188809.90	-28397.97	-28555.78
	Min. H_z	8	188809.90	-28397.97	-28555.78
Leg B	Max. Vert	4	185784.02	-27550.52	28922.26
	Max. H_x	13	-142733.33	23067.08	-23934.67
	Max. H_z	4	185784.02	-27550.52	28922.26
	Min. Vert	13	-142733.33	23067.08	-23934.67

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Leg A	Min. H_x	4	185784.02	-27550.52	28922.26
	Min. H_z	13	-142733.33	23067.08	-23934.67
	Max. Vert	16	183657.98	29191.75	27166.38
	Max. H_x	16	183657.98	29191.75	27166.38
	Max. H_z	16	183657.98	29191.75	27166.38
	Min. Vert	9	-146034.92	-24707.75	-22793.15
	Min. H_x	9	-146034.92	-24707.75	-22793.15
	Min. H_z	9	-146034.92	-24707.75	-22793.15

Tower Mast Reaction Summary

Load Combination	*Vertical lb*	*Shear$_x$ lb*	*Shear$_z$ lb*	*Overturning Moment, M_x lb-ft*	*Overturning Moment, M_z lb-ft*	*Torque lb-ft*
Dead Only	80250.15	0.00	0.00	53406.45	-80768.19	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	96300.18	-187.70	-91894.20	-6731946.54	-75381.13	152112.86
0.9 Dead+1.0 Wind 0 deg - No Ice	72225.13	-187.70	-91894.20	-6747968.48	-51150.68	152112.86
1.2 Dead+1.0 Wind 45 deg - No Ice	96300.18	71563.29	-67124.05	-4901672.30	-5205165.98	125437.75
0.9 Dead+1.0 Wind 45 deg - No Ice	72225.13	71563.29	-67124.05	-4917694.23	-5180935.52	125437.75
1.2 Dead+1.0 Wind 90 deg - No Ice	96300.18	94009.59	187.70	85628.62	-6837851.99	47453.49
0.9 Dead+1.0 Wind 90 deg - No Ice	72225.13	94009.59	187.70	69606.68	-6813621.53	47453.49
1.2 Dead+1.0 Wind 135 deg - No Ice	96300.18	71828.74	67389.50	5060311.18	-5235629.11	-64923.47
0.9 Dead+1.0 Wind 135 deg - No Ice	72225.13	71828.74	67389.50	5044289.25	-5211398.65	-64923.48
1.2 Dead+1.0 Wind 180 deg - No Ice	96300.18	187.70	91894.20	6860122.02	-118462.52	-152112.86
0.9 Dead+1.0 Wind 180 deg - No Ice	72225.13	187.70	91894.20	6844100.08	-94232.06	-152112.86
1.2 Dead+1.0 Wind 225 deg - No Ice	96300.18	-71563.29	67124.05	5029847.77	5011322.33	-125437.75
0.9 Dead+1.0 Wind 225 deg - No Ice	72225.13	-71563.29	67124.05	5013825.84	5035552.78	-125437.75
1.2 Dead+1.0 Wind 270 deg - No Ice	96300.18	-94009.59	-187.70	42546.86	6644008.34	-47453.49
0.9 Dead+1.0 Wind 270 deg - No Ice	72225.13	-94009.59	-187.70	26524.93	6668238.79	-47453.49
1.2 Dead+1.0 Wind 315 deg - No Ice	96300.18	-71828.74	-67389.50	-4932135.71	5041785.46	64923.48
0.9 Dead+1.0 Wind 315 deg - No Ice	72225.13	-71828.74	-67389.50	-4948157.64	5066015.91	64923.48
1.2 Dead+1.0 Ice+1.0 Temp	185924.44	0.00	0.00	73790.11	-241867.19	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	185924.44	-31.63	-24313.48	-1770662.54	-238349.89	43819.92
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	185924.44	19565.09	-18083.63	-1290826.28	-1649209.85	41697.67
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	185924.44	25681.68	31.63	77307.45	-2101989.55	19517.87
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	185924.44	19609.83	18128.37	1443380.77	-1654184.06	-15552.93
1.2 Dead+1.0 Wind 180	185924.44	31.63	24313.48	1918242.75	-245384.48	-43819.91

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 225	185924.44	-19565.09	18083.63	1438406.49	1165475.48	-41697.66
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 270	185924.44	-25681.68	-31.63	70272.76	1618255.18	-19517.87
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 315	185924.44	-19609.83	-18128.37	-1295800.56	1170449.68	15552.94
deg+1.0 Ice+1.0 Temp Dead+Wind 0 deg - Service	80250.15	-48.53	-23758.91	-1703683.71	-75198.92	39328.23
Dead+Wind 45 deg - Service	80250.15	18502.43	-17354.68	-1230472.90	-1401486.30	32431.48
Dead+Wind 90 deg - Service	80250.15	24305.84	48.53	58975.76	-1823611.38	12268.93
Dead+Wind 135 deg - Service	80250.15	18571.06	17423.31	1345162.01	-1409362.43	-16785.73
Dead+Wind 180 deg - Service	80250.15	48.53	23758.91	1810496.61	-86337.46	-39328.23
Dead+Wind 225 deg - Service	80250.15	-18502.43	17354.68	1337285.80	1239949.92	-32431.48
Dead+Wind 270 deg - Service	80250.15	-24305.84	-48.53	47837.13	1662075.00	-12268.93
Dead+Wind 315 deg - Service	80250.15	-18571.06	-17423.31	-1238349.11	1247826.05	16785.73

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-80250.15	0.00	-0.00	80250.15	-0.00	0.000%
2	-187.70	-96300.18	-91894.20	187.70	96300.18	91894.20	0.000%
3	-187.70	-72225.13	-91894.20	187.70	72225.13	91894.20	0.000%
4	71563.29	-96300.18	-67124.05	-71563.29	96300.18	67124.05	0.000%
5	71563.29	-72225.13	-67124.05	-71563.29	72225.13	67124.05	0.000%
6	94009.59	-96300.18	187.70	-94009.59	96300.18	-187.70	0.000%
7	94009.59	-72225.13	187.70	-94009.59	72225.13	-187.70	0.000%
8	71828.74	-96300.18	67389.50	-71828.74	96300.18	-67389.50	0.000%
9	71828.74	-72225.13	67389.50	-71828.74	72225.13	-67389.50	0.000%
10	187.70	-96300.18	91894.20	-187.70	96300.18	-91894.20	0.000%
11	187.70	-72225.13	91894.20	-187.70	72225.13	-91894.20	0.000%
12	-71563.29	-96300.18	67124.05	71563.29	96300.18	-67124.05	0.000%
13	-71563.29	-72225.13	67124.05	71563.29	72225.13	-67124.05	0.000%
14	-94009.59	-96300.18	-187.70	94009.59	96300.18	187.70	0.000%
15	-94009.59	-72225.13	-187.70	94009.59	72225.13	187.70	0.000%
16	-71828.74	-96300.18	-67389.50	71828.74	96300.18	67389.50	0.000%
17	-71828.74	-72225.13	-67389.50	71828.74	72225.13	67389.50	0.000%
18	0.00	-185924.44	0.00	-0.00	185924.44	-0.00	0.000%
19	-31.63	-185924.44	-24313.48	31.63	185924.44	24313.48	0.000%
20	19565.09	-185924.44	-18083.63	-19565.09	185924.44	18083.63	0.000%
21	25681.68	-185924.44	31.63	-25681.68	185924.44	-31.63	0.000%
22	19609.83	-185924.44	18128.37	-19609.83	185924.44	-18128.37	0.000%
23	31.63	-185924.44	24313.48	-31.63	185924.44	-24313.48	0.000%
24	-19565.09	-185924.44	18083.63	19565.09	185924.44	-18083.63	0.000%
25	-25681.68	-185924.44	-31.63	25681.68	185924.44	31.63	0.000%
26	-19609.83	-185924.44	-18128.37	19609.83	185924.44	18128.37	0.000%
27	-48.53	-80250.15	-23758.92	48.53	80250.15	23758.91	0.000%
28	18502.43	-80250.15	-17354.68	-18502.43	80250.15	17354.68	0.000%
29	24305.84	-80250.15	48.53	-24305.84	80250.15	-48.53	0.000%
30	18571.06	-80250.15	17423.31	-18571.06	80250.15	-17423.31	0.000%
31	48.53	-80250.15	23758.92	-48.53	80250.15	-23758.91	0.000%
32	-18502.43	-80250.15	17354.68	18502.43	80250.15	-17354.68	0.000%
33	-24305.84	-80250.15	-48.53	24305.84	80250.15	48.53	0.000%
34	-18571.06	-80250.15	-17423.31	18571.06	80250.15	17423.31	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	125 - 112.5	0.564	30	0.0249	0.0083
T2	112.5 - 100	0.492	30	0.0243	0.0077
T3	100 - 75	0.416	30	0.0229	0.0073
T4	75 - 62.5	0.273	30	0.0179	0.0063
T5	62.5 - 50	0.210	30	0.0150	0.0051
T6	50 - 25	0.157	34	0.0115	0.0040
T7	25 - 0	0.071	34	0.0046	0.0021

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	Flash Beacon Lighting	30	0.564	0.0249	0.0083	568997
129.00	BA40-67-DIN UHF Omni Dipole	30	0.564	0.0249	0.0083	568997
127.00	12' GENERIC BOOM	30	0.564	0.0249	0.0083	568997
125.00	Top Platform - West Peak	30	0.564	0.0249	0.0083	568997
119.00	2L 2 1/2x2 1/2x1/4x3/8 @ 10ft	30	0.530	0.0247	0.0080	474162
117.00	MX08FRO665-20 w. Mtg Pipe	30	0.518	0.0246	0.0079	355707
107.00	Full Access Platform	30	0.459	0.0238	0.0076	575932
88.00	Mount Frames	30	0.345	0.0207	0.0070	409726
75.00	Mount Frames	30	0.273	0.0179	0.0063	292258
34.00	22' Protection Frame/ Shield	34	0.100	0.0069	0.0028	281723
28.50	22' Protection Frame/ Shield	34	0.082	0.0054	0.0023	280616
28.00	Old Hardline cage	34	0.081	0.0053	0.0023	280447
25.00	Rest Platform-Half	34	0.071	0.0046	0.0021	287008
23.00	22' Protection Frame/ Shield	34	0.065	0.0041	0.0019	303156
22.67	Old Hardline cage	34	0.064	0.0040	0.0019	306850
17.50	22' Protection Frame/ Shield	34	0.049	0.0030	0.0015	395011
17.33	Old Hardline cage	34	0.048	0.0029	0.0014	398810
12.00	22' Protection Frame/ Shield	34	0.033	0.0020	0.0010	576057

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	125 - 112.5	2.094	8	0.0867	0.0322
T2	112.5 - 100	1.836	8	0.0858	0.0299
T3	100 - 75	1.563	8	0.0809	0.0283
T4	75 - 62.5	1.043	8	0.0631	0.0242
T5	62.5 - 50	0.809	8	0.0536	0.0196
T6	50 - 25	0.604	16	0.0414	0.0155
T7	25 - 0	0.270	16	0.0164	0.0080

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140.00	Flash Beacon Lighting	8	2.094	0.0867	0.0322	164840
129.00	BA40-67-DIN UHF Omni Dipole	8	2.094	0.0867	0.0322	164840
127.00	12' GENERIC BOOM	8	2.094	0.0867	0.0322	164840
125.00	Top Platform - West Peak	8	2.094	0.0867	0.0322	164840
119.00	2L 2 1/2x2 1/2x1/4x3/8 @ 10ft	8	1.972	0.0866	0.0309	137367
117.00	MX08FRO665-20 w. Mtg Pipe	8	1.931	0.0864	0.0304	103051
107.00	Full Access Platform	8	1.717	0.0842	0.0292	173980
88.00	Mount Frames	8	1.307	0.0730	0.0269	134184
75.00	Mount Frames	8	1.043	0.0631	0.0242	107491
34.00	22' Protection Frame/ Shield	16	0.380	0.0247	0.0107	79090
28.50	22' Protection Frame/ Shield	16	0.311	0.0195	0.0091	77519
28.00	Old Hardline cage	16	0.305	0.0190	0.0089	77478
25.00	Rest Platform-Half	16	0.270	0.0164	0.0080	79319
23.00	22' Protection Frame/ Shield	16	0.246	0.0147	0.0074	83791
22.67	Old Hardline cage	16	0.242	0.0145	0.0073	84813
17.50	22' Protection Frame/ Shield	16	0.184	0.0106	0.0057	109183
17.33	Old Hardline cage	16	0.182	0.0105	0.0056	110233
12.00	22' Protection Frame/ Shield	16	0.125	0.0070	0.0039	159225

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	125	Leg	A307	0.7500	16	1325.81	24850.50	0.053 ✓	1	Bolt DS
		Diagonal	A307	0.7500	5	1332.93	10222.50	0.130 ✓	1	Member Block Shear
		Secondary Horizontal	A307	0.7500	2	745.53	10467.20	0.071 ✓	1	Member Block Shear
		Top Girt	A307	0.7500	4	288.42	12425.20	0.023 ✓	1	Bolt Shear
T2	112.5	Diagonal	A307	0.7500	4	2183.47	9855.47	0.222 ✓	1	Member Block Shear
		Secondary Horizontal	A307	0.7500	2	628.03	12425.20	0.051 ✓	1	Bolt Shear
		Top Girt	A307	0.7500	3	1174.74	24850.50	0.047 ✓	1	Bolt Shear
T3	100	Leg	A307	0.7500	16	7730.82	24850.50	0.311 ✓	1	Bolt DS
		Diagonal	A307	0.7500	4	2774.02	10535.20	0.263 ✓	1	Member Block Shear
		Horizontal	A307	0.7500	3	1082.34	20843.80	0.052 ✓	1	Member Block Shear
		Secondary Horizontal	A307	0.7500	2	465.14	11146.90	0.042 ✓	1	Member Block Shear
		Top Girt	A307	0.7500	3	1104.93	20843.80	0.053 ✓	1	Member Block Shear
T4	75	Diagonal	A307	0.7500	2	9065.35	20118.80	0.451 ✓	1	Member Block Shear
		Horizontal	A307	0.7500	2	6233.59	22293.80	0.280 ✓	1	Member Block Shear
T5	62.5	Leg	A307	0.7500	20	9469.42	24850.50	0.381 ✓	1	Bolt DS

