Northeast Site Solutions
Carolyn Seeley
1053 Farmington Avenue, Farmington CT 06032
cseeley@northeastsitesolutions.com

December 9, 2021

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

RE: Tower Share Application
641 Maple Hill Road Naugatuck, CT 06770
Latitude: 41.488100 N
Longitude: -73.020200 W
Site# BOHVN00184A_Dish_Naugatuck_TS_Zoning

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 641 Maple Hill Road Naugatuck, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/19005G MHz antenna and six (6) RRUs, at the 157-foot level of the existing 180-foot monopole tower, one (1) Fiber cables will also be installed. Dish Wireless LLC equipment cabinets will be placed within 7x5 lease area. Included are plans by Infinigy, stamped November 3, 2021, Exhibit C. Also included is a structural analysis prepared by Aerosmith Engineering, LLC, dated March 9, 2021, confirming that the existing tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Borough of Naugatuck, Land Use Department, Zoning Compliance Permit No. 2018-133, dated October 10, 2018. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to The Honorable N. Warren “Pete” Hess, III, Mayor, for the Borough of Naugatuck, Robert S. Pease, Chairman, Planning Commission for the Borough of Naugatuck, as well as the property owner Borough of Naugatuck and Tarpon Towers 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 180-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 157 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 3.17% 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 monopole 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 support tower in Naugatuck. 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 157-foot level of the existing 180-foot tower would have an insignificant visual impact on the area around the tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

Sincerely,

Carolyn Seeley

Carolyn Seeley
Mobile: 978-760-5577
Fax: 413-521-0558
Office: 1053 Farmington Avenue, Farmington, CT 06032
Email: cseeley@northeastsitesolutions.com

Attachments
Cc: The Honorable
N. Warren "Pete" Hess, III, Mayor
Borough of Naugatuck
229 Church St
Naugatuck, CT 06770

Robert S. Pease, Chairman
Planning Commission
Borough of Naugatuck
229 Church St
Naugatuck, CT 06770

Borough of Naugatuck
229 Church St
Naugatuck, CT 06770

Tarpon Towers II, LLC, Tower Owner

Exhibit A

Original Facility Approval

BOROUGH OF NAUGATUCK
LAND USE DEPARTMENT

Phone 203-720-7042
Fax 203-720-5026

229 Church St. 2nd Fl
Naugatuck, CT. 06770

ZONING COMPLIANCE PERMIT #074-8610

PERMIT NO: 2018 - 133

DATE 10/9/2018 2/14/2019

Type of Permit:

Size: 180' ~~160~~' monopole 60' x 60' Fenced Compound

_____ Addition $150/$60
_____ Change of Use $75/$60
_____ Deck $75/$60
_____ Detached Garage $75/$60
_____ Fence $25/$60
_____ Shed $75/$60
_____ Sign $75/$60
_____ Swimming Pool $75/$60
__X__ Other Cell Tower municipal Tower

Old Use ____________ New Use ____________

DESCRIPTION OF PREMISES:

SingleFamily _____ **MultiFamily** _____ **Other** X **ZONE** R-15

PROPERTY OWNER: Borough of Naugatuck

ADDRESS: 641 Maple Hill Road **PHONE:** 203-623-3287

APPLICANT: Tarpon Towers II, LLC (Keith Coppins)

The applicant states that the proposed structure is not located within:

1. A wetlands or water course area;
2. 100 feet of a stream or wetlands area;
3. A stream encroachment area
4. A flood plain area.

X **Signature of Applicant** [signature] Keith Coppins

I hereby certify that the information herein and the attached plot plan are accurate.

Applicable Zoning Regulation to apply: Conforms to all setbacks

Date Granted: 10/10/18 **Fee:** $75 + $60 **Variance #** _____

ZONING ENFORCMENT OFFICER: [signature]

This approval is subject to compliance (prior to occupancy) with the provisions of the zoning and subdivision regulations of the Borough of Naugatuck and as authorized under section 8 of the Connecticut General Statutes, as amended. This permit is based upon the plot plan submitted. Falsification, misrepresentation or omission shall constitute a violation of the borough regulations.

ck# 1125-75
ck # 11269 60

Exhibit B

Property Card

Town of Naugatuck, CT

Property Listing Report

Map Block Lot	Q-18E24	Building #	1	PID	11332	Account	074-8610

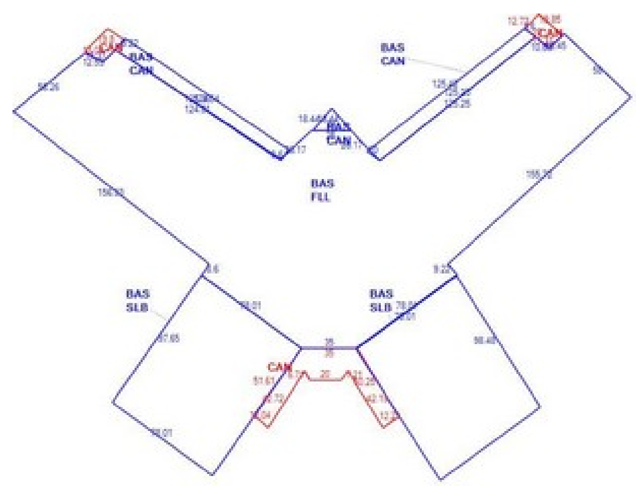
Property Information

Property Location	641 MAPLE HILL RD
Owner	BOROUGH OF NAUGATUCK
Co-Owner	MAPLE HILL SCHOOL
Mailing Address	229 CHURCH ST NAUGATUCK CT 06770
Land Use	902C GRADE SCH
Land Class	E
Zoning Code	RA1
Census Tract	

Neighborhood	6
Acreage	14.32
Utilities	
Lot Setting/Desc	
Book / Page	0327/0090
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1990
Building Desc.	GRADE SCH
Building Style	Schools-Public
Building Grade	C
Stories	1
Occupancy	1.00
Exterior Walls	Brick
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	T+G/Rubber
Interior Walls	Drywall
Interior Walls 2	Minim/Masonry
Interior Floors 1	Vinyl
Interior Floors 2	

Heating Fuel	Gas
Heating Type	Forced Hot Air
AC Type	None
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	
Fin Bsmt Quality	
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Comm/Ind
Building Condition	A
Sprinkler %	NA
Heat / AC	NONE
Frame Type	STEEL
Baths / Plumbing	AVERAGE
Ceiling / Wall	SUS-CEIL & WL
Rooms / Prtns	AVERAGE
Wall Height	12.00
First Floor Use	NA
Foundation	NA

Report Created On 10/5/2021

Town of Naugatuck, CT

Property Listing Report | Map Block Lot: Q-18E24 | Building # 1 | PID 11332 | Account 074-8610

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	7700130	5390070
Extras	75540	52880
Improvements		
Outbuildings	52530	36790
Land	944700	661290
Total	8772900	6141030

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	52251	52251
Canopy	4540	0
Lower Level,Finished	34567	34567
Slab	15283	0
Total Area	106641	86818

Outbuilding and Extra Features

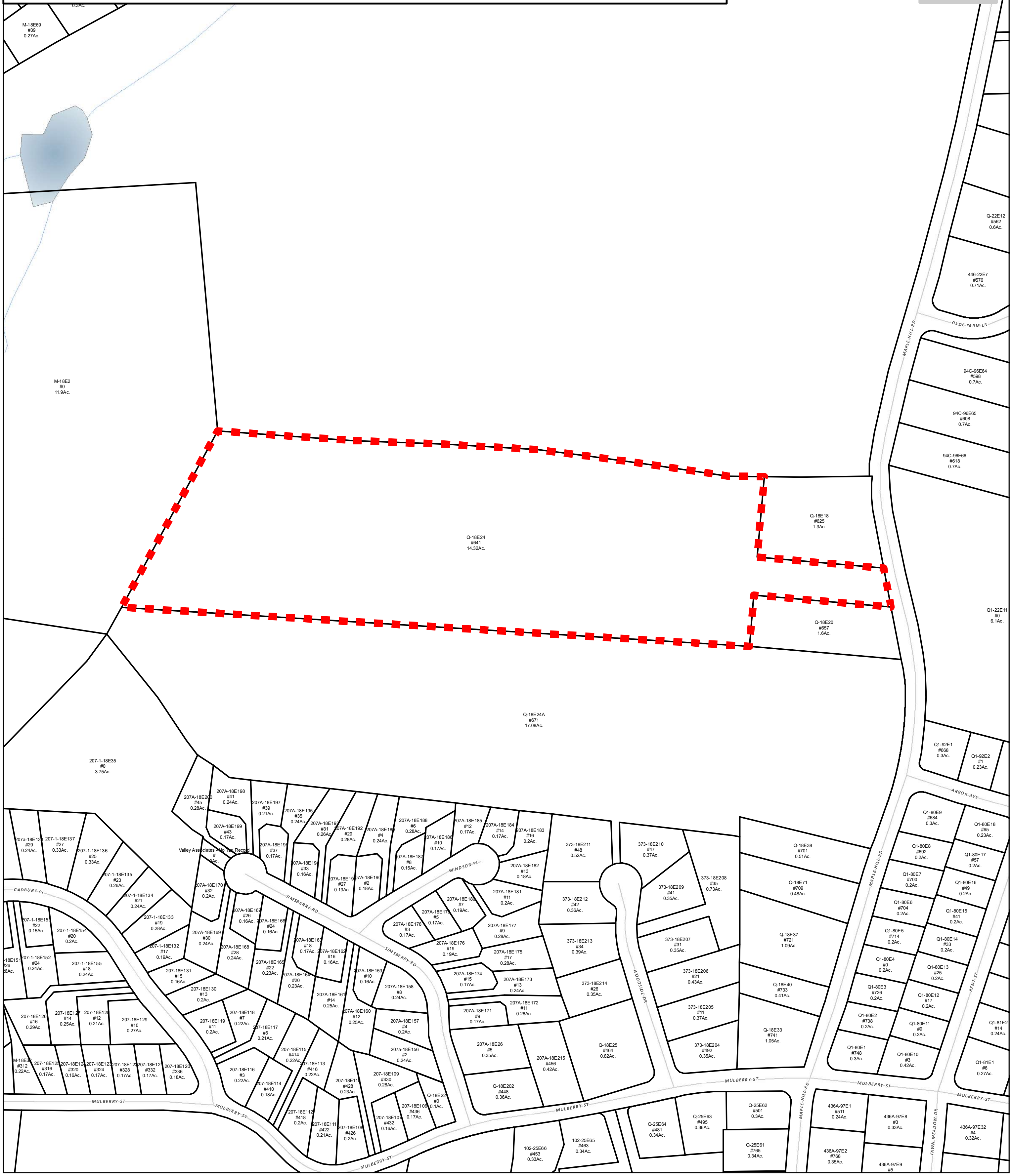
Type	Description
Paving Asphalt	25000 S.F.
MERC VAP/FLU	2 UNITS
Lights (1)	7 UNITS
W/TRIPLE LIGHT	1 UNITS
W/DOUBLE LIGHT	2 UNITS
Sprnklr Enclos	86800 S.F.
CENTRAL AC	4450 S.F.
Freight Elev	2 STOPS
Shed Good	192 S.F.

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BOROUGH OF NAUGATUCK	0327/0090	1989-01-27	0

Report Created On 10/5/2021

Borough of Naugatuck, Connecticut - Assessment Parcel Map
Parcel Account Number: 074-8610
Address: 641 MAPLE HILL RD



0 75 150 225 300
Feet

Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Borough of Naugatuck and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced March 2019

Exhibit C

Construction Drawings

dish wireless

DISH WIRELESS, LLC. SITE ID:

BOHVN00184A

DISH WIRELESS, LLC. SITE ADDRESS:

641 MAPLE HILL ROAD NAUGATUCK, CT 06770

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

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

SITE INFORMATION

PROPERTY OWNER:	TARPON TOWER
ADDRESS:	641 MAPLE HILL ROAD NAUGATUCK, CT 06770
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT1008
TOWER APP NUMBER:	N/A
COUNTY:	NEW HAVEN
LATITUDE (NAD 83):	41° 29' 17.16" N 41.488100 N
LONGITUDE (NAD 83):	-73° 1' 12.72" W -73.020200 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	NEW HAVEN
PARCEL NUMBER:	TBD
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	EVERSOURCE
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

APPLICANT:	DISH WIRELESS, LLC. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	TARPON TOWER 905 E MARTIN LUTHER KING JR DR, TARPON SPRINGS, FL 34689
SITE DESIGNER:	INFINIGY 1033 WATERVLIET SHAKER RD ALBANY, NY 12205 (518) 690-0790
SITE ACQUISITION:	APRIL PARROTT (203) 927-4317
CONSTRUCTION MANAGER:	JAVIER SOTO (617) 839-6514
RF ENGINEER:	SYED ZAIDI Syed.zaidi@DISH.COM

CONNECTICUT CODE COMPLIANCE

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

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

SITE PHOTO

DIRECTIONS

DIRECTIONS FROM GREEN ACRES AIRPORT:

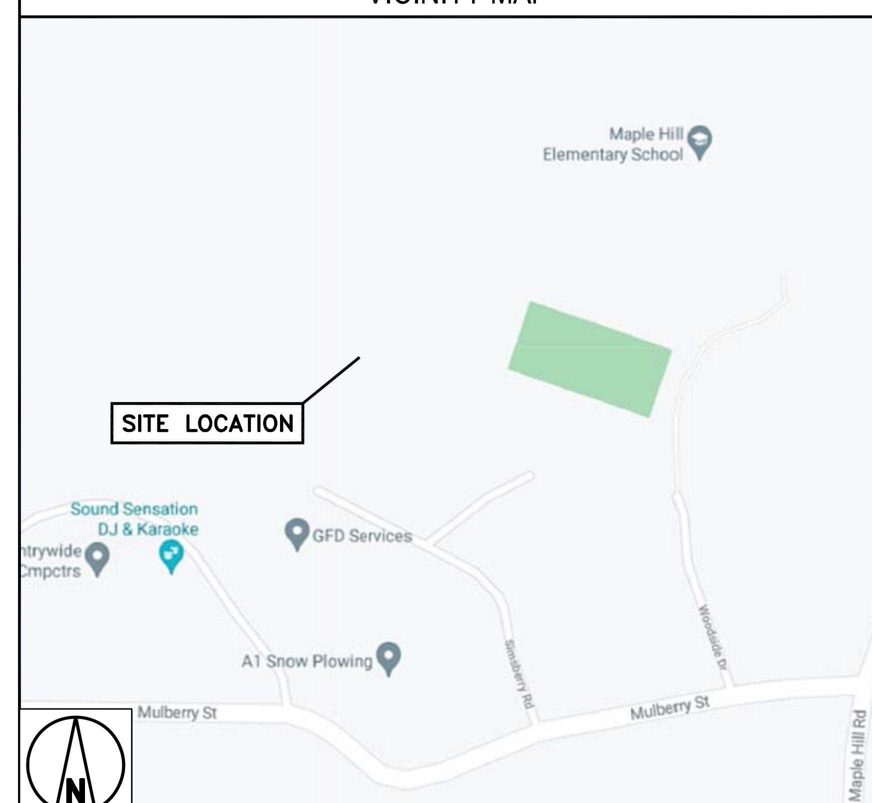
DEPART AND HEAD TOWARD PERKINS ST, TURN RIGHT ONTO PERKINS ST, TURN RIGHT ONTO JAMES P CASEY RD ROAD NAME CHANGES TO CLARK AVE, TURN RIGHT ONTO US-6 W / TERRYVILLE AVE, TAKE THE RAMP ON THE LEFT FOR CT-8 SOUTH AND HEAD TOWARD WATERBURY, KEEP STRAIGHT TO GET ONTO CT-8 S / JAMES H DARCEY MEMORIAL HWY S, AT EXIT 28, HEAD RIGHT ON THE RAMP TOWARD PROSPECT / UNION CITY, BEAR RIGHT ONTO N MAIN ST TOWARD PROSPECT / UNION CITY, TURN LEFT ONTO GOLDEN CT, TURN LEFT ONTO CT-68 / PROSPECT ST, TURN RIGHT ONTO MAPLE HILL RD, TURN RIGHT ONTO MULBERRY ST, TURN RIGHT ONTO SIMSBERRY RD, ARRIVE AT, 641 MAPLE HILL ROAD, NAUGATUCK, CT 06770

SHEET INDEX

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

VICINITY MAP



NO SCALE

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.

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

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PHONE: 847-648-4068 | FAX: 518-690-0793
WWW.INFINIGY.COM

STATE OF CONNECTICUT
SHUHEI SAKANO
64916
LICENSED PROFESSIONAL ENGINEER
11/03/21

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

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

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS
2	11/03/21	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