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A307	0.7500	2	9095.41	20118.80	0.452 ✔	1	Member Block Shear
		Horizontal	A307	0.7500	2	6438.73	20934.40	0.308 ✔	1	Member Block Shear
T6	50	Leg	A307	0.7500	24	11036.90	24850.50	0.444 ✔	1	Bolt DS
		Diagonal	A307	0.7500	2	9111.83	20118.80	0.453 ✔	1	Member Block Shear
		Horizontal	A307	0.7500	2	6959.02	20934.40	0.332 ✔	1	Member Block Shear
T7	25	Leg	A307	0.7500	28	10009.70	24850.50	0.403 ✔	1	Bolt DS
		Diagonal	A307	0.7500	4	8295.65	24850.50	0.334 ✔	1	Bolt Shear
		Horizontal	A307	0.7500	2	9083.76	24850.50	0.366 ✔	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	125 - 112.5	L6x6x1/2	12.57	6.72	68.4 K=1.00	5.7500	-10606.50	176569.00	0.060 [1] ✔
T2	112.5 - 100	L6x6x1/2	12.57	6.67	67.8 K=1.00	5.7500	-25981.40	177053.00	0.147 [1] ✔
T3	100 - 75	L6x6x5/8	25.14	6.63	67.4 K=1.00	7.1100	-61846.60	219395.00	0.282 [1] ✔
T4	75 - 62.5	L6x6x3/4	12.57	6.29	64.5 K=1.00	8.4400	-75377.60	264139.00	0.285 [1] ✔
T5	62.5 - 50	L6x6x3/4	12.57	6.29	64.5 K=1.00	8.4400	-94694.20	264139.00	0.359 [1] ✔
T6	50 - 25	L6x6x7/8	25.14	6.29	64.5 K=1.00	9.7300	-132443.00	304511.00	0.435 [1] ✔
T7	25 - 0	L8x8x7/8	25.14	8.38	64.1 K=1.00	13.2000	-140742.00	413897.00	0.340 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	125 - 112.5	L3 1/2x3 1/2x1/4	16.49	8.82	137.3	1.6900	-7958.67	25667.50	0.310 [1]

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=0.90				✔
T2	112.5 - 100	L3x3 1/2x1/4	17.91	9.51	162.7 K=0.90	1.5600	-9936.95	16869.90	0.589 [1] ✔
T3	100 - 75	L4x3x1/4	20.97	11.00	182.5 K=0.90	1.6900	-12014.80	14521.10	0.827 [1] ✔
T4	75 - 62.5	2L2 1/2x2 1/2x1/4x3/8	15.15	15.15	145.9 K=0.90	2.3800	-18614.50	31288.50	0.595 [1] ✔
T5	62.5 - 50	2L2 1/2x2 1/2x1/4x3/8	15.79	15.79	151.4 K=0.90	2.3800	-18625.70	29110.90	0.640 [1] ✔
T6	50 - 25	2L2 1/2x2 1/2x1/4x3/8	17.15	17.15	163.2 K=0.90	2.3800	-18711.20	25143.30	0.744 [1] ✔
T7	25 - 0	2L3x3 1/2x3/8x3/8	28.04	28.04	185.4 K=0.90	4.5900	-33182.60	37976.50	0.874 [1] ✔

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	100 - 75	2L3x2 1/2x1/4x3/8	18.13	18.13	230.2 K=1.00	2.6300	-1797.76	14210.10	0.127 [1] ✔
T4	75 - 62.5	KL/R > 200 (C) - 59 2L3x2 1/2x1/4x3/8	20.00	10.00	114.3 K=0.90	2.6300	-11988.90	55794.60	0.215 [1] ✔
T5	62.5 - 50	2L2 1/2x2 1/2x1/4x3/8	21.88	10.94	153.6 K=0.90	2.3800	-12814.50	28869.80	0.444 [1] ✔
T6	50 - 25	2L2 1/2x2 1/2x1/4x3/8	25.63	12.81	179.9 K=0.90	2.3800	-13773.40	21038.40	0.655 [1] ✔
T7	25 - 0	2L3x2 1/2x5/16x3/8	27.50	13.75	158.5 K=0.90	3.2422	-15499.70	36926.20	0.420 [1] ✔

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	125 - 112.5	L2 1/2x2x1/4	13.37	13.37	270.9 K=1.00	1.0600	-1645.35	4135.04	0.398 [1] ✔
T2	112.5 - 100	KL/R > 250 (C) - 18 C6x8.2	15.26	15.26	340.9 K=1.00	2.4000	-1256.05	4665.59	0.269 [1] ✔
T3	100 - 75	KL/R > 250 (C) - 39 L3x2 1/2x1/4	19.02	19.02	303.6	1.3100	-930.29	4067.34	0.229 [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	lb	lb	
					K=1.00				✔
		KL/R > 250 (C) - 61							

[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	lb	lb	
T1	125 - 112.5	C9x13.4	12.50	12.50	224.2 K=1.00	3.9400	-200.73	17705.40	0.011 [1] ✔
		KL/R > 200 (C) - 8							
T2	112.5 - 100	2L 3 1/2 x 3 x 7/16 x 3/8	14.38	14.38	159.6 K=1.00	5.3047	-562.07	59609.60	0.009 [1] ✔
T3	100 - 75	2L3x2 1/2x1/4x3/8	16.25	16.25	206.3 K=1.00	2.6300	-1063.63	17678.60	0.060 [1] ✔
		KL/R > 200 (C) - 47							

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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	lb	lb	
T4	75 - 62.5	L2x2x3/16	5.00	5.00	137.1 K=0.90	0.7150	-1133.82	10894.50	0.104 [1] ✔
T5	62.5 - 50	L2x2x3/16	5.47	5.47	149.9 K=0.90	0.7150	-1424.38	9106.94	0.156 [1] ✔
T6	50 - 25	L2x2x3/16	6.41	6.41	175.6 K=0.90	0.7150	-1992.19	6636.53	0.300 [1] ✔
T7	25 - 0	L2 1/2x2x3/16	4.58	4.58	115.9 K=0.90	0.8090	-2117.03	12919.40	0.164 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (2) 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	lb	lb	
T7	25 - 0	2L2 1/2x2 1/2x1/4x3/8	9.17	9.17	128.7 K=0.90	2.3800	-2117.03	32225.20	0.066 [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	lb	lb	

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (1) 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	lb	lb	
T4	75 - 62.5	L2 1/2x2x3/16	7.73	7.73	195.6 K=0.90	0.8090	-876.90	6051.30	0.145 [1] ✔
T5	62.5 - 50	L2 1/2x2x3/16	8.02	8.02	202.8 K=0.90	0.8090	-1044.13	5630.72	0.185 [1] ✔
T6	50 - 25	L2 1/2x2 1/2x3/16	8.63	8.63	188.4 K=0.90	0.9020	-1342.40	7276.13	0.184 [1] ✔
T7	25 - 0	L2-1/2x2-1/2x3/16	9.25	9.25	128.2 K=0.90	0.9020	-2135.54	12295.70	0.174 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (2) 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	lb	lb	
T7	25 - 0	2L2 1/2x2x1/4x3/8	11.95	11.95	164.6 K=0.90	2.1300	-9287.09	17768.50	0.523 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Sub-Horizontal 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	lb	lb	
T7	25 - 0	2L3x2 1/2x1/4x3/8	10.42	10.42	132.3 K=1.00	2.6300	-10921.90	43022.60	0.254 [1] ✔

[1] $P_u / \phi P_n$ controls

Inner Bracing Design Data (Compression)

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	75 - 62.5	2L2 1/2x2x3/16x3/8	14.14	14.14	107.8 K=0.50	1.6200	-51.32	34620.20	0.001 [1] ✔
T5	62.5 - 50	2L2 1/2x2x3/16x3/8	15.47	15.47	117.0 K=0.50	1.6200	-52.83	31664.10	0.002 [1] ✔
T6	50 - 25	2L2 1/2x2 1/2x3/16x3/8	18.12	18.12	139.7 K=0.50	1.8000	-59.22	26383.30	0.002 [1] ✔
T7	25 - 0	L2 1/2x2 1/2x1/4	19.45	19.45	237.6 K=0.50	1.1900	-103.22	6032.12	0.017 [1] ✔

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	125 - 112.5	L6x6x1/2	12.57	6.72	43.4	5.7500	2979.17	186300.00	0.016 [1] ✔
T2	112.5 - 100	L6x6x1/2	12.57	6.67	43.0	5.7500	13934.30	186300.00	0.075 [1] ✔
T3	100 - 75	L6x6x5/8	25.14	6.63	43.2	7.1100	43201.80	230364.00	0.188 [1] ✔
T4	75 - 62.5	L6x6x3/4	12.57	6.29	41.2	8.4400	51732.30	273456.00	0.189 [1] ✔
T5	62.5 - 50	L6x6x3/4	12.57	6.29	41.2	8.4400	68695.10	273456.00	0.251 [1] ✔
T6	50 - 25	L6x6x7/8	25.14	6.29	41.7	9.7300	100777.00	315252.00	0.320 [1] ✔
T7	25 - 0	L8x8x7/8	25.14	8.38	41.0	13.2000	108510.00	427680.00	0.254 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	125 - 112.5	L3 1/2x3 1/2x1/4	16.49	8.82	97.1	1.1034	6664.67	47999.50	0.139 [1] ✔
T2	112.5 - 100	L3x3 1/2x1/4	17.91	9.51	124.9	1.0059	8733.88	43758.30	0.200 [1] ✔
T3	100 - 75	L4x3x1/4	20.97	11.00	147.2	1.1034	11096.10	47999.50	0.231 [1]

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	75 - 62.5	2L2 1/2x2 1/2x1/4x3/8	15.15	15.15	152.7	1.4569	18130.70	63374.10	0.286 [1]
T5	62.5 - 50	2L2 1/2x2 1/2x1/4x3/8	15.79	15.79	159.2	1.4569	18190.80	63374.10	0.287 [1]
T6	50 - 25	2L2 1/2x2 1/2x1/4x3/8	16.46	16.46	166.0	1.4569	18223.70	63374.10	0.288 [1]
T7	25 - 0	2L3x3 1/2x3/8x3/8	28.04	28.04	201.5	2.9503	29354.50	128339.00	0.229 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	100 - 75	2L3x2 1/2x1/4x3/8	18.13	18.13	230.2	1.6444	3247.03	71530.30	0.045 [1]
T4	75 - 62.5	2L3x2 1/2x1/4x3/8	20.00	10.00	127.0	1.6444	12467.20	71530.30	0.174 [1]
T5	62.5 - 50	2L2 1/2x2 1/2x1/4x3/8	21.88	10.94	170.7	1.4569	12877.50	63374.10	0.203 [1]
T6	50 - 25	2L2 1/2x2 1/2x1/4x3/8	25.63	12.81	199.9	1.4569	13918.00	63374.10	0.220 [1]
T7	25 - 0	2L3x2 1/2x5/16x3/8	27.50	13.75	176.1	2.0215	18167.50	87934.60	0.207 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	125 - 112.5	L2 1/2x2x1/4	13.37	13.37	270.9	0.6309	1491.07	27445.80	0.054 [1]
T2	112.5 - 100	C6x8.2	15.26	15.26	340.9	1.6688	1060.03	72590.60	0.015 [1]
T3	100 - 75	L3x2 1/2x1/4	17.14	17.14	273.6	0.8184	930.29	35602.00	0.026 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	125 - 112.5	C9x13.4	12.50	12.50	224.2	2.8021	1153.68	121891.00	0.009 [1] ✔
T2	112.5 - 100	2L 3 1/2 x 3 x 7/16 x 3/8	14.38	14.38	159.6	3.4043	3524.21	148087.00	0.024 [1] ✔
T3	100 - 75	2L3x2 1/2x1/4x3/8	16.25	16.25	206.3	1.6444	3314.80	71530.30	0.046 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (1) 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	lb	lb	
T4	75 - 62.5	L2x2x3/16	5.00	5.00	97.2	0.7150	1133.82	23166.00	0.049 [1] ✔
T5	62.5 - 50	L2x2x3/16	5.47	5.47	106.4	0.7150	1424.38	23166.00	0.061 [1] ✔
T6	50 - 25	L2x2x3/16	6.41	6.41	124.6	0.7150	1992.19	23166.00	0.086 [1] ✔
T7	25 - 0	L2 1/2x2x3/16	4.58	4.58	128.8	0.8090	2117.03	26211.60	0.081 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (2) 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	lb	lb	
T7	25 - 0	2L2 1/2x2 1/2x1/4x3/8	9.17	9.17	143.0	2.3800	2117.03	77112.00	0.027 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (1) 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	lb	lb	
T4	75 - 62.5	L2 1/2x2x3/16	7.73	7.73	154.7	0.8090	876.90	26211.60	0.033 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	62.5 - 50	L2 1/2x2x3/16	8.02	8.02	160.4	0.8090	1044.13	26211.60	0.040 [1]
T6	50 - 25	L2 1/2x2 1/2x3/16	8.32	8.32	128.3	0.9020	1395.46	29224.80	0.048 [1]
T7	25 - 0	L2-1/2x2-1/2x3/16	9.25	9.25	142.5	0.9020	2135.54	29224.80	0.073 [1]

[1] $P_u / \phi P_n$ controls

Redundant Diagonal (2) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	25 - 0	2L2 1/2x2x1/4x3/8	11.95	11.95	182.8	2.1300	6623.25	69012.00	0.096 [1]

[1] $P_u / \phi P_n$ controls

Redundant Sub-Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	25 - 0	2L3x2 1/2x1/4x3/8	10.42	10.42	132.3	2.6300	7150.90	85212.00	0.084 [1]

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	125 - 112.5	Leg	L6x6x1/2	2	-10606.50	176569.00	6.0	Pass
T2	112.5 - 100	Leg	L6x6x1/2	22	-25981.40	177053.00	14.7	Pass
T3	100 - 75	Leg	L6x6x5/8	42	-61846.60	219395.00	28.2 31.1 (b)	Pass
T4	75 - 62.5	Leg	L6x6x3/4	78	-75377.60	264139.00	28.5	Pass
T5	62.5 - 50	Leg	L6x6x3/4	115	-94694.20	264139.00	35.9 38.1 (b)	Pass
T6	50 - 25	Leg	L6x6x7/8	152	-132443.00	304511.00	43.5 44.4 (b)	Pass
T7	25 - 0	Leg	L8x8x7/8	222	-140742.00	413897.00	34.0 40.3 (b)	Pass

ARMOR TOWER ENGINEERING

Armor Tower Inc
9 North Main
Cortland, NY 13045
Phone: 607-591-5381
FAX: 866-870-0840

Job	Page
125' SQR SELF-SUPPORTING TOWER ANALYSIS .	28 of 29
Project	**Date**
Dish Wireless BOHVN00204B West Peak/Meriden, CT	08:21:04 09/22/21
Client	**Designed by**
Everest Infrastructure - 638281	PB

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	125 - 112.5	Diagonal	L3 1/2x3 1/2x1/4	9	-7958.67	25667.50	31.0	Pass
T2	112.5 - 100	Diagonal	L3x3 1/2x1/4	32	-9936.95	16869.90	58.9	Pass
T3	100 - 75	Diagonal	L4x3x1/4	52	-12014.80	14521.10	82.7	Pass
T4	75 - 62.5	Diagonal	2L2 1/2x2 1/2x1/4x3/8	92	-18614.50	31288.50	59.5	Pass
T5	62.5 - 50	Diagonal	2L2 1/2x2 1/2x1/4x3/8	129	-18625.70	29110.90	64.0	Pass
T6	50 - 25	Diagonal	2L2 1/2x2 1/2x1/4x3/8	166	-18711.20	25143.30	74.4	Pass
T7	25 - 0	Diagonal	2L3x3 1/2x3/8x3/8	226	-33182.60	37976.50	87.4	Pass
T3	100 - 75	Horizontal	2L3x2 1/2x1/4x3/8	59	-1797.76	14210.10	12.7	Pass
T4	75 - 62.5	Horizontal	2L3x2 1/2x1/4x3/8	88	-11988.90	55794.60	21.5 28.0 (b)	Pass
T5	62.5 - 50	Horizontal	2L2 1/2x2 1/2x1/4x3/8	125	-12814.50	28869.80	44.4	Pass
T6	50 - 25	Horizontal	2L2 1/2x2 1/2x1/4x3/8	162	-13773.40	21038.40	65.5	Pass
T7	25 - 0	Horizontal	2L3x2 1/2x5/16x3/8	225	-15499.70	36926.20	42.0	Pass
T1	125 - 112.5	Secondary Horizontal	L2 1/2x2x1/4	18	-1645.35	4135.04	39.8	Pass
T2	112.5 - 100	Secondary Horizontal	C6x8.2	39	-1256.05	4665.59	26.9	Pass
T3	100 - 75	Secondary Horizontal	L3x2 1/2x1/4	61	-930.29	4067.34	22.9	Pass
T1	125 - 112.5	Top Girt	C9x13.4	8	-200.73	17705.40	1.1 2.3 (b)	Pass
T2	112.5 - 100	Top Girt	2L 3 1/2 x 3 x 7/16 x 3/8	25	3524.21	148087.00	2.4 4.7 (b)	Pass
T3	100 - 75	Top Girt	2L3x2 1/2x1/4x3/8	47	-1063.63	17678.60	6.0	Pass
T4	75 - 62.5	Redund Horz 1 Bracing	L2x2x3/16	86	-1133.82	10894.50	10.4	Pass
T5	62.5 - 50	Redund Horz 1 Bracing	L2x2x3/16	123	-1424.38	9106.94	15.6	Pass
T6	50 - 25	Redund Horz 1 Bracing	L2x2x3/16	160	-1992.19	6636.53	30.0	Pass
T7	25 - 0	Redund Horz 1 Bracing	L2 1/2x2x3/16	232	-2117.03	12919.40	16.4	Pass
T7	25 - 0	Redund Horz 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	233	-2117.03	32225.20	6.6	Pass
T4	75 - 62.5	Redund Diag 1 Bracing	L2 1/2x2x3/16	91	-876.90	6051.30	14.5	Pass
T5	62.5 - 50	Redund Diag 1 Bracing	L2 1/2x2x3/16	124	-1044.13	5630.72	18.5	Pass
T6	50 - 25	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	165	-1342.40	7276.13	18.4	Pass
T7	25 - 0	Redund Diag 1 Bracing	L2-1/2x2-1/2x3/16	241	-2135.54	12295.70	17.4	Pass
T7	25 - 0	Redund Diag 2 Bracing	2L2 1/2x2x1/4x3/8	230	-9287.09	17768.50	52.3	Pass
T7	25 - 0	Redund Sub Horz Bracing	2L3x2 1/2x1/4x3/8	236	-10921.90	43022.60	25.4	Pass
T4	75 - 62.5	Inner Bracing	2L2 1/2x2x3/16x3/8	113	-13.50	20248.70	1.0	Pass
T5	62.5 - 50	Inner Bracing	2L2 1/2x2x3/16x3/8	150	-14.65	16926.20	1.1	Pass
T6	50 - 25	Inner Bracing	2L2 1/2x2 1/2x3/16x3/8	187	-17.51	13191.70	1.3	Pass
T7	25 - 0	Inner Bracing	L2 1/2x2 1/2x1/4	273	-103.22	6032.12	1.7	Pass

Summary		
Leg (T6)	44.4	Pass
Diagonal (T7)	87.4	Pass
Horizontal (T6)	65.5	Pass
Secondary Horizontal (T1)	39.8	Pass
Top Girt (T3)	6.0	Pass
Redund Horz 1 Bracing (T6)	30.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Redund Horz 2 Bracing (T7)	6.6	Pass
						Redund Diag 1 Bracing (T5)	18.5	Pass
						Redund Diag 2 Bracing (T7)	52.3	Pass
						Redund Sub Horz Bracing (T7)	25.4	Pass
						Inner Bracing (T7)	1.7	Pass
						Bolt Checks	45.3	Pass
						RATING =	**87.4**	**Pass**

Client: Everest Infrastructure
Project: DishWireless West PeakCT
Calculated By: PB
Date: Sep 2021

ARMOR TOWER, INC.
9 N. Main St. 2nd Floor
Cortland, NY 13045

ARMOR TOWER ENGINEERING

Check Foundation

Applied Load Factored:

$Download := 190.0kip$ $LegShear_c := 40.5 \cdot kip$

$Uplift := 147.0kip$ $LegShear_u := 33.9 \cdot kip$

Check Uplift Capacity:

Top radius of the anchor rods: $r := 41.5in$

Slope of rod: $\theta := 14 \cdot deg$

Length of rod from the base of the pier: $l := 20ft$

Depth of anchor rod to the bed rock: $h_r := l \cdot \cos(\theta) = 19.4 \cdot ft$

Bottom radius of the anchor rod: $R := r + l \cdot \sin(\theta) = 8.3 \cdot ft$

Frustum base length for top of the rock:

$x := 2(R + 19.4ft \cdot \tan(45deg)) = 55.4 \cdot ft$

Frustum base length for bottom og the rock: $y := 2 \cdot R = 16.6 \cdot ft$

Unit wt. of rock: $\gamma_r := 150pcf$

Weight of inverted frustum of the rock:

$$W_r := \frac{h_r}{3}\left(x^2 + x \cdot y + y^2\right) \cdot \gamma_r = 4136.3 \cdot kip$$

Concrete foundation dimension:

Length of top base: $a := 5ft$

Length of the foundation: $b := 8.25ft$

Height of the foundation: $h_f := 6.5ft$

Unit wt. of concrete: $\mu_c := 150pcf$

Concrete foundation weight:

$$W_c := \frac{1}{3} \cdot \left(a^2 + a \cdot b + b^2\right) h_f \cdot \mu_c = 43.7 \cdot kip$$

Top base length of the soil:

$x_s := x + 2 \cdot h_f \cdot \tan(10deg) = 57.7 \cdot ft$

Unit wt. of soil: $\gamma_s := 110pcf$

Weight of soil fill above the rock:

$$W_s := \left[\frac{1}{3} \cdot \left(x_s^2 + x_s \cdot x + x^2\right) - \frac{1}{3}\left(a^2 + a \cdot b + b^2\right)\right] \cdot h_f \cdot \gamma_s = 2254 \cdot kip$$

Total uplift capacity: $\phi := 0.75$ $P_n := W_r + W_c + W_s = 6434 \cdot kip$

$$\frac{Uplift}{\phi \cdot P_n} = 3.\%$$

Client: Everest Infrastructure
Project: DishWireless West PeakCT
Calculated By: PB
Date: Sep 2021

ARMOR TOWER, INC.
9 N. Main St. 2nd Floor
Cortland, NY 13045

ARMOR TOWER ENGINEERING

Check Bearing Capacity:

Area of the bottom footing: $A := b^2 = 68.1 \cdot ft^2$

Overturning moment for a single pier: $OTM := LegShear_u \cdot h_f = 220.3 \cdot kip \cdot ft$

Overturning moment soil bearing: $f_b := \frac{OTM}{\left(b^3 \cdot \frac{\sqrt{2}}{12}\right)} = 3329.8 \cdot psf$

Total ultimate Bearing Load: $P_b := \frac{Download + 1.2W_c}{A} + f_b = 6891 \cdot psf$

Allowable bearing capacity of the Bedrock: $P_n := 8ksf$ Very conservative

Safety factor: $FS := 2.0$

Ultimate Bearing capacity of the Bedrock: $P_{ult} := FS \cdot P_n = 16 \cdot ksf$

$$\frac{P_b}{\phi \cdot P_{ult}} = 57.4 \cdot \%$$

Client: Everest Infrastructure
Project: DishWireless West PeakCT
Calculated By: PB
Date: Sep 2021

ARMOR TOWER, INC.
9 N. Main St. 2nd Floor
Cortland, NY 13045

Chech Anchor Rods

TIA 4.9.9:

Assuming F1554-36

$Fu_{bolt} := 58 \cdot ksi$

$Fy_{bolt} := 36 \cdot ksi$

Number of bolts: $n := 4$

Bolt diameter: $Bolt\theta := 2in$

$A_g := \frac{\pi}{4} \cdot (Bolt\theta)^2$ $\quad n := 4.5 \ \ tpi$ $\quad A_n := \frac{\pi}{4} \cdot \left(Bolt\theta - \frac{0.9743 \cdot in}{n}\right)^2$

$l_{ar} := 0 \cdot in$ Leveling nut on top of pier

$\phi_t := 0.75$ $\quad \phi_c := 1.00$ $\quad \phi R_{nt} := \phi_t \cdot Fu_{bolt} \cdot A_n$ $\quad \phi R_{nc} := \phi_c \cdot Fy_{bolt} \cdot A_n$

$\phi_v := 0.75$ $\quad \phi R_{nv} := \phi_v \cdot 0.5 \cdot Fu_{bolt} \cdot A_g$ $\quad \phi R_{nvc} := \phi_c \cdot 0.6 \cdot Fy_{bolt} \cdot \frac{A_n}{2}$

$$\left(\frac{\frac{Uplift}{4bolts}}{\phi R_{nt}}\right)^2 + \left(\frac{\frac{LegShear_u}{4 \cdot bolts}}{\phi R_{nv}}\right)^2 = 13 \cdot \%$$

$$\frac{\frac{Download}{4 \cdot bolts}}{\phi R_{nc}} + \left(\frac{\frac{LegShear_c}{4 \cdot bolts}}{\phi R_{nvc}}\right)^2 = 66.9 \cdot \%$$

Rock Anchors

Rock bolt QTY: $n := 6$

Shear moment on the bolts: $M := LegShear_u \cdot h_f = 220.35 \cdot kip \cdot ft$

Bolt Are $Bar\theta := 2.0 \cdot in$ $\quad BarXArea := \frac{\pi}{4} \cdot Bar\theta^2 = 3.1 \cdot in^2$

Section modulus of bolt cluster: $S := 10.38 \frac{ft^3}{ft^2}$

Resultant load: $P_r := \frac{Uplift}{n} + \frac{M}{S} = 45.7 \cdot kip$

Steel grade: A306 Gr.80: $F_u := 80ksi$

Nominal tensile capacity: $\phi_t := 0.8$ $\quad \phi F_n := \phi_t \cdot F_u \cdot (0.75 \cdot A_g) = 150.8 \cdot kip$