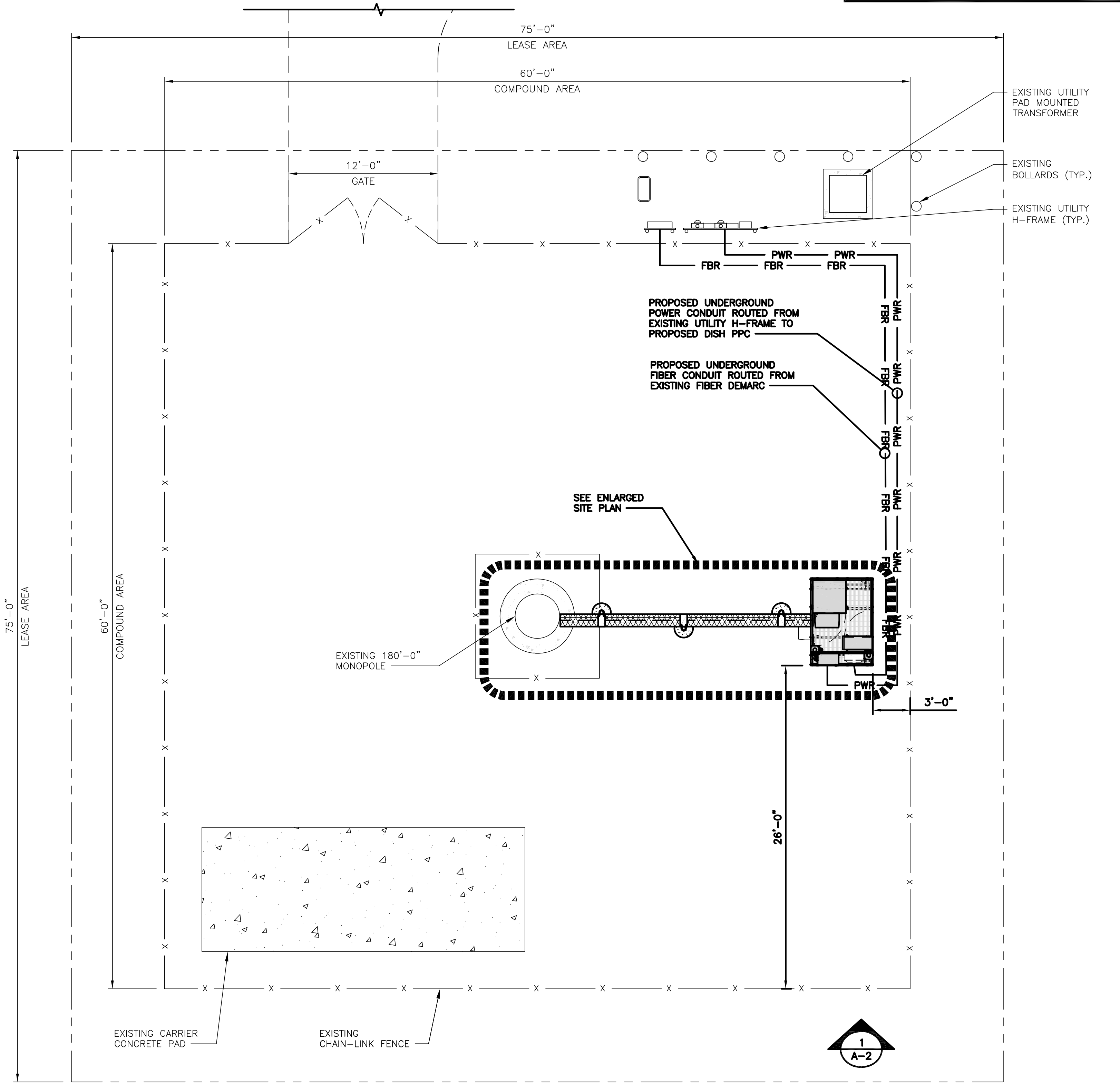
DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

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

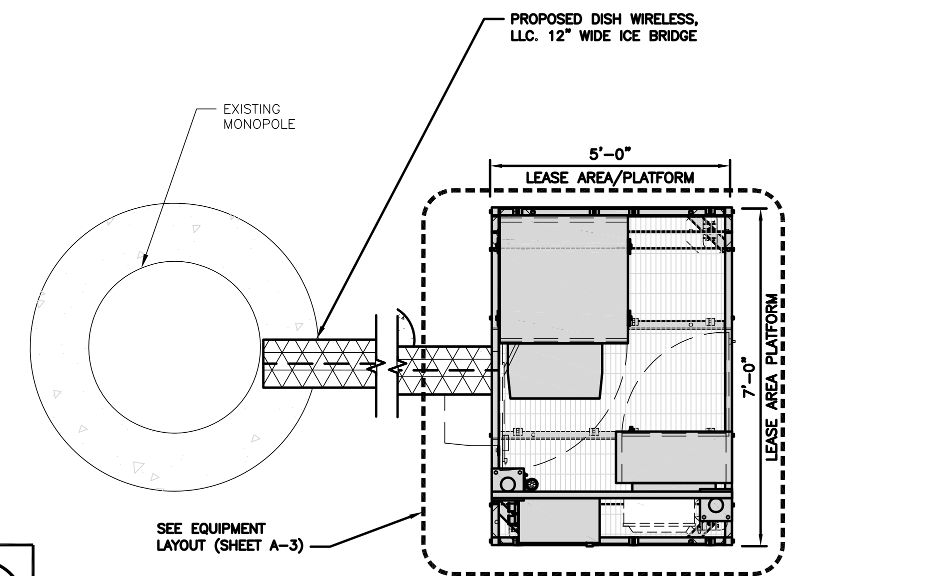


COMPOUND PLAN

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

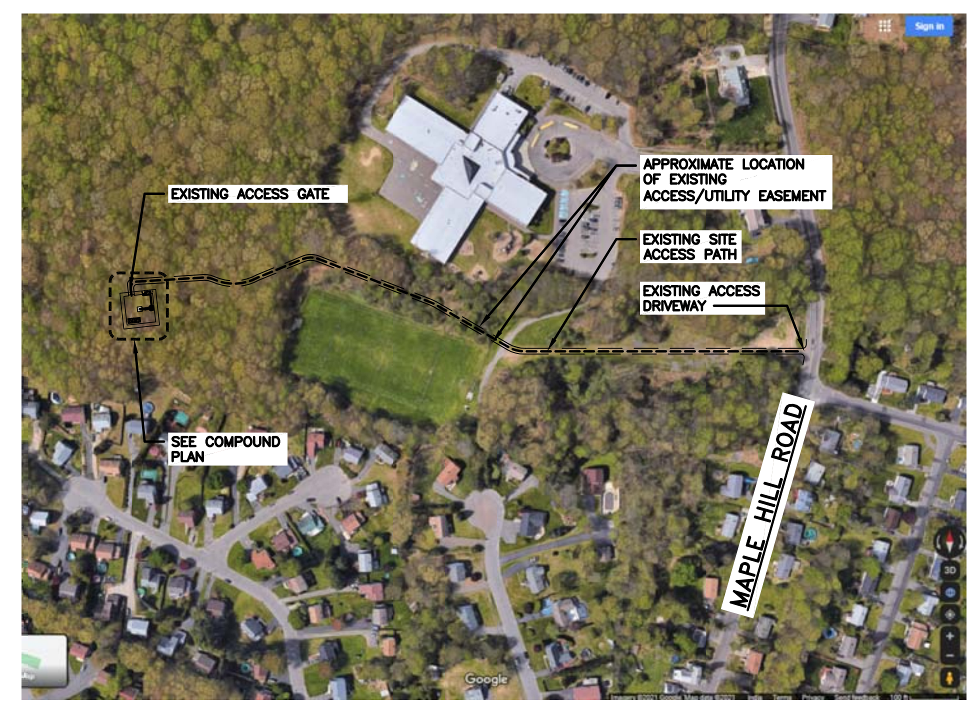
NOTES

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



ENLARGED SITE PLAN

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



SITE PLAN

200' 100' 0 200' 400'
1"=200'
3

dish wireless.

5701 SOUTH SANTA FE DRIVE
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DISH WIRELESS, LLC.
PROJECT INFORMATION
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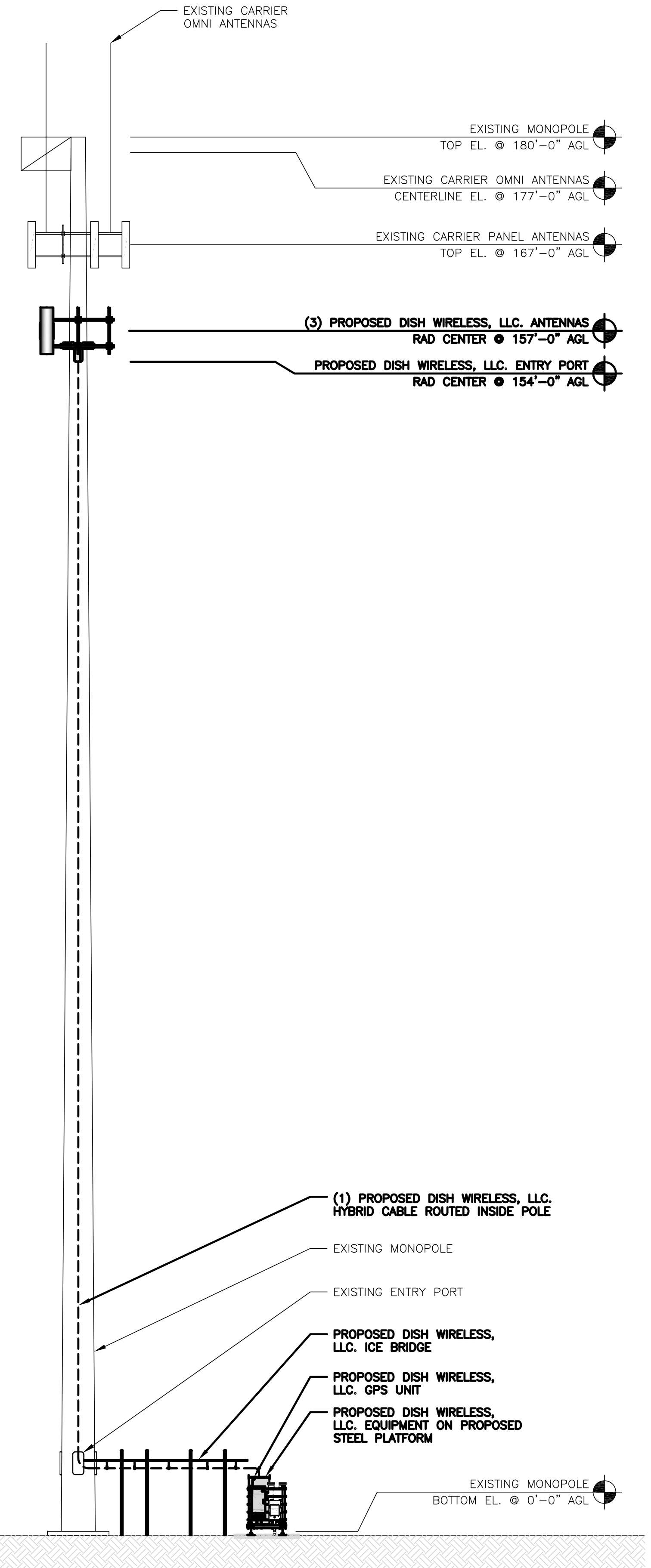
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