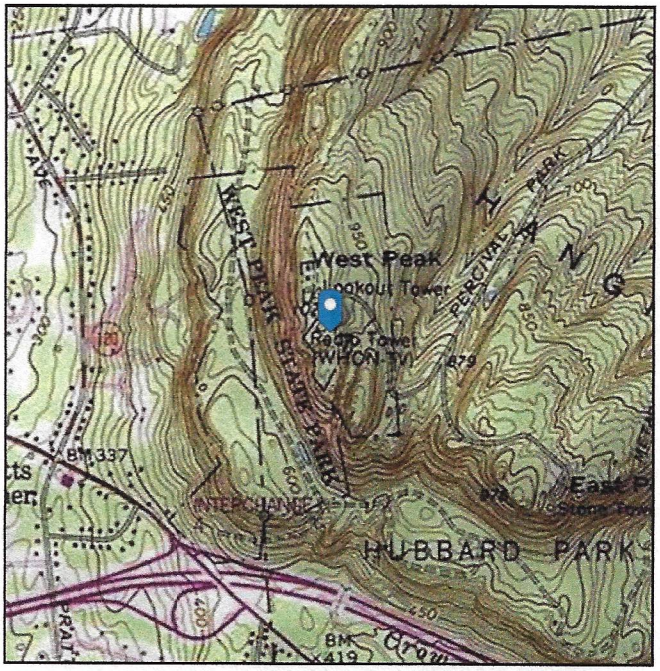
$$\frac{P_r}{\phi F_n} = 30.3 \cdot \%$$

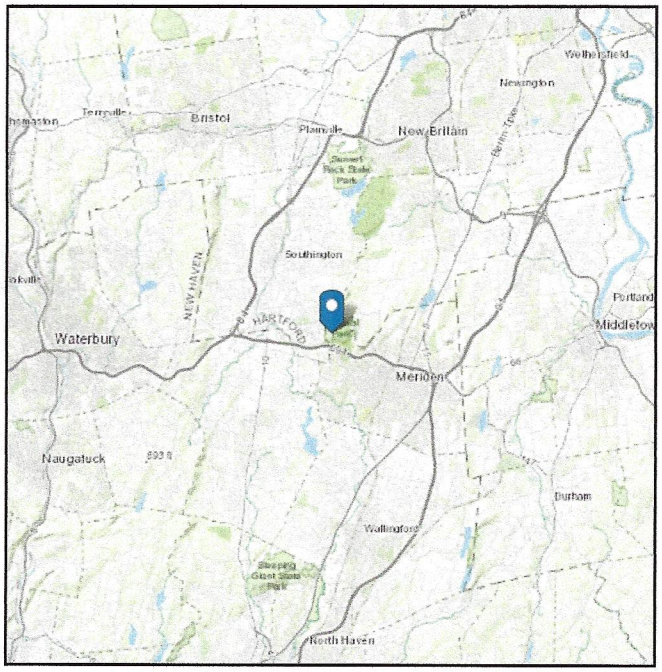
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: B - Rock

Elevation: 1004.55 ft (NAVD 88)
Latitude: 41.561168
Longitude: -72.843646





Wind

Results:

Wind Speed:	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph
Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4
Date Accessed:	Fri Sep 25 2020

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

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

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

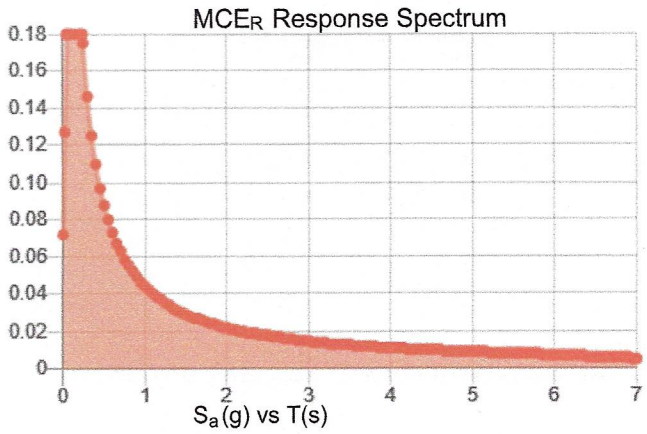
Seismic

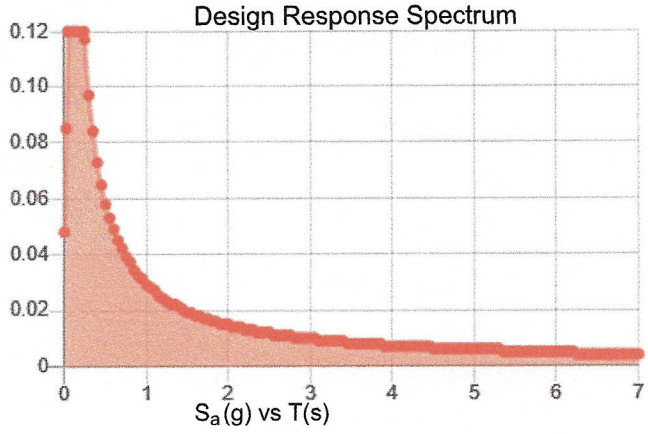
Site Soil Class: B - Rock

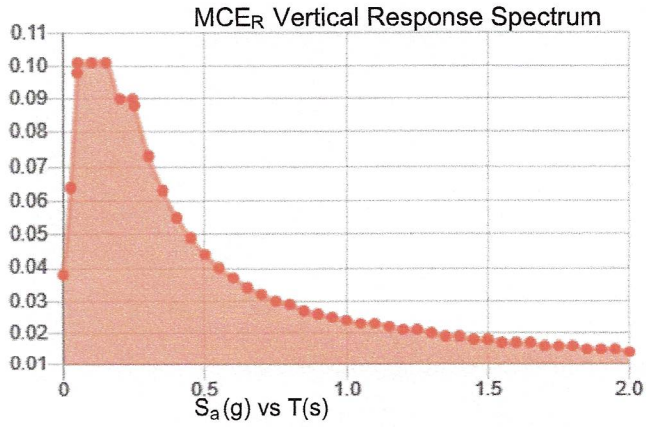
Results:

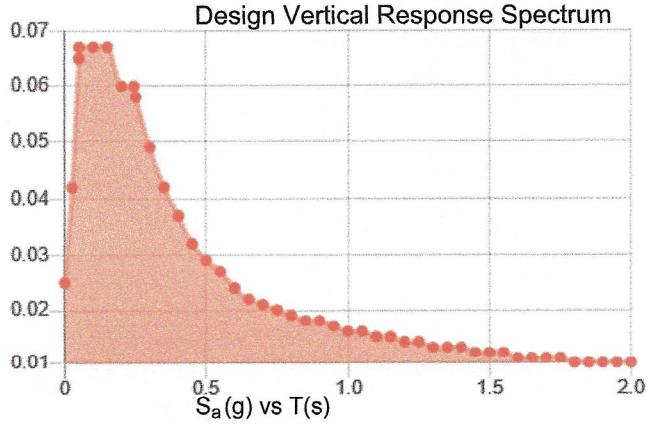
S_S :	0.2	S_{D1} :	0.029
S_1 :	0.055	T_L :	6
F_a :	0.9	PGA :	0.11
F_v :	0.8	PGA_M :	0.099
S_{MS} :	0.18	F_{PGA} :	0.9
S_{M1} :	0.044	I_e :	1
S_{DS} :	0.12	C_v :	0.7

Seismic Design Category A









Data Accessed: Fri Sep 25 2020

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

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 25 2020

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

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

Exhibit E

Mount Analysis

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

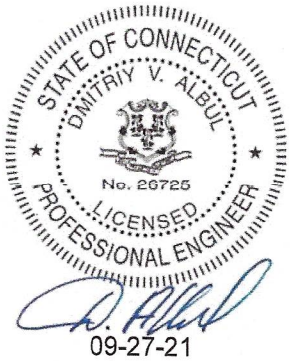
1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

September 27, 2021

Dish Wireless Site Number	BOHVN00204B
Job Number	2039-Z5555C
Client	Northeast Site Solutions
Carrier	Dish Wireless
Site Location	West Peak Drive, Meriden, CT 06451 41.5612 N NAD83 72.8441 W NAD83
Mount Centerline EL.	117 ft
Mount Classification	Sector Frame
Structural Usage Ratio	**61%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA and ASCE code requirements. The proposed mounts for the proposed carrier is therefore deemed **adequate** to support the final loading configuration as listed in this report.



09-27-21
Dmitriy Albul, P.E.
Engineering Consultant to Infinigy

Contents

Introduction

Infinigy Engineering has been requested to perform a mount analysis of proposed antenna mount from the Dish Wireless equipment. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 19.0.1 analysis software.

Supporting Documentation

Construction Drawings	Infinigy Engineering PLLC, Job No. 2039-Z5555C, dated June 22, 2021
RF Design Sheet	Dish Wireless, dated June 15, 2021

Analysis Code Requirements

Wind Speed	125 mph (3-second Gust, Vult.)
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 0.75" ice
TIA Revision	ANSI/TIA-222-G
Structure Class	II
Exposure Category	B
Topographic Method	Method 2
Topographic Category	5
Topo Feature	Flat Topped Hill
Crest Height	630
Slope Distance	1088
Distance from Crest	40
Spectral Response	S_s=0.183, S_1=0.063
Site Class	D – Default (Assumed)
HMSL	1013.8 ft.

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The proposed mounts are therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Dmitriy Albul, P.E.
Professional Engineer | Engineering Consultant to Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (518) 699-4428
www.infinigy.com
BOHVN00204B

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
117.0	117.0	-	7.75	3	JMA MX08FRO665-21	Dish Wireless
			7.75	3	Fujitsu TA08025-B605	
			7.75	3	Fujitsu TA08025-B604	
			-	1	Raycap RDIDC-9181-PF-48	

*Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.

Structure Usages

Bracing	61%	Pass
Frame Rails	19%	Pass
Plates	19%	Pass
Arms	25%	Pass
Mount Pipes	28%	Pass
Stabilizer	7%	Pass
Rating	**61%**	Pass

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Date:	9/27/2021
Site Name:	BOHVN00204B
Project Engineer:	DVA
Infinigy Job No:	2039-Z5555C
Customer:	Northeast Site Solutions
Carrier:	Dish Wireless

Building Code:	2015	
ASCE Standard:	ASCE 7-10	
TIA Standard:	G	
Mount Type:	Sector Frame	
	Proposed	
Mount Centerline:	117	ft
Superstructure Height:	N/A	ft
Structure Type:	Tower	

Factors	
Gh:	1.000
K_{zmin}:	0.700
K_z:	1.034
K_d:	0.950
K_{zt}:	1.665
Ka:	0.900
I wind:	1.000
I ice:	1.000

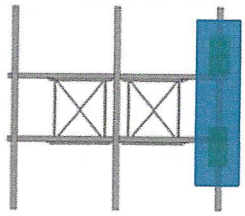
q_z:	39.23	psf
Surface Wind Pressure:	0.00	psf

Site Information		
Exposure Category:	B	
Risk Category:	II	
Ultimate Wind Speed:	125	mph
Design Wind Speed:	97	mph
Ice Thickness:	0.75	in
Ice Wind Speed:	50.0	mph
Escalated Ice Thickness:	2.03	in
Topographic Method:	2	
Topographic Category:	5	
Topographic Feature:	Flat Topped Hill	
Crest Height (H):	630.00	ft
Slope Distance (L):	1088.00	ft
Distance from Crest (x):	40.00	ft

Run Seismic?	Yes	
Site Soil:	D (Default)	
Short-Period Accel. (Ss):	0.1830	
1-Second Accel. (S1):	0.0630	
Short-Period Design (SDS):	0.1960	
1-Second Design (SD1):	0.1010	
Short-Period Coeff. (Fa):	1.6000	
1-Second Coeff. (Fv):	2.4000	
Cs	0.0980	
Cs min	0.0300	
Amplification Factor (ap):	1.00	
Response Mod. (Rp):	2.50	
Overstrength (Ωo):	1.00	

Service Wind:	30.0	mph
Lm (man live load) =	500.0	lb
Lv (man live load) =	250.0	lb

ELEVATION VIEW



PLAN VIEW

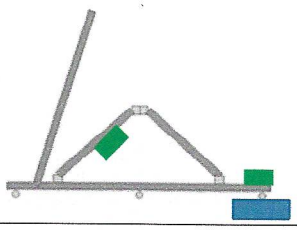


Table 1. Equipment Specifications and Wind Pressure

Manufacturer	Model	Elevation	Pipe Label	Weight (lb)	Height (in)	Width (in)	Depth (in)	EPA_n	EPA_t	$EPA_{n\ w/\ ice}$	$EPA_{t\ w/\ ice}$	q_z:	$q_{z\ ice}$:	$q_{z\ live}$:
JMA	MX08FRO665-21	117	16	64.50	72	20	8	8.01	3.21	8.80	3.90	39.23	10.46	3.77
Fujitsu	TA08025-B605	117	16	74.90	15.75	14.96	9.06	1.86	1.16	2.97	2.09	39.23	10.46	3.77
Fujitsu	TA08025-B604	117	16	63.90	15.75	14.96	7.87	1.86	1.01	2.97	1.91	39.23	10.46	3.77
Raycap	RDIDC-9181-PF-48	117	39	21.85	16	14	8	1.77	1.05	2.87	1.96	39.23	10.46	3.77