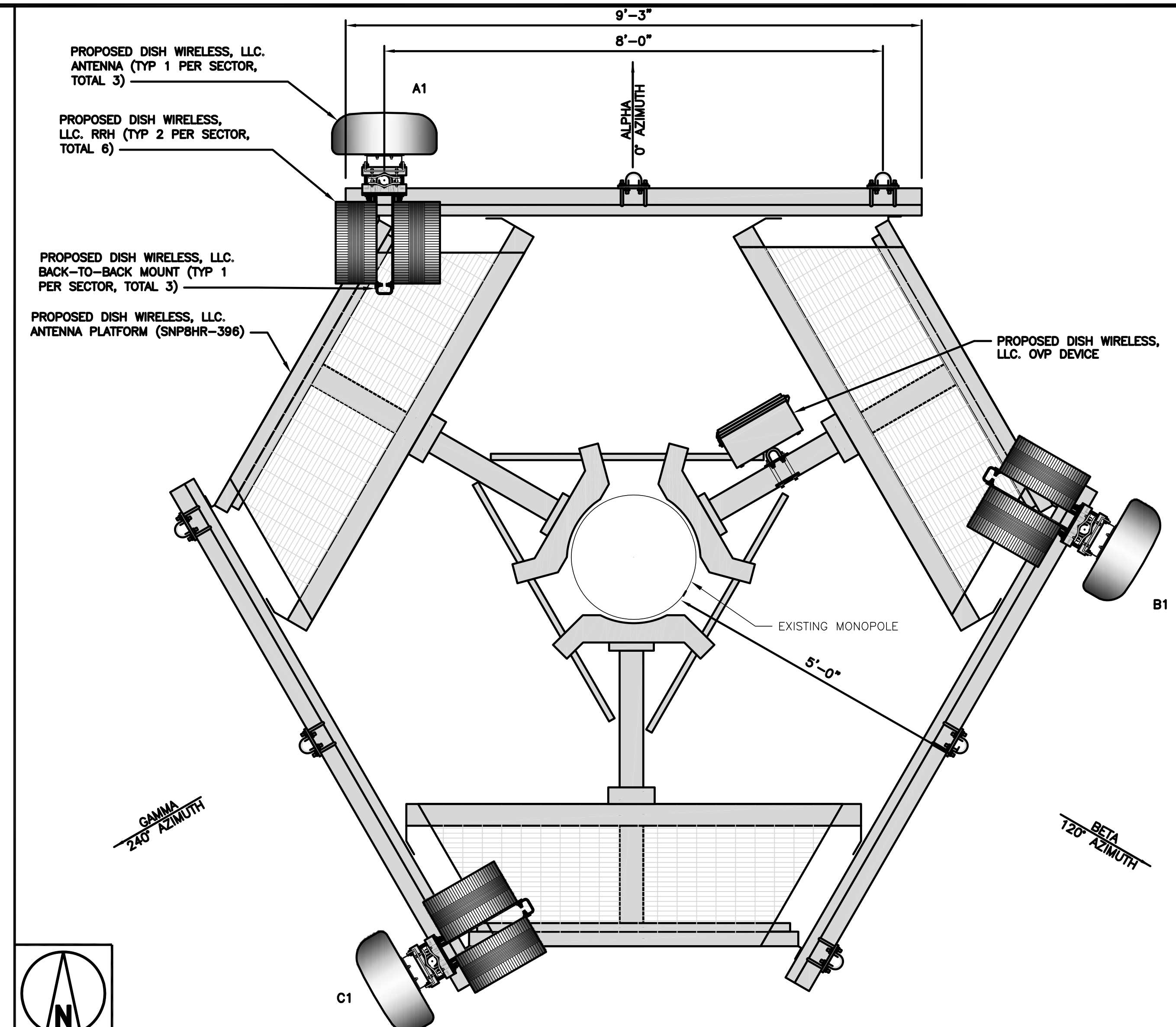
SHEET NUMBER
A-1

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 07/30/2021. THE EXISTING ANTENNA MOUNTS ARE CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT CONFIGURATION
5. FOR ADDITIONAL TOWER STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY AIROSMITH DATED: 03/9/21



PROPOSED NORTH ELEVATION — 12' 8' 4' 0 10' 20' — 3/32"=1'–0" — 1



ANTENNA LAYOUT — 12" 6" 0 1' 2' 3' — 3/4"=1'–0" — 2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	0°	157'–0"	(1) HIGH–CAPACITY HYBRID CABLE (185' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	120°	157'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	240°	157'–0"	

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

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

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

ANTENNA SCHEDULE — NO SCALE — 3

dish wireless.
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DRAWN BY:	CHECKED BY:	APPROVED BY:
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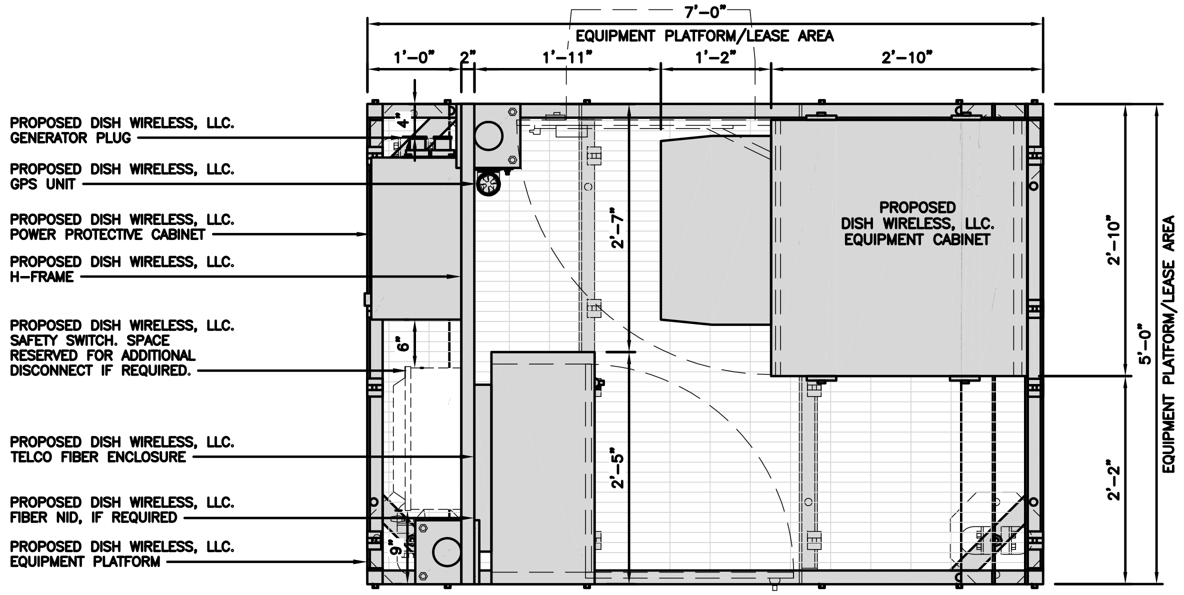
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-2