Table 2. Equipment Wind and Seismic Loads

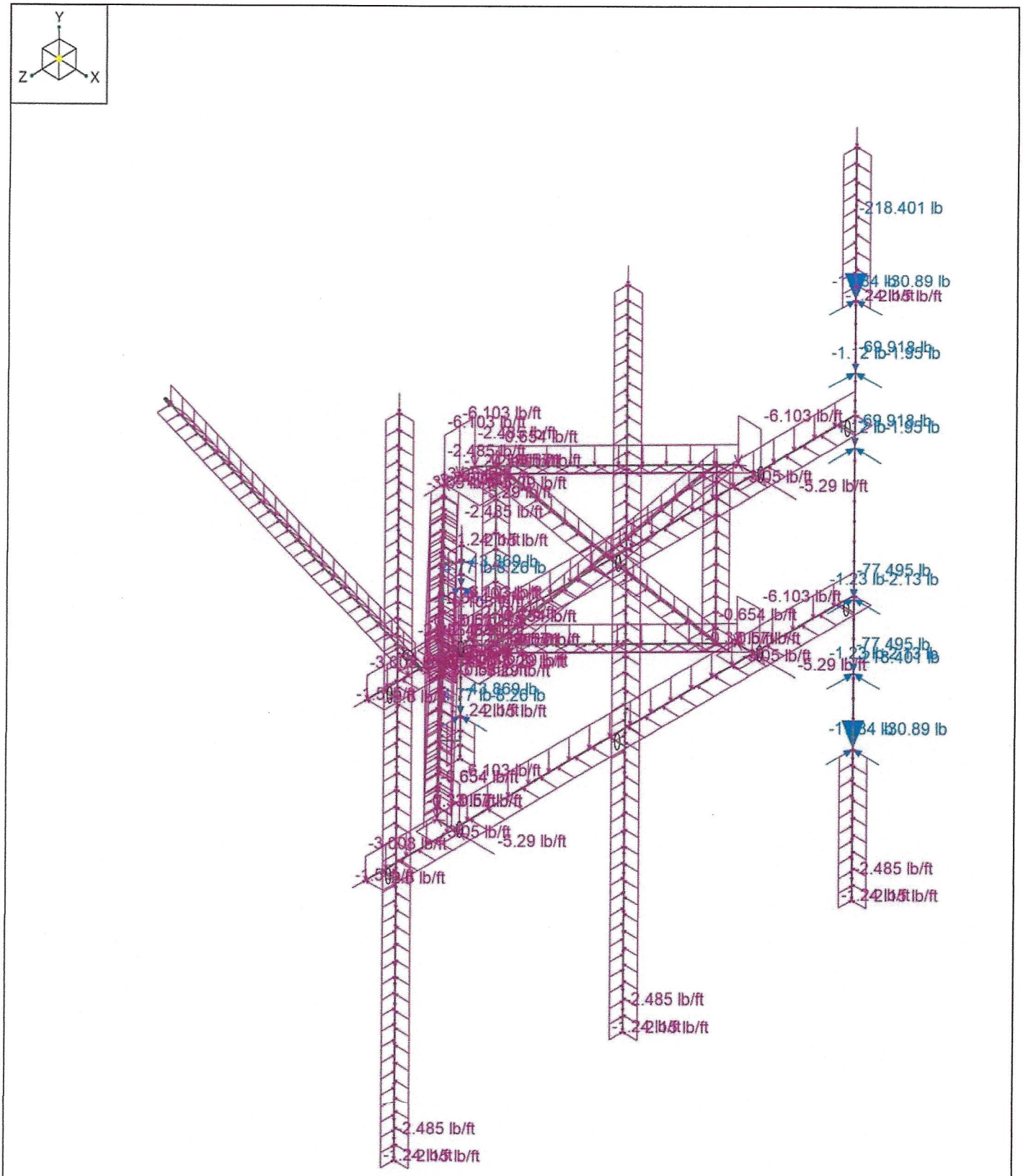
Manufacturer	Model	Wind Load (F_a), lb		Wind Load Ice Case (F_a), lb			Wind Load Service Case		Seismic
JMA	MX08FRO665-21	283	113	83	37	359	27	11	6.3
Fujitsu	TA08025-B605	66	41	28	20	65	6	4	7.3
Fujitsu	TA08025-B604	66	36	28	18	63	6	3	6.3
Raycap	RDIDC-9181-PF-48	63	37	27	18	62	6	4	2.1

Table 3. Member Capacities

Member Name	Member Shape	Wind load (plf)	Wind Load Ice (plf)	Weight Ice (plf)	Bending Check	Shear Check	Total Capacity	Controlling Capacity
Frame Rail	PIPE_2.5	11.28	3.01	1.47	19%	15%	19%	61%
Mount Pipe	PIPE_2.0	9.32	2.48	1.36	28%	10%	28%	
Arm	PIPE_2.0	9.32	2.48	1.36	25%	8%	25%	
Bracing	0.625" SR	2.45	0.65	0.99	61%	3%	61%	
Plate	3.5"x0.625" Plate	22.89	6.10	1.60	19%	15%	19%	
Stabilizer	PIPE_2.0	9.32	2.48	1.36	7%	1%	7%	

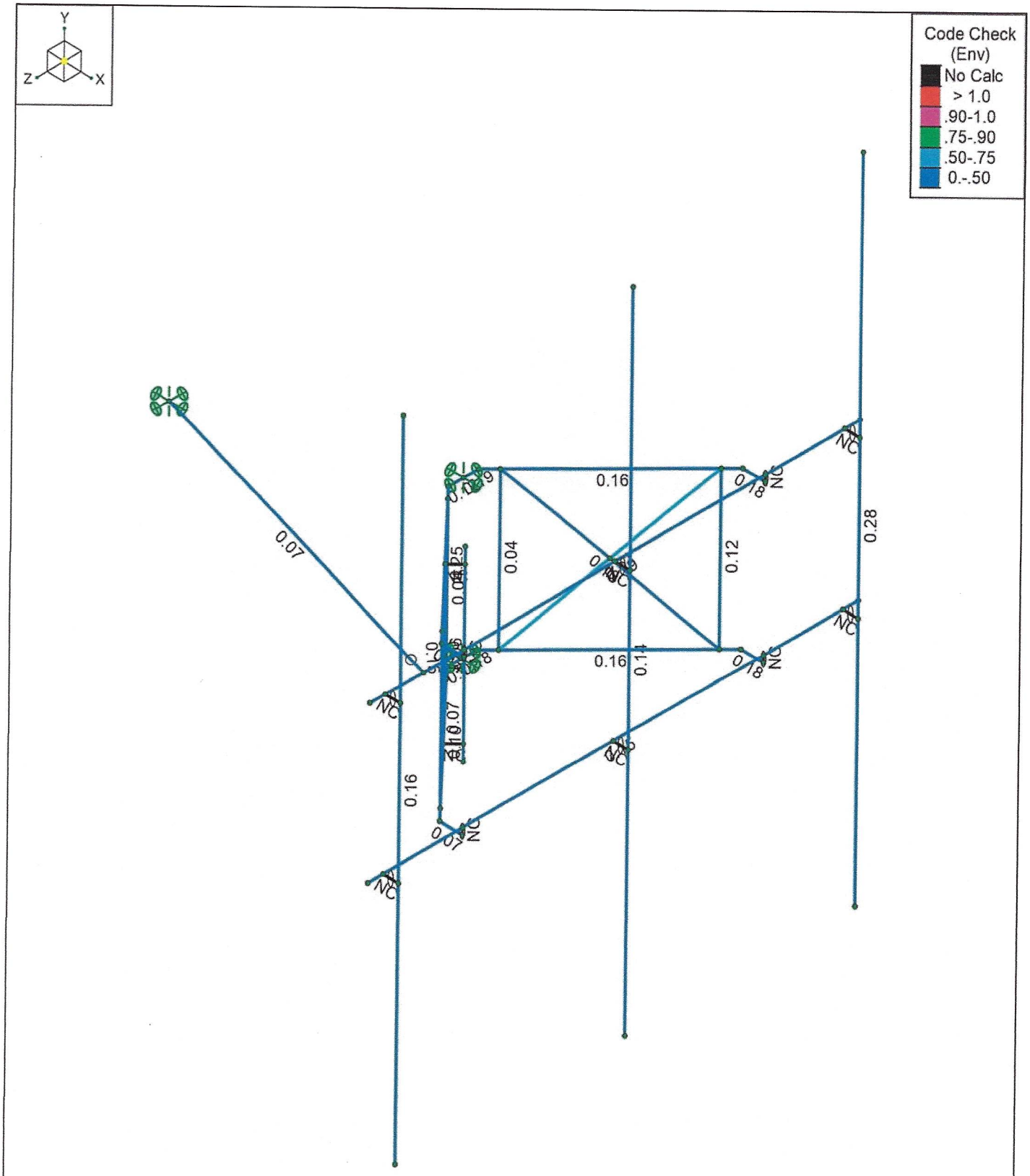
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00204B	SK-1
DVA		Sep 27, 2021
2039-Z5555C	Proposed Configuration Model	BOHVN00204B.R3D



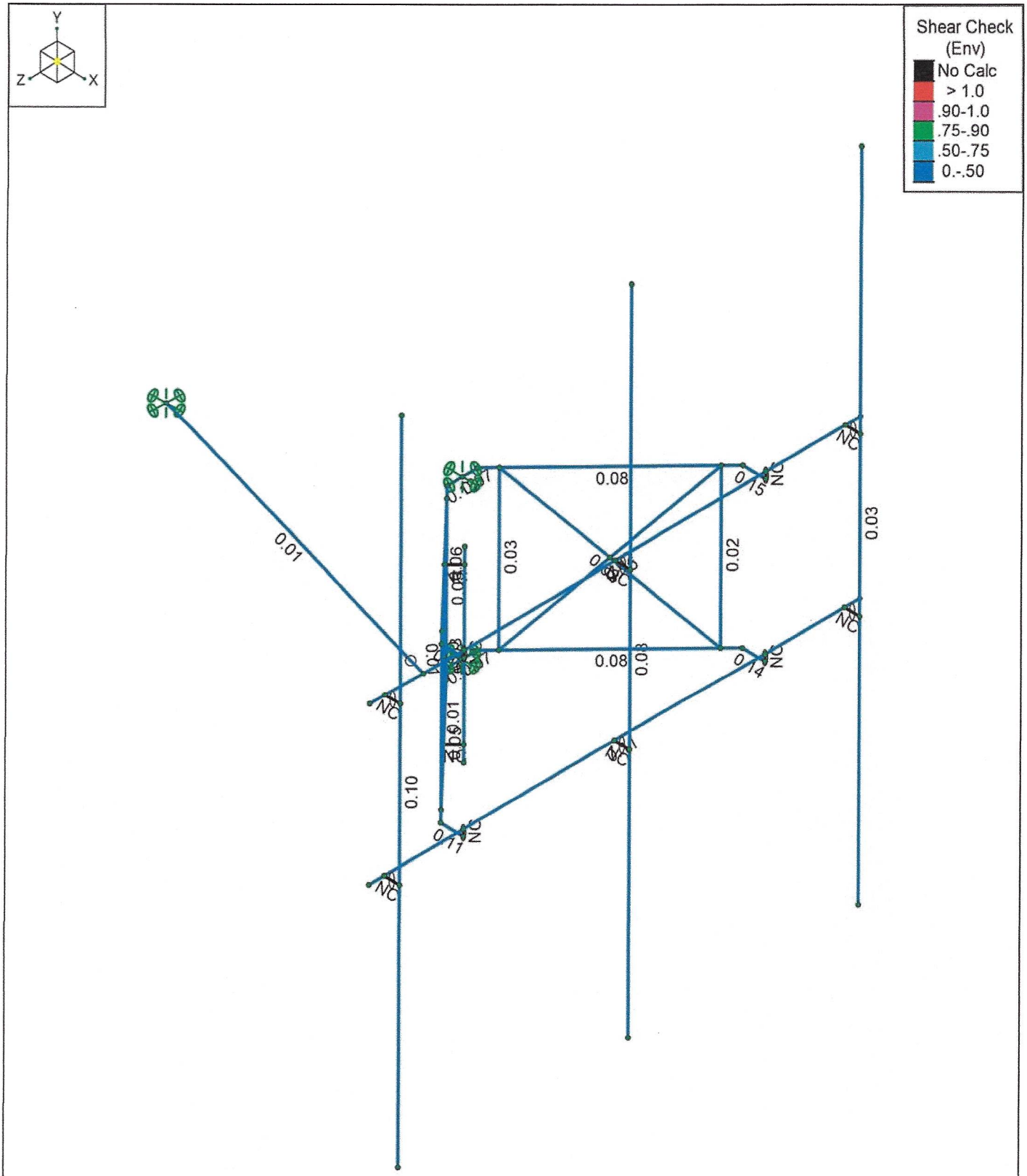
Loads: LC 28, 1.2D + 1.0Di +1.0Wi AZI 30
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00204B	SK-2
DVA		Sep 27, 2021
2039-Z5555C	Contrlolling Load Case	BOHVN00204B.R3D



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00204B	SK-3
DVA		Sep 27, 2021
2039-Z5555C	Member Bending Check	BOHVN00204B.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00204B	SK-4
DVA		Sep 27, 2021
2039-Z5555C	Member Shear Check	BOHVN00204B.R3D

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

Wall Panels

Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Nodal

Codes

Hot Rolled Steel	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): LRFD
Cold Formed Steel	AISI S100-12: LRFD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-12: ASD
Temperature	< 100F
Concrete	ACI 318-11
Masonry	ACI 530-11: Strength
Aluminum	AA ADM1-10: LRFD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): LRFD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

Model Settings (Continued)

List forces which were ignored for design in the Detail Report	Yes

Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-10
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
2	M2	N11	N3	90	Plate	Beam	RECT	A36 Gr.36	Typical
3	M3	N13	N5	90	Plate	Beam	RECT	A36 Gr.36	Typical
4	M4	N29	N3		Arm	Beam	Pipe	A53 Gr.B	Typical
5	M5	N27	N5		Arm	Beam	Pipe	A53 Gr.B	Typical
6	M6	N6	N7		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
7	M7	N17	N8	90	Plate	Beam	RECT	A36 Gr.36	Typical
8	M8	N15	N10	90	Plate	Beam	RECT	A36 Gr.36	Typical
9	M9	N30	N8		Arm	Beam	Pipe	A53 Gr.B	Typical
10	M10	N28	N10		Arm	Beam	Pipe	A53 Gr.B	Typical
11	M11	N11	N12		RIGID	None	None	RIGID	Typical
12	M12	N13	N14		RIGID	None	None	RIGID	Typical
13	M13	N15	N16		RIGID	None	None	RIGID	Typical
14	M14	N17	N18		RIGID	None	None	RIGID	Typical
15	M15	N20	N19		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
16	M16	N22	N21		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
17	M17	N30	N9	90	Plate	Beam	RECT	A36 Gr.36	Typical
18	M18	N29	N4	90	Plate	Beam	RECT	A36 Gr.36	Typical
19	M19	N9	N28	90	Plate	Beam	RECT	A36 Gr.36	Typical
20	M20	N4	N27	90	Plate	Beam	RECT	A36 Gr.36	Typical
21	M21	N25	N33		RIGID	None	None	RIGID	Typical
22	M22	N23	N31		RIGID	None	None	RIGID	Typical
23	M23	N24	N32		RIGID	None	None	RIGID	Typical
24	M24	N26	N34		RIGID	None	None	RIGID	Typical
25	M25	N39	N40		Bracing	VBrace	BAR	A36 Gr.36	Typical
26	M26	N38	N35		Bracing	VBrace	BAR	A36 Gr.36	Typical
27	M27	N37	N36		Bracing	VBrace	BAR	A36 Gr.36	Typical
28	M28	N41	N42		Bracing	VBrace	BAR	A36 Gr.36	Typical
29	M29	N39	N35		Bracing	VBrace	BAR	A36 Gr.36	Typical
30	M30	N40	N38		Bracing	VBrace	BAR	A36 Gr.36	Typical
31	M31	N37	N42		Bracing	VBrace	BAR	A36 Gr.36	Typical
32	M32	N36	N41		Bracing	VBrace	BAR	A36 Gr.36	Typical
33	M33	N51	N52		Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
34	M34	N46	N45		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
35	M35	N48	N50		RIGID	None	None	RIGID	Typical
36	M36	N47	N49		RIGID	None	None	RIGID	Typical
37	M37	N55	N53		RIGID	None	None	RIGID	Typical
38	M38	N56	N54		RIGID	None	None	RIGID	Typical
39	M39	N57	N58		Mount Pipe	Column	Pipe	A53 Gr.B	Typical

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General Members				
2	RIGID		12	28.7	0
3	Total General		12	28.7	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	0.625" SR	8	291.9	25.396
7	A36 Gr.36	3.5"x0.625" Plate	8	30	18.609
8	A53 Gr.B	PIPE_2.0	9	630.9	182.491
9	A53 Gr.B	PIPE_2.5	2	192	87.656
10	Total HR Steel		27	1144.9	314.151

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
1	Self Weight	DL		-1		8	
2	Wind Load AZI 0	WLX				16	82

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed
3	Wind Load AZI 30	None				16	82
4	Wind Load AZI 60	None				16	82
5	Wind Load AZI 90	WLZ				16	82
6	Wind Load AZI 120	None				16	82
7	Wind Load AZI 150	None				16	82
8	Wind Load AZI 180	None				16	82
9	Wind Load AZI 210	None				16	82
10	Wind Load AZI 240	None				16	82
11	Wind Load AZI 270	None				16	82
12	Wind Load AZI 300	None				16	82
13	Wind Load AZI 330	None				16	82
14	Ice Weight	OL1				8	39
15	Ice Wind Load AZI 0	OL2				16	82
16	Ice Wind Load AZI 30	None				16	82
17	Ice Wind Load AZI 60	None				16	82
18	Ice Wind Load AZI 90	OL3				16	82
19	Ice Wind Load AZI 120	None				16	82
20	Ice Wind Load AZI 150	None				16	82
21	Ice Wind Load AZI 180	None				16	82
22	Ice Wind Load AZI 210	None				16	82
23	Ice Wind Load AZI 240	None				16	82
24	Ice Wind Load AZI 270	None				16	82
25	Ice Wind Load AZI 300	None				16	82
26	Ice Wind Load AZI 330	None				16	82
27	Seismic Load X	ELX			-0.098	8	
28	Seismic Load Z	ELZ	-0.098			8	
29	Service Live Loads	LL					
30	Maintenance Load 1	LL				1	
31	Maintenance Load 2	LL				1	
32	Maintenance Load 3	LL				1	
33	Maintenance Load 4	LL				1	
34	Maintenance Load 5	LL				1	
35	Maintenance Load 6	LL				1	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4				
2	1.2DL + 1.6WL AZI 0	Yes	Y	1	1.2	2	1.6		
3	1.2DL + 1.6WL AZI 30	Yes	Y	1	1.2	3	1.6		
4	1.2DL + 1.6WL AZI 60	Yes	Y	1	1.2	4	1.6		
5	1.2DL + 1.6WL AZI 90	Yes	Y	1	1.2	5	1.6		
6	1.2DL + 1.6WL AZI 120	Yes	Y	1	1.2	6	1.6		
7	1.2DL + 1.6WL AZI 150	Yes	Y	1	1.2	7	1.6		
8	1.2DL + 1.6WL AZI 180	Yes	Y	1	1.2	8	1.6		
9	1.2DL + 1.6WL AZI 210	Yes	Y	1	1.2	9	1.6		
10	1.2DL + 1.6WL AZI 240	Yes	Y	1	1.2	10	1.6		
11	1.2DL + 1.6WL AZI 270	Yes	Y	1	1.2	11	1.6		
12	1.2DL + 1.6WL AZI 300	Yes	Y	1	1.2	12	1.6		
13	1.2DL + 1.6WL AZI 330	Yes	Y	1	1.2	13	1.6		
14	0.9DL + 1.6WL AZI 0	Yes	Y	1	0.9	2	1.6		
15	0.9DL + 1.6WL AZI 30	Yes	Y	1	0.9	3	1.6		
16	0.9DL + 1.6WL AZI 60	Yes	Y	1	0.9	4	1.6		
17	0.9DL + 1.6WL AZI 90	Yes	Y	1	0.9	5	1.6		
18	0.9DL + 1.6WL AZI 120	Yes	Y	1	0.9	6	1.6		
19	0.9DL + 1.6WL AZI 150	Yes	Y	1	0.9	7	1.6		
20	0.9DL + 1.6WL AZI 180	Yes	Y	1	0.9	8	1.6		
21	0.9DL + 1.6WL AZI 210	Yes	Y	1	0.9	9	1.6		
22	0.9DL + 1.6WL AZI 240	Yes	Y	1	0.9	10	1.6		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
23	0.9DL + 1.6WL AZI 270	Yes	Y	1	0.9	11	1.6		
24	0.9DL + 1.6WL AZI 300	Yes	Y	1	0.9	12	1.6		
25	0.9DL + 1.6WL AZI 330	Yes	Y	1	0.9	13	1.6		
26	1.2D + 1.0Di	Yes	Y	1	1.2	14	1		
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	14	1	15	1
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	14	1	16	1
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	14	1	17	1
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	14	1	18	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	14	1	19	1
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	14	1	20	1
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	14	1	21	1
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	14	1	22	1
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	14	1	23	1
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	14	1	24	1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	14	1	25	1
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	14	1	26	1
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.239	27	1	28	
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.239	27	0.866	28	0.5
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.239	27	0.5	28	0.866
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.239	27		28	1
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.239	27	-0.5	28	0.866
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.239	27	-0.866	28	0.5
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.239	27	-1	28	
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.239	27	-0.866	28	-0.5
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.239	27	-0.5	28	-0.866
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.239	27		28	-1
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.239	27	0.5	28	-0.866
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.239	27	0.866	28	-0.5
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.861	27	1	28	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.861	27	0.866	28	0.5
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.861	27	0.5	28	0.866
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.861	27		28	1
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.861	27	-0.5	28	0.866
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.861	27	-0.866	28	0.5
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.861	27	-1	28	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.861	27	-0.866	28	-0.5
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.861	27	-0.5	28	-0.866
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.861	27		28	-1
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.861	27	0.5	28	-0.866
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.861	27	0.866	28	-0.5
63	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 0	Yes	Y	1	1	2	0.096	29	1.5
64	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 30	Yes	Y	1	1	3	0.096	29	1.5
65	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 60	Yes	Y	1	1	4	0.096	29	1.5
66	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 90	Yes	Y	1	1	5	0.096	29	1.5
67	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 120	Yes	Y	1	1	6	0.096	29	1.5
68	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 150	Yes	Y	1	1	7	0.096	29	1.5
69	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 180	Yes	Y	1	1	8	0.096	29	1.5
70	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 210	Yes	Y	1	1	9	0.096	29	1.5
71	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 240	Yes	Y	1	1	10	0.096	29	1.5
72	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 270	Yes	Y	1	1	11	0.096	29	1.5
73	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 300	Yes	Y	1	1	12	0.096	29	1.5
74	1.0DL + 1.5LL + 1.0SWL (30 mph) AZI 330	Yes	Y	1	1	13	0.096	29	1.5
75	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.154
76	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.154
77	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.154
78	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.154
79	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.154
80	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.154

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
81	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.154
82	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.154
83	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.154
84	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.154
85	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.154
86	1.2DL + 1.5LM1 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.154
87	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.154
88	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.154
89	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.154
90	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.154
91	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.154
92	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.154
93	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.154
94	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.154
95	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.154
96	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.154
97	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.154
98	1.2DL + 1.5LM2 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.154
99	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.154
100	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.154
101	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.154
102	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.154
103	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.154
104	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.154
105	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.154
106	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.154
107	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.154
108	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.154
109	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.154
110	1.2DL + 1.5LM3 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.154
111	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.154
112	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.154
113	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.154
114	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.154
115	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.154
116	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.154
117	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.154
118	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.154
119	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.154
120	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.154
121	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.154
122	1.2DL + 1.5LM4 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.154
123	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.154
124	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.154
125	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.154
126	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.154
127	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.154
128	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.154
129	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.154
130	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.154
131	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.154
132	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.154
133	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.154
134	1.2DL + 1.5LM5 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.154
135	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.154
136	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.154
137	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.154
138	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.154

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor
139	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.154
140	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.154
141	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.154
142	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.154
143	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.154
144	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.154
145	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.154
146	1.2DL + 1.5LM6 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.154

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-in]	LC	MY [lb-in]	LC	MZ [lb-in]	LC
1	N9	max	1393.416	15	698.186	38	1437.349	4	1080.61	35	0	146	529.703	10
2		min	-2413.19	9	211.033	19	-884.036	22	-182.514	16	0	1	-411.963	16
3	N4	max	1456.198	27	695.107	32	336.789	18	1103.72	35	0	146	574.964	10
4		min	-268.258	20	209.741	25	-1074.384	37	-300.513	16	0	1	-459.805	16
5	N52	max	1301.689	10	24.737	35	332.515	10	52.079	82	0	146	452.588	10
6		min	-1307.709	4	8.299	16	-330.759	4	-265.424	28	0	1	-50.002	16
7	Totals:	max	1616.941	14	1406.256	28	1365.61	18						
8		min	-1616.941	8	464.22	60	-1365.613	12						