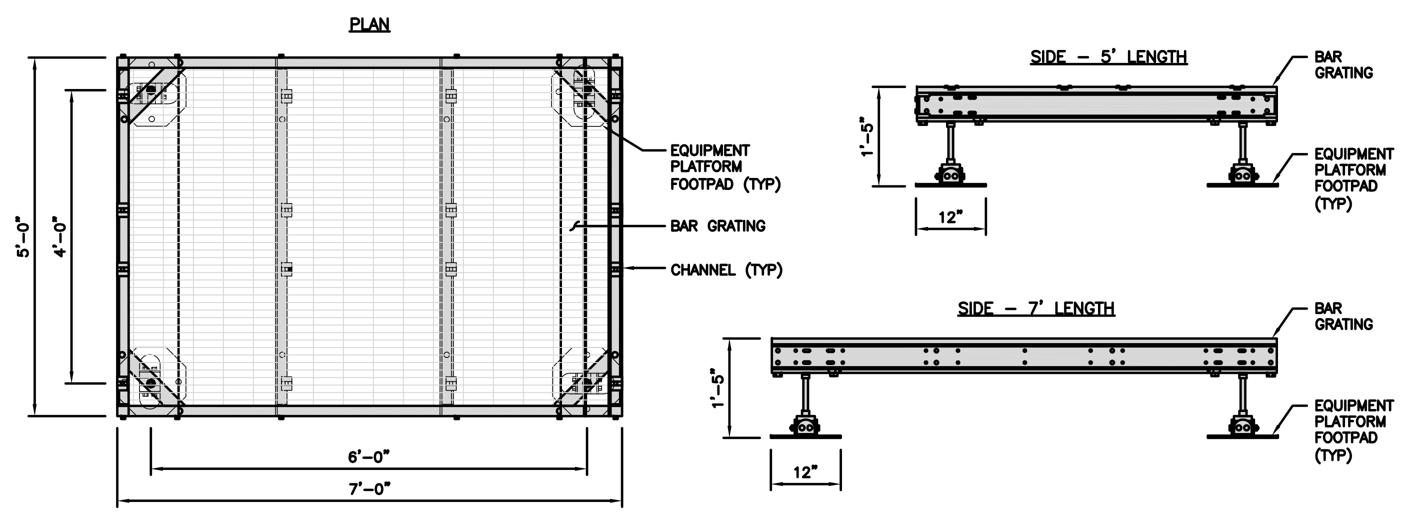
PLATFORM EQUIPMENT PLAN

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

1"=1'-0"

1

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

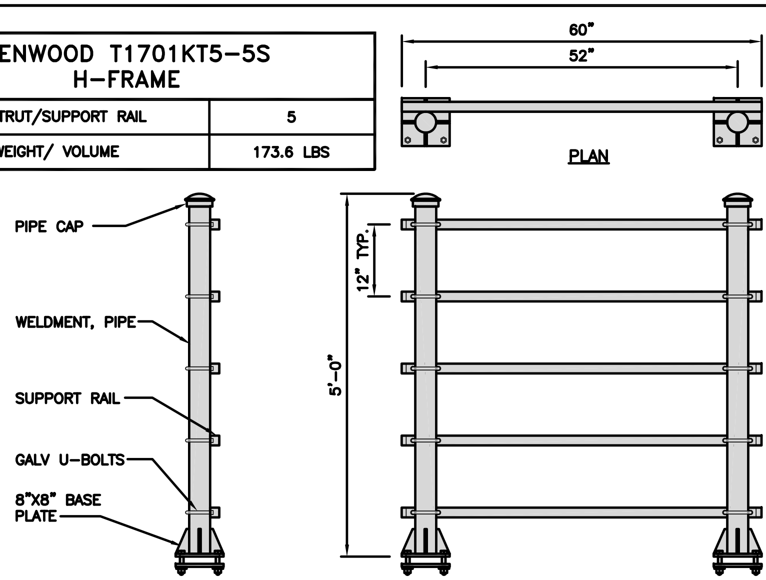


PLATFORM DETAIL

NO SCALE

2

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



H-FRAME DETAIL

NO SCALE

3

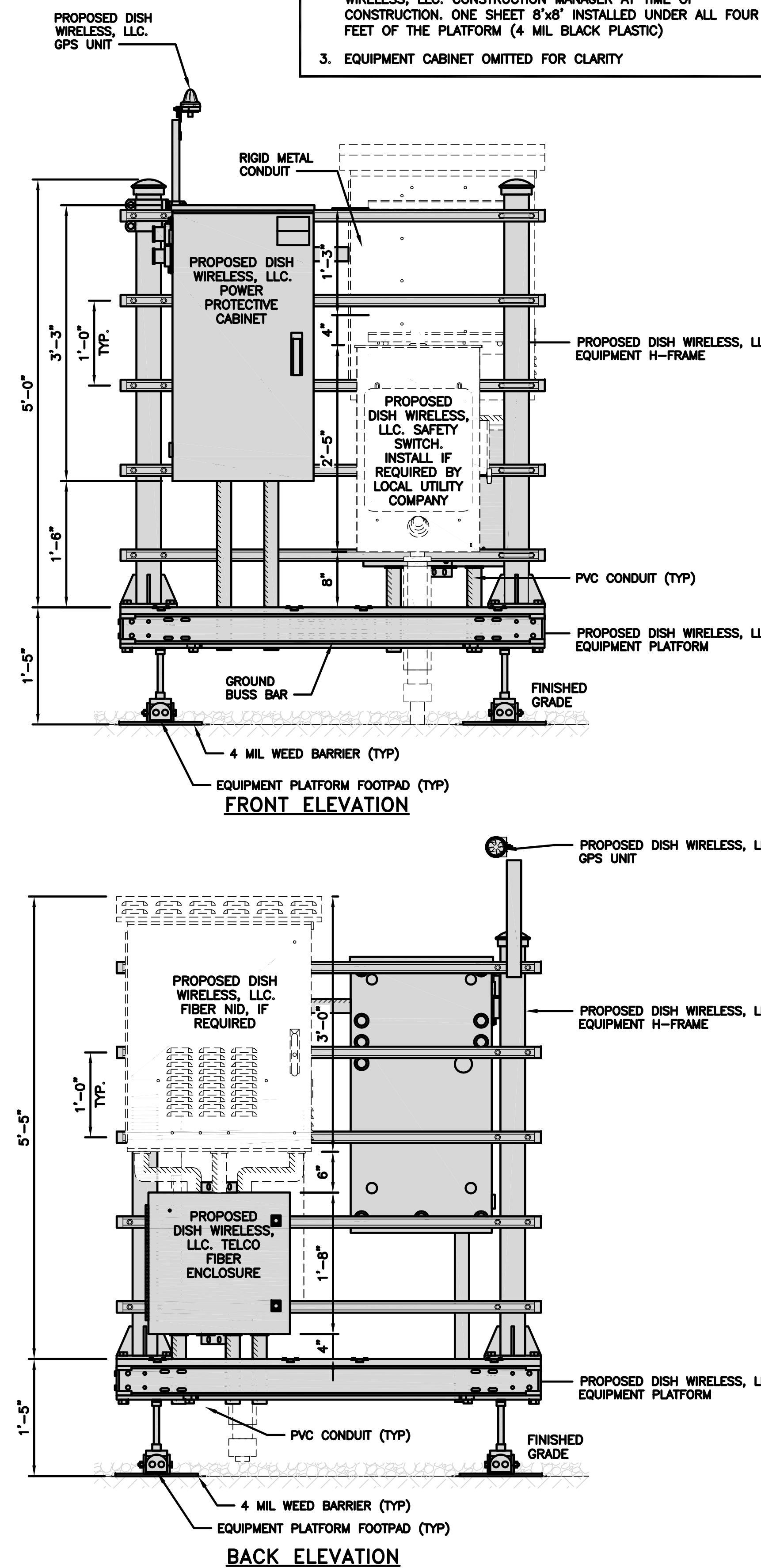
NOT USED

NO SCALE

4

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH WIRELESS, LLC. 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



H-FRAME EQUIPMENT ELEVATION

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

1"=1'-0"

5

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RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS
2	11/03/21	REVISED PER COMMENTS