Envelope AISC 14TH (360-10): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-in]	phi*Mn z-z [lb-in]	Cb	Eqn
1	M31	0.625" SR	0.609	42.979	28	0.022	42.979		3	1869.479	9940.19	1242.501	1242.501	2.791	H1-1a
2	M16	PIPE_2.0	0.277	78.75	8	0.034	77.438		35	8922.084	32130	22459.5	22459.5	1.868	H1-1b
3	M9	PIPE_2.0	0.254	36.776	10	0.055	2.682		10	30405.086	32130	22459.5	22459.5	1.836	H1-1b
4	M19	3.5"x0.625" Plate	0.193	0	34	0.067	0	y	32	69850.881	70875	11074.223	62015.641	1.822	H1-1b
5	M6	PIPE_2.5	0.185	19	10	0.151	18		4	30038.461	50715	43155	43155	1.287	H1-1b
6	M8	3.5"x0.625" Plate	0.184	0	2	0.148	4.5	y	31	68591.516	70875	11074.223	62015.641	1.667	H1-1b
7	M3	3.5"x0.625" Plate	0.183	0	8	0.143	0	y	29	68591.516	70875	11074.223	62015.641	1.667	H1-1b
8	M20	3.5"x0.625" Plate	0.182	0	38	0.067	0	y	27	69850.881	70875	11074.223	62015.641	2.156	H1-1b
9	M15	PIPE_2.0	0.162	48.563	4	0.096	48.563		4	8922.084	32130	22459.5	22459.5	3	H1-1b
10	M5	PIPE_2.0	0.159	33.712	33	0.076	0		29	30405.086	32130	22459.5	22459.5	2.045	H1-1b
11	M10	PIPE_2.0	0.158	0	4	0.078	0		29	30405.086	32130	22459.5	22459.5	2.041	H1-1b
12	M1	PIPE_2.5	0.154	78	33	0.108	78		8	30038.461	50715	43155	43155	2.002	H1-1b
13	M30	0.625" SR	0.148	42.979	77	0.007	42.979		12	1869.479	9940.19	1242.501	1242.501	1.835	H1-1b*
14	M34	PIPE_2.0	0.143	77.438	9	0.078	77.438		4	8922.084	32130	22459.5	22459.5	2.433	H1-1b
15	M7	3.5"x0.625" Plate	0.141	4.5	10	0.153	4.5	y	10	68591.516	70875	11074.223	62015.641	1.669	H1-1b
16	M28	0.625" SR	0.124	30	4	0.02	30		10	3836.923	9940.19	1242.501	1242.501	2.286	H1-1b
17	M17	3.5"x0.625" Plate	0.119	3	4	0.134	3	y	10	69850.881	70875	11074.223	62015.641	1.845	H1-1b
18	M18	3.5"x0.625" Plate	0.111	3	3	0.106	3	y	4	69850.881	70875	11074.223	62015.641	1.355	H1-1b
19	M32	0.625" SR	0.104	0	4	0.024	21.489		4	1869.479	9940.19	1242.501	1242.501	2.354	H1-1b
20	M4	PIPE_2.0	0.098	18.388	4	0.052	0		4	30405.086	32130	22459.5	22459.5	1.172	H1-1b
21	M25	0.625" SR	0.075	30	4	0.014	30		4	3836.923	9940.19	1242.501	1242.501	2.325	H1-1b
22	M2	3.5"x0.625" Plate	0.066	4.5	10	0.112	4.5	y	10	68591.516	70875	11074.223	62015.641	1.676	H1-1b
23	M33	PIPE_2.0	0.066	0	10	0.012	0		4	21406.935	32130	22459.5	22459.5	3	H1-1b*
24	M29	0.625" SR	0.058	21.489	15	0.025	21.489		4	1869.479	9940.19	1242.501	1242.501	1.333	H1-1b
25	M39	PIPE_2.0	0.057	3	4	0.077	3		4	28843.414	32130	22459.5	22459.5	2.017	H1-1b
26	M26	0.625" SR	0.045	0	4	0.028	0		4	3836.923	9940.19	1242.501	1242.501	2.607	H1-1b
27	M27	0.625" SR	0.043	30	3	0.025	30		4	3836.923	9940.19	1242.501	1242.501	2.597	H1-1b

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

BOLT CONNECTION CALCULATION

BOLT PROPERTIES

Date:	9/27/2021
Site:	*BOHVN00204B*
Engineer:	*DVA*
Project No:	*2039-Z5555C*
Connection Location:	*Mount to Tower*

Bolt Capacity Equation	TIA-222-H	
Connection Type	Steel	
Bolt Size, **d**	5/8	in
Threads per Inch, **n**	11	
Steel Grade	A325	
Bolt Ultimate Tensile Stress, F_u	120	ksi
Threads Exclusion	N	
Shear Plane	1	

Net Bolt Cross-Sectional Area, **An**	0.226	in^2
Gross Bolt Cross-Sectional Area, **Ag**	0.307	in^2
Tensile Steel Strength (per bolt), φR_{nt}	20340	lbs
Shear Steel Strength (per bolt), φR_{nv}	13806	lbs

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

BOLT CONNECTION CALCULATION

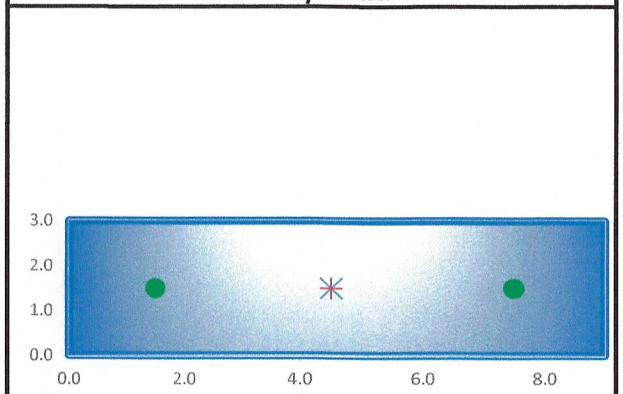
BOLT GROUP CHECK

Date:	*9/27/2021*
Site:	*BOHVN00204B*
Engineer:	*DVA*
Project No:	*2039-Z5555C*
Connection Location:	*Mount to Tower*

Loads Properties					
Controlling LC	10				
Load Point Number:	N9				
X-Coordinate (in.)	4.50				
Y-Coordinate (in.)	1.50				
Z-Coordinate (in.)	5.00				
Shear Load, Px (lbs)	805.000	0	0	0	0
Shear Load, Py (lbs)	2338.000	0	0	0	0
Axial Load, Pz (lbs)	-319.000	0	0	0	0
Moment, Mx (lb-in)	513.000	0	0	0	0
Moment, My (lb-in)	-751.000	0	0	0	0
Moment, Mz (lb-in)	0.000	0	0	0	0

Member Properties	***X***	***Y***
Start Coordinates:	0.0	0.0
Dimentions:	9.0	3.0

Bolt Group Pattern



Number of Bolts: 2

		Bolt Coordinates		***Bolt Loads***		***Steel Bolt Usage***			
No.	***Bolt Type***	***Xo (in)***	***Yo (in)***	***Axial (lbs)***	***Shear (lbs)***	***Tension***	***Shear***	***Combined***	***Max. Capacity***
1	Main Type	1.5	1.5	4111.83	1236.35	20.2%	9.0%	20.2%	20.2%
2	Main Type	7.5	1.5	3020.50	1236.35	14.8%	9.0%	14.8%	14.8%

Bolt Group Properties:

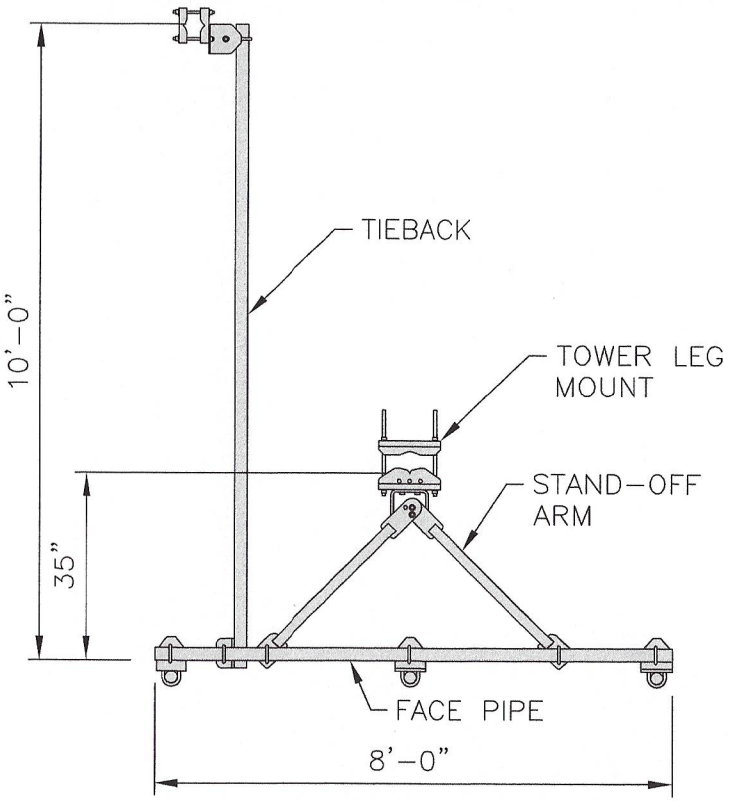
Xc =	4.50	in.
Yc =	1.50	in.
Ic.y =	5.52	in.^2
Ic.x =	0.00	in.^2
Ic.xy =	5.52	in.^2

Loads at Center of Gravity of Bolt Group:

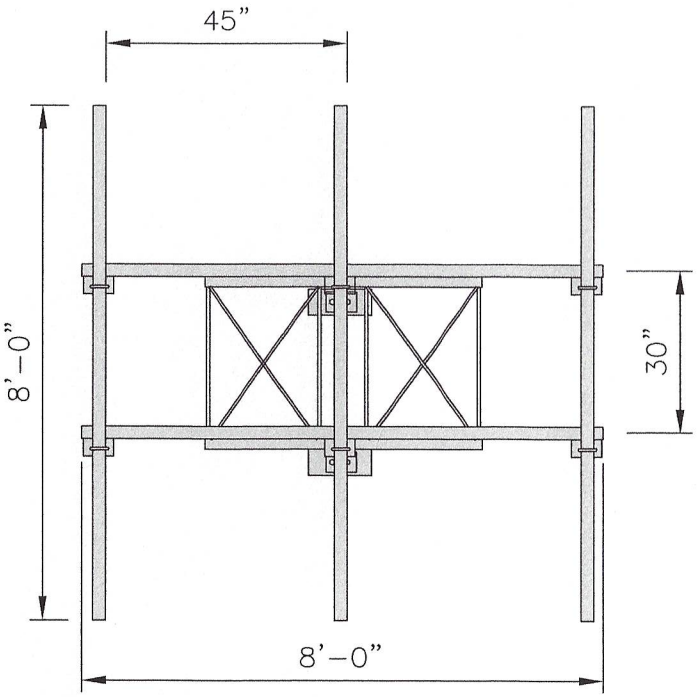
Pz =	-319.00	lbs
Px =	805.00	lbs
Py =	2338.00	lbs
Mx =	-11177.00	lb-in
My =	3274.00	lb-in
Mz =	0.00	lb-in

Total Capacity of Bolt Group: 20.2%

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



PLAN



FRONT

ANTENNA FRAME DETAIL

Exhibit F

Power Density/RF Emissions Report

Fox Hill Telecom

Radio Frequency Emissions Analysis Report

Site ID: BOHVN00204B

EVE - West Peak Drive
11 West Peak Drive
Meriden, CT 06451

October 12, 2021

Fox Hill Telecom Project Number: 210625

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**15.83 %**

Fox Hill Telecom

October 12, 2021

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOHVN00204B – EVE - West Peak Drive**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **11 West Peak Drive, Meriden, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz 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) and 2100 MHz (AWS) 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 performed for the proposed radio system installation for **Dish** on the subject site located at **11 West Peak Drive, Meriden, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since **Dish** 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	600 MHz	4	61.5
5G	1900 MHz (PCS)	4	40
5G	2100 MHz (AWS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	117
B	1	JMA MX08FRO665-21	117
C	1	JMA MX08FRO665-21	117

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	6.59
						Sector A Composite MPE%	**6.59**
Antenna B1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	6.59
						Sector B Composite MPE%	**6.59**
Antenna C1	JMA MX08FRO665-21	600 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	11.45 / 16.15 / 16.65	12	566	17,426.72	6.59
						Sector C Composite MPE%	**6.59**

Table 3: Dish Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**6.59 %**
T-Mobile	8.20 %
PageNet	0.54 %
SNET TMRS	0.31 %
XM Satellite Radio	0.12 %
Arrow Bus	0.07 %
Site Total MPE %:	**15.83 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	6.59 %
Dish Sector B Total:	6.59 %
Dish Sector C Total:	6.59 %
Site Total:	15.83 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish 600 MHz 5G	4	858.77	117	10.02	600 MHz	400	2.51%
Dish 1900 MHz (PCS) 5G	4	1,648.39	117	19.24	1900 MHz (PCS)	1000	1.92%
Dish 2100 MHz (AWS) 5G	4	1,849.52	117	21.59	2100 MHz (AWS)	1000	2.16%
						Total:	**6.59%**

Table 6: Dish Maximum Sector MPE Power Values

Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	6.59 %
Sector B:	6.59 %
Sector C:	6.59 %
Dish Maximum Total (per sector):	6.59 %
Site Total:	15.83 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.83 %** 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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

Exhibit G

Letter of Authorization

LETTER OF AUTHORIZATION

I, Michael Ashley Culbert, the owner representative for the telecommunications tower located at West Peak Dr, Meriden, New Haven County, Connecticut, as evidenced by the Memorandum of Lease recorded with the New Haven County Recorder of Deeds on 8/6/2019, Instrument Number 2019004809.

As owner of the above-referenced telecommunications tower, I hereby authorize DISH Wireless L.L.C., through its designated agent, Northeast Site Solutions, to apply for all necessary municipal, state, federal and other permits necessary to accommodate the installation of DISH Wireless L.L.C.'s antennas and ancillary equipment on the subject tower and base station equipment on the ground on our leasehold property.

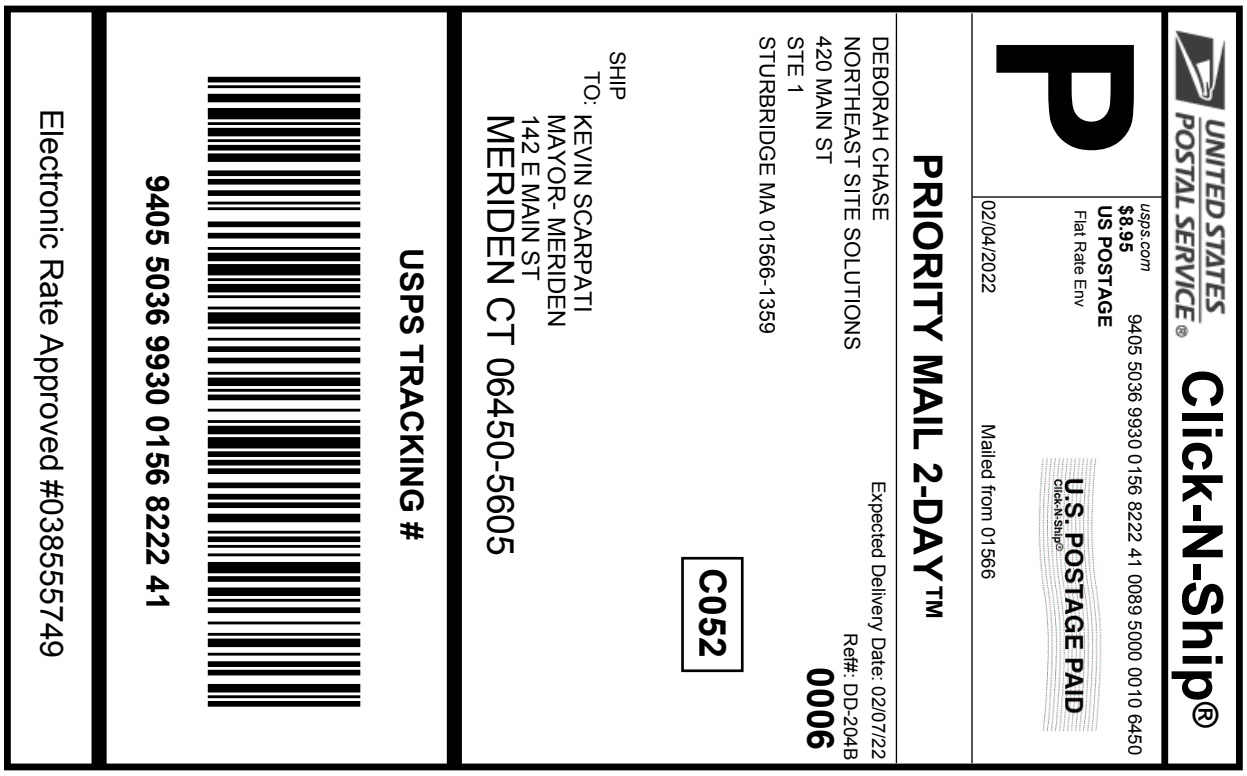
EIP Communications I, LLC

Michael Ashley Culbert

Michael Ashley Culbert
Vice President of Site Development
Date: December 17, 2021

Exhibit H

Recipient Mailings



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9405 5036 9930 0156 8222 41

Trans. #:	555805814
Print Date:	02/04/2022
Ship Date:	02/04/2022
Expected Delivery Date:	02/07/2022

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

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

Ref#: DD-204B

To: KEVIN SCARPATI
MAYOR- MERIDEN
142 E MAIN ST
MERIDEN CT 06450-5605

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

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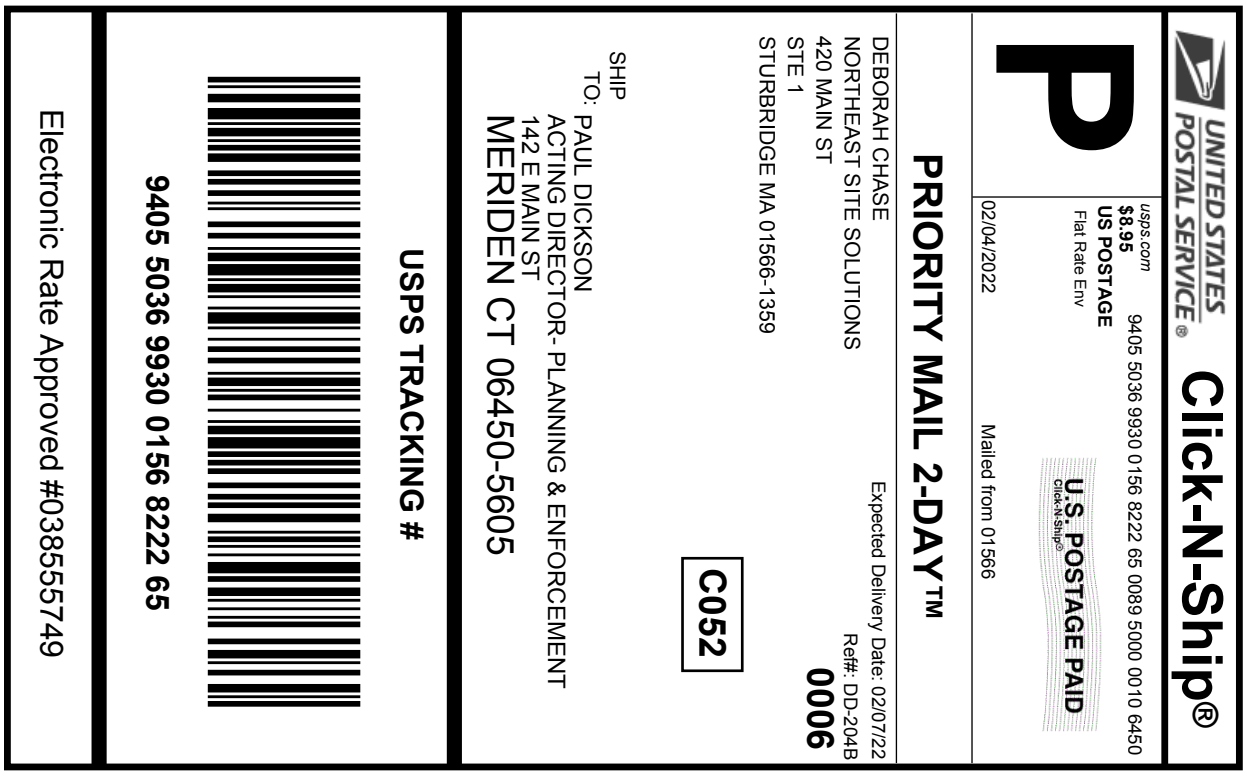

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9405 5036 9930 0156 8222 65

Trans. #:	555805814
Print Date:	02/04/2022
Ship Date:	02/04/2022
Expected Delivery Date:	02/07/2022

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

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

Ref#: DD-204B

To: PAUL DICKSON
ACTING DIRECTOR- PLANNING & ENFORCEMENT
142 E MAIN ST
MERIDEN CT 06450-5605

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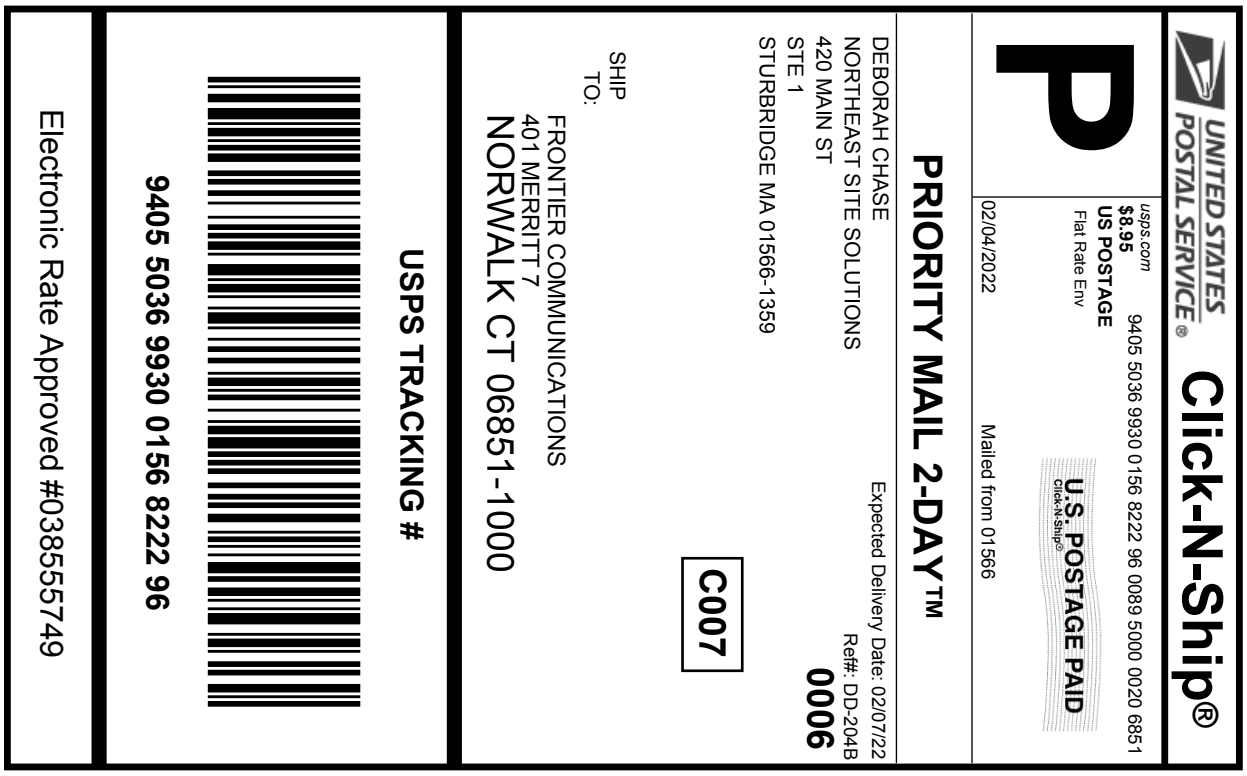

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0156 8222 96

Trans. #:	555805814
Print Date:	02/04/2022
Ship Date:	02/04/2022
Expected Delivery Date:	02/07/2022

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

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

Ref#: DD-204B

To: FRONTIER COMMUNICATIONS
401 MERRITT 7
NORWALK CT 06851-1000

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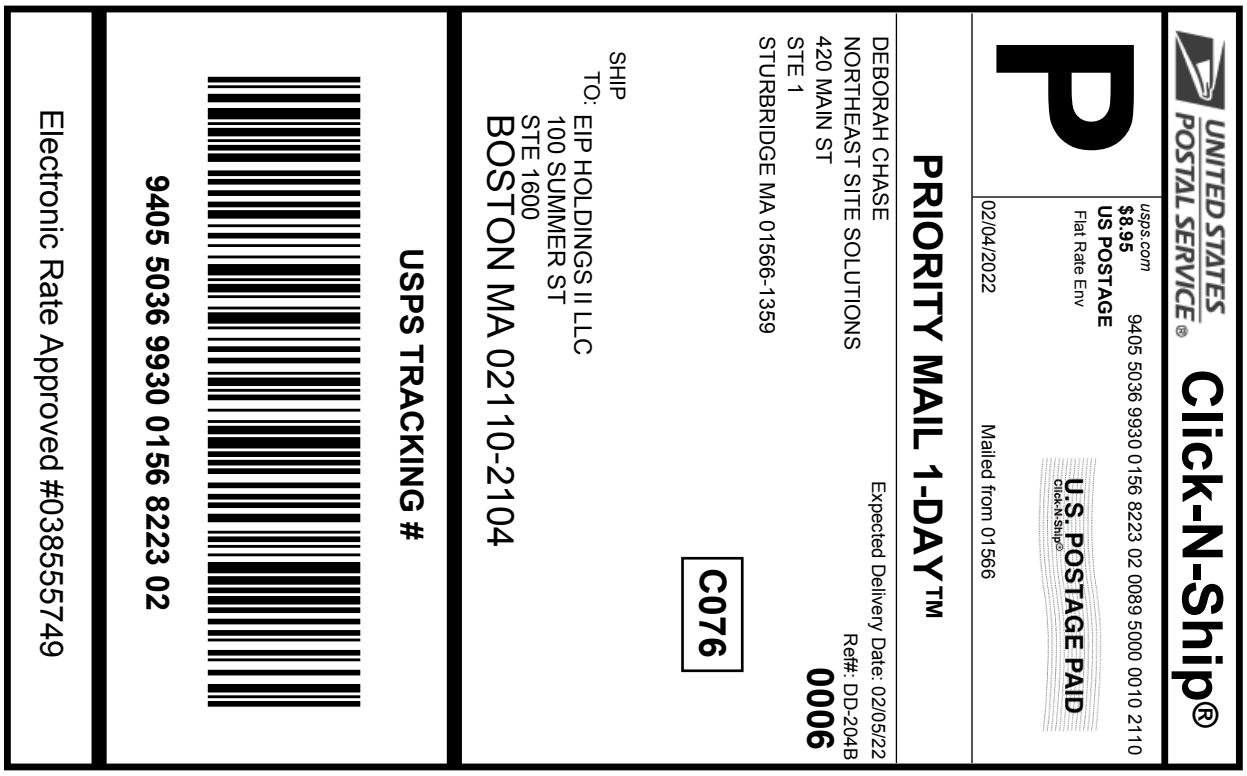

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3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0156 8223 02

Trans. #:	555805814
Print Date:	02/04/2022
Ship Date:	02/04/2022
Expected Delivery Date:	02/05/2022

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

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

Ref#: DD-204B

To: EIP HOLDINGS II LLC
100 SUMMER ST
STE 1600
BOSTON MA 02110-2104

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

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

BOHVNUU 2043

UNITED STATES POSTAL SERVICE.

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

02/07/2022 11:10 AM

Product	Qty	Unit Price	Price
Prepaid Mail Meriden, CT 06450 Weight: 0 lb 0.30 oz Acceptance Date: Mon 02/07/2022 Tracking #: 9405 5036 9930 0156 8222 41	1		$0.00
Prepaid Mail Meriden, CT 06450 Weight: 0 lb 10.60 oz Acceptance Date: Mon 02/07/2022 Tracking #: 9405 5036 9930 0156 8222 65	1		$0.00
Prepaid Mail Norwalk, CT 06851 Weight: 0 lb 0.30 oz Acceptance Date: Mon 02/07/2022 Tracking #: 9405 5036 9930 0156 8222 96	1		$0.00
Prepaid Mail Boston, MA 02110 Weight: 0 lb 10.60 oz Acceptance Date: Mon 02/07/2022 Tracking #: 9405 5036 9930 0156 8223 02	1		$0.00
Grand Total:			$0.00

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USPS is experiencing unprecedented volume increases and limited employee availability due to the impacts of COVID-19. We appreciate your patience.
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