A&E PROJECT NUMBER

2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

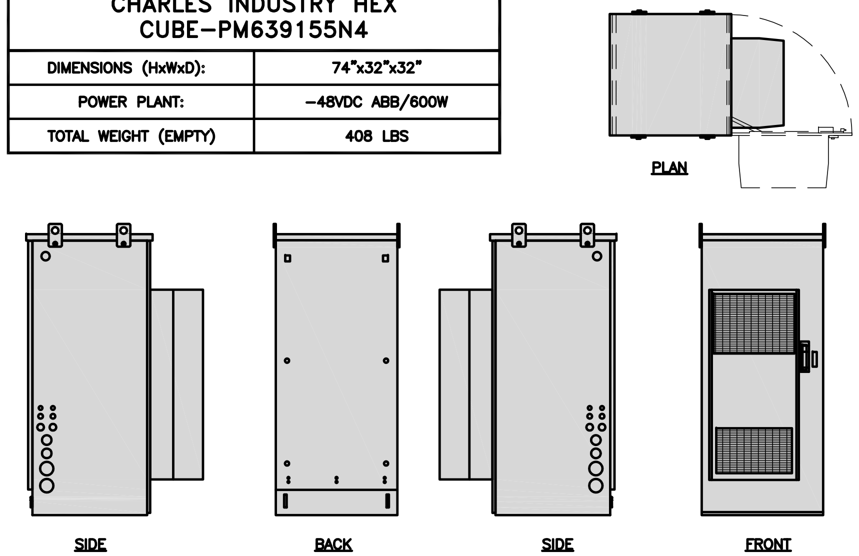
SHEET TITLE

EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

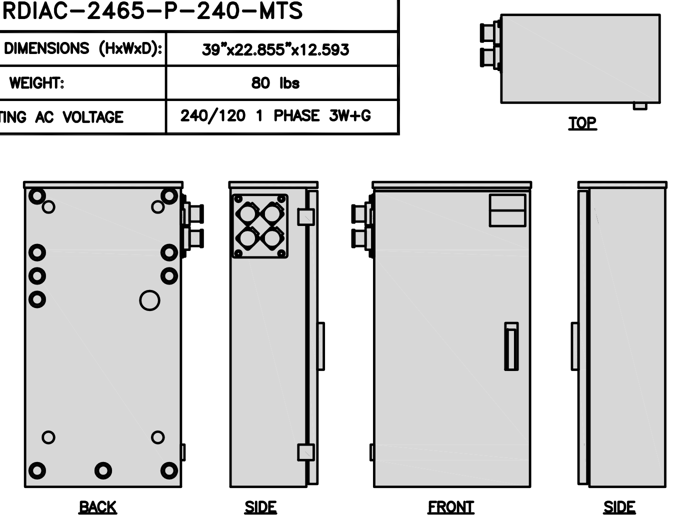
A-3

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



CABINET DETAIL — NO SCALE — 1

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



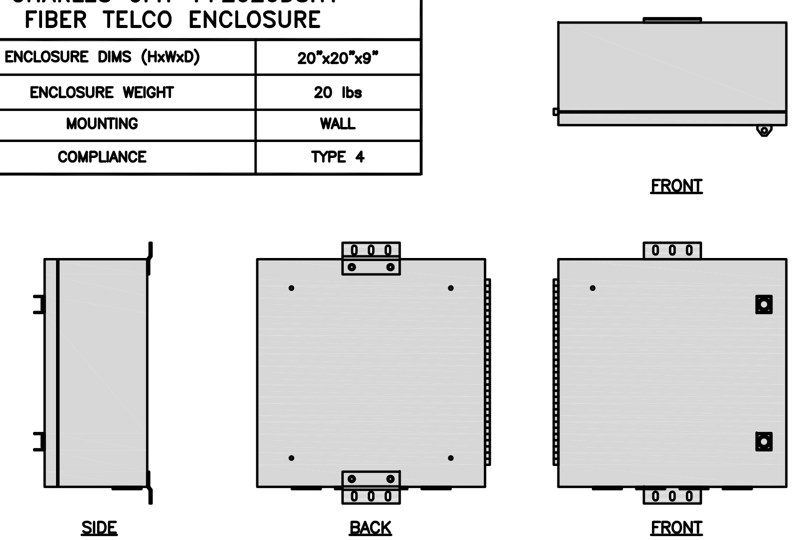
POWER PROTECTION CABINET (PPC) DETAIL — NO SCALE — 2

NOT USED — NO SCALE — 3

NOT USED — NO SCALE — 4

NOT USED — NO SCALE — 5

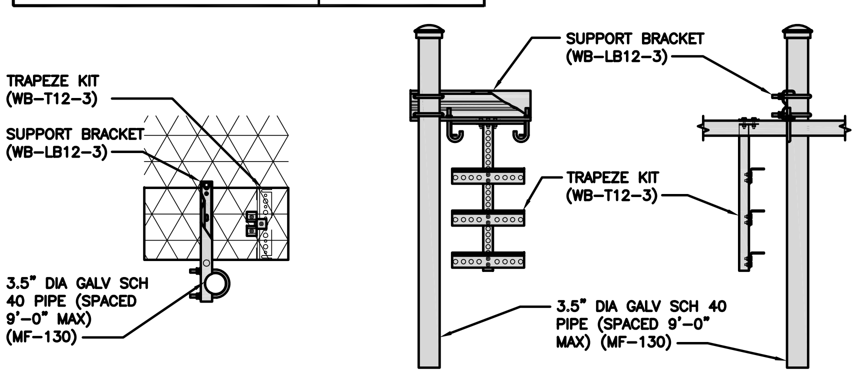
CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



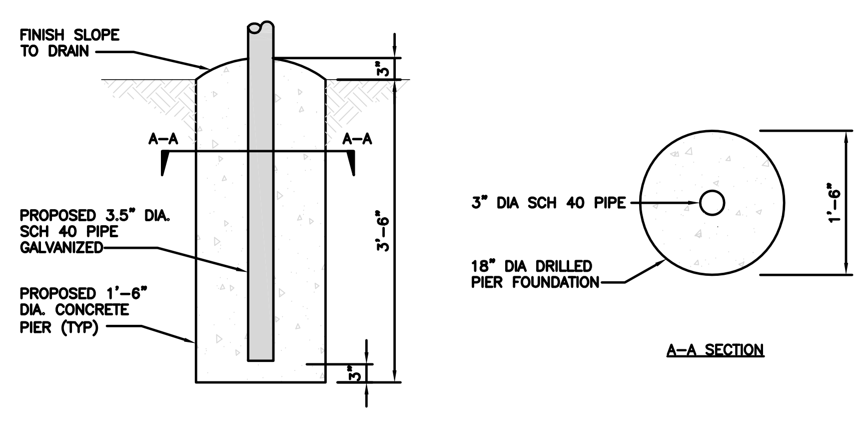
FIBER TELCO ENCLOSURE DETAIL — NO SCALE — 6

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

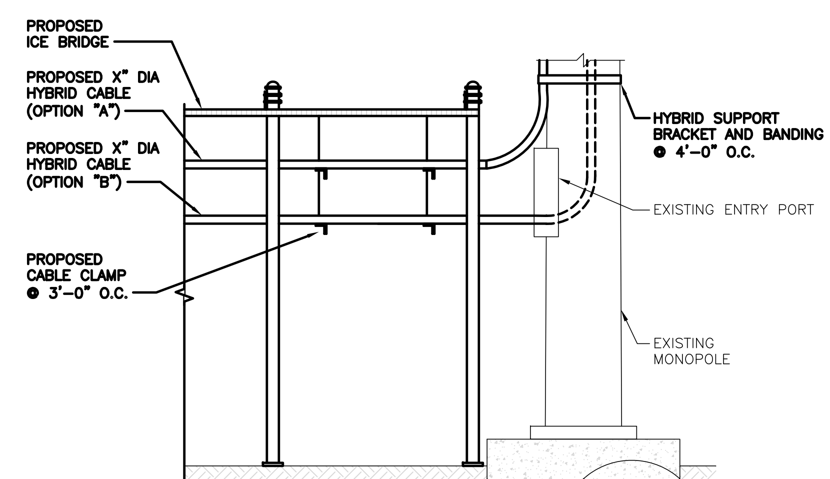
INCLUDED PRODUCTS:	
	WB–T12–3 TRAPEZE KIT, 3 RUNGS
	WB–LB12–3 SUPPORT BRACKET
	MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



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

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

RFDS REV #: 0

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DISH WIRELESS, LLC.
PROJECT INFORMATION
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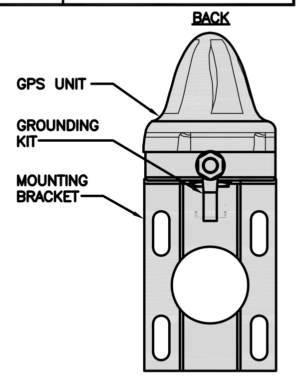
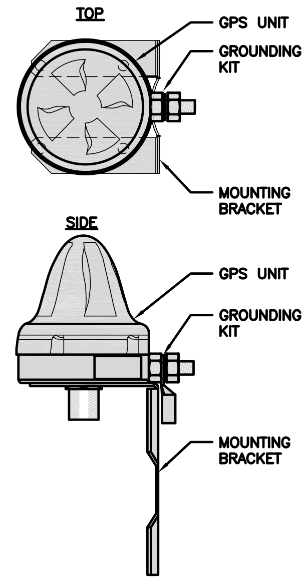
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
EQUIPMENT DETAILS

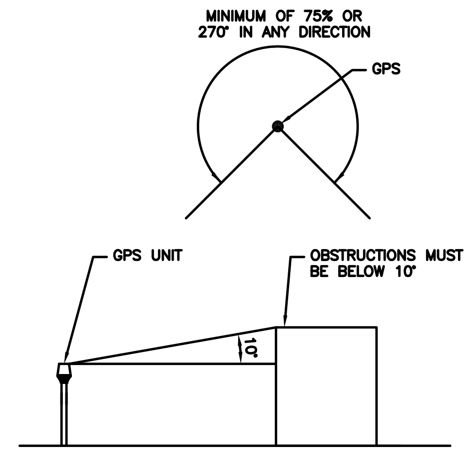
SHEET NUMBER
A-4

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

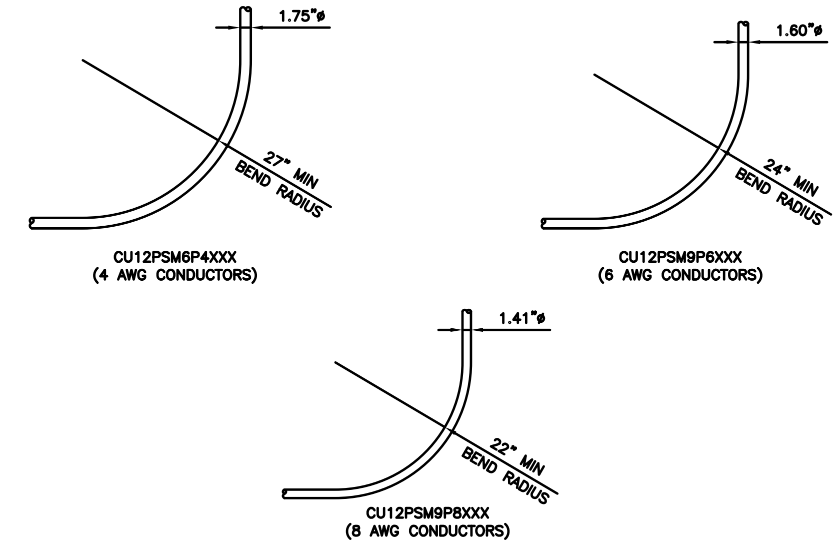




GPS ANTENNA DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2



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

NOT USED — NO SCALE — 4

NOT USED — NO SCALE — 5

NOT USED — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

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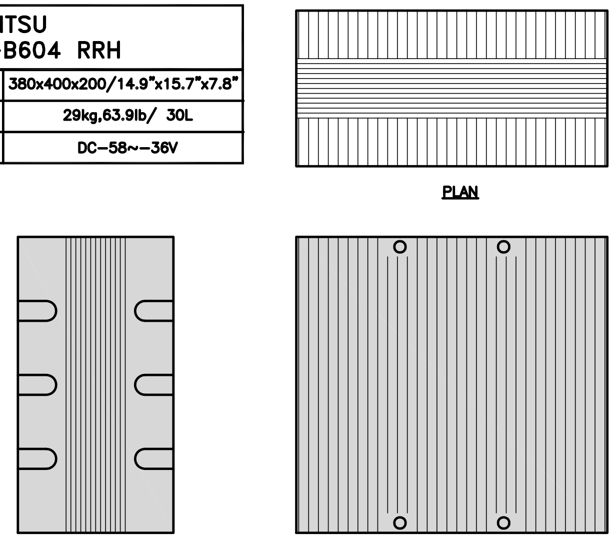
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-5

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

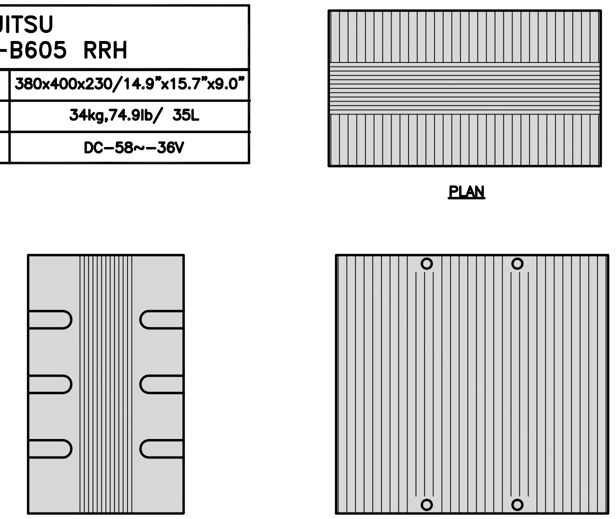


NOTES

FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

REMOTE RADIO HEAD DETAIL | NO SCALE | 1

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



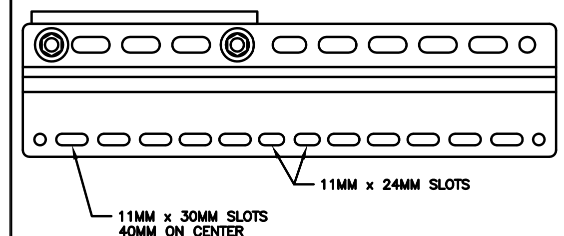
NOTES

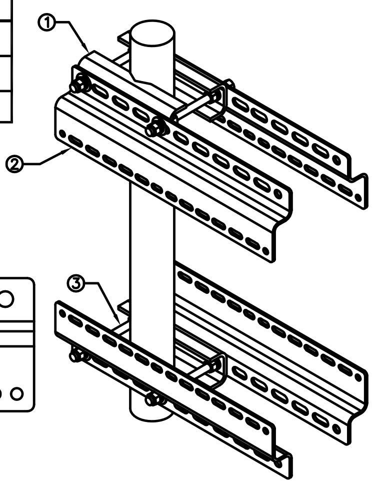
FINAL RRH SPECIFICATIONS TO BE CONFIRMED BY GC

REMOTE RADIO HEAD DETAIL | NO SCALE | 2

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

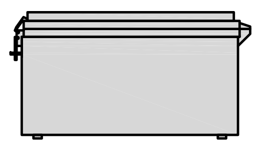
ITEM#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"

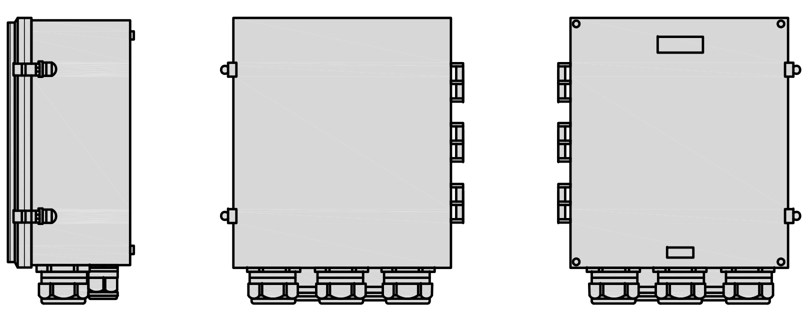




REMOTE RADIO MOUNT DETAIL | NO SCALE | 3

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



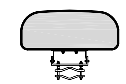


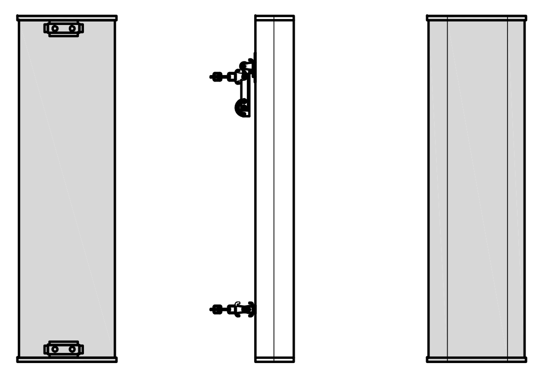
SURGE SUPPRESSION DETAIL | NO SCALE | 4

JMA WIRELESS MX08FRO665-20 ANTENNA	
DIMENSIONS (HxWxD)	72.0"x20.0"x8.0"
TOTAL WEIGHT	54 LB
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE

NOTES

FINAL ANTENNA SPECIFICATIONS TO BE CONFIRMED BY GC



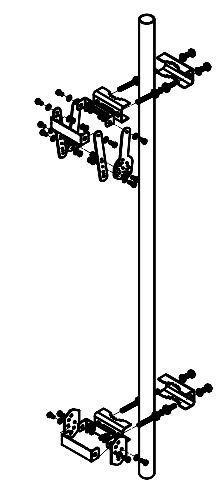


ANTENNA DETAIL | NO SCALE | 5

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

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

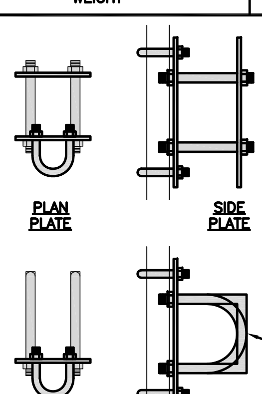
ANTENNA BRACKET NOT PART OF KIT

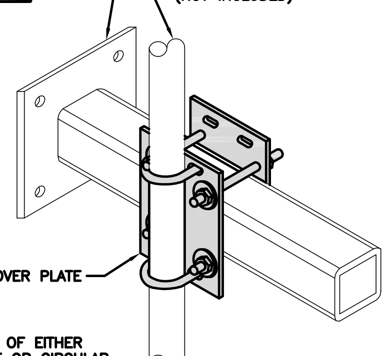


NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

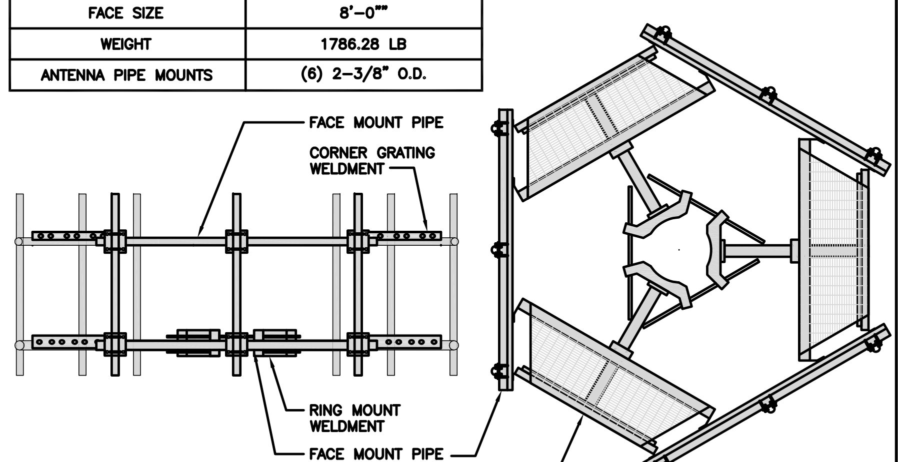
COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS





RRH/OVP MOUNT DETAIL | NO SCALE | 7

SITEPRO1 SNP8HR-396 SNUB-NOSE PLATFORM	
FACE SIZE	8'-0""
WEIGHT	1786.28 LB
ANTENNA PIPE MOUNTS	(6) 2-3/8" O.D.



ANTENNA PLATFORM DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE

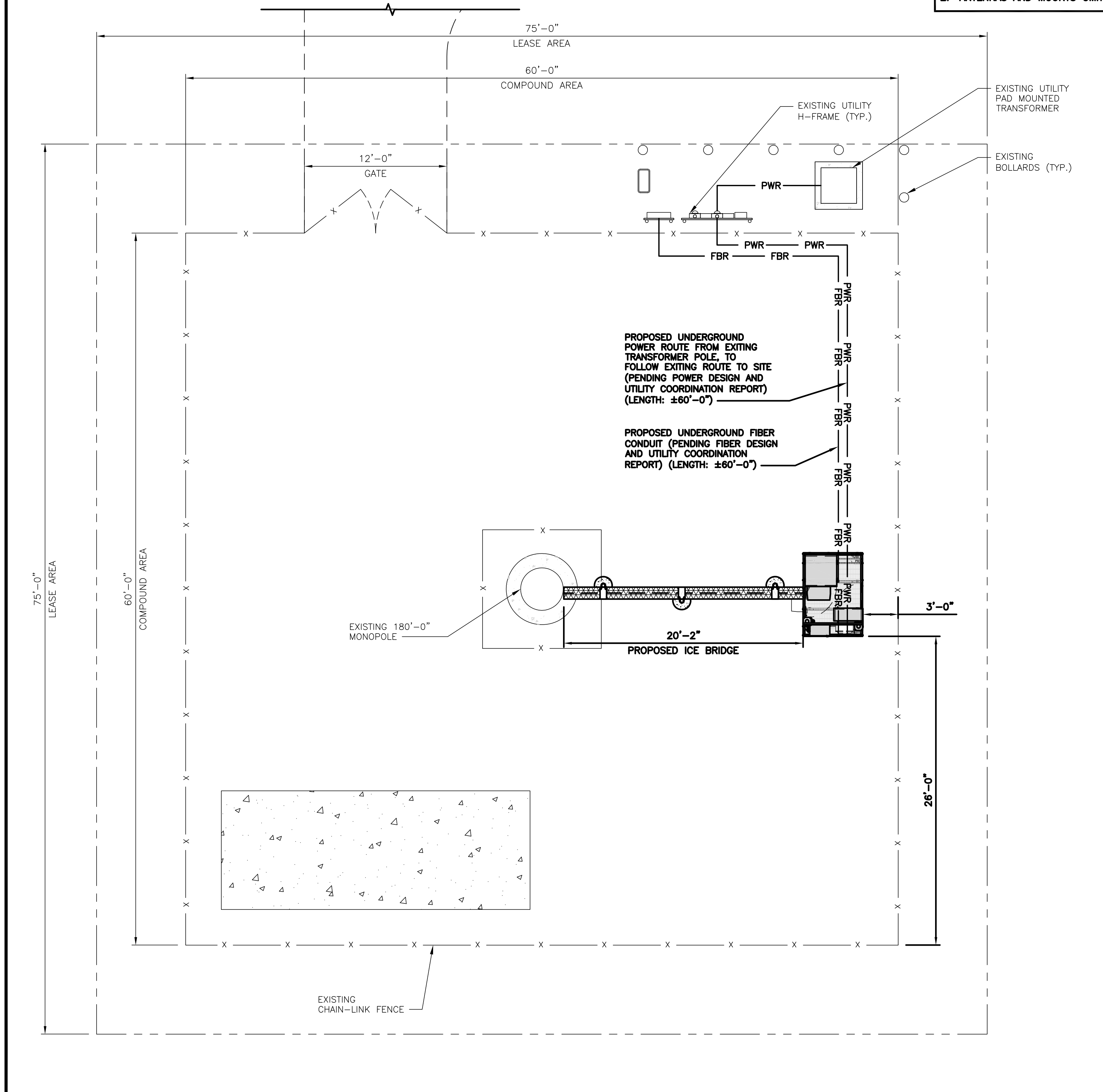
EQUIPMENT DETAILS

SHEET NUMBER

A-6

NOTES

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

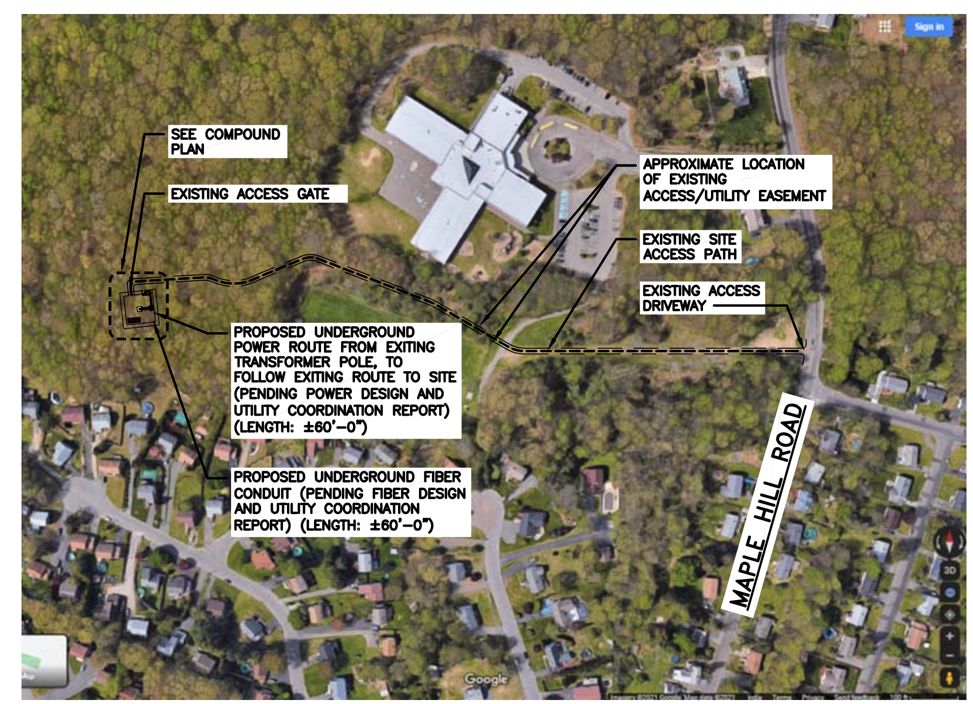


UTILITY ROUTE PLAN — 3/16"=1'-0" — 1

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

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

ELECTRICAL NOTES — 2



OVERALL UTILITY ROUTE PLAN — 1"=200' — 3

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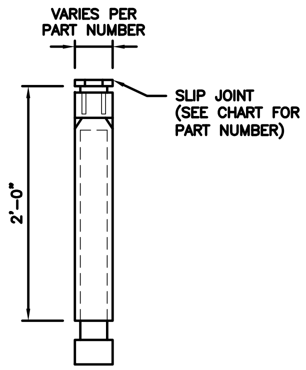
NAUGATUCK, CT 06770

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"

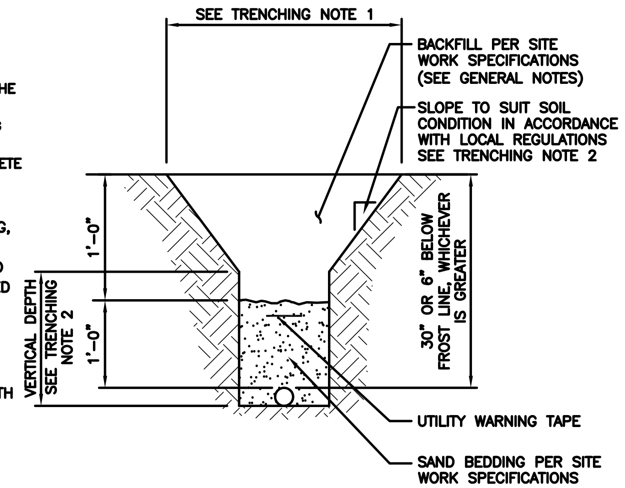


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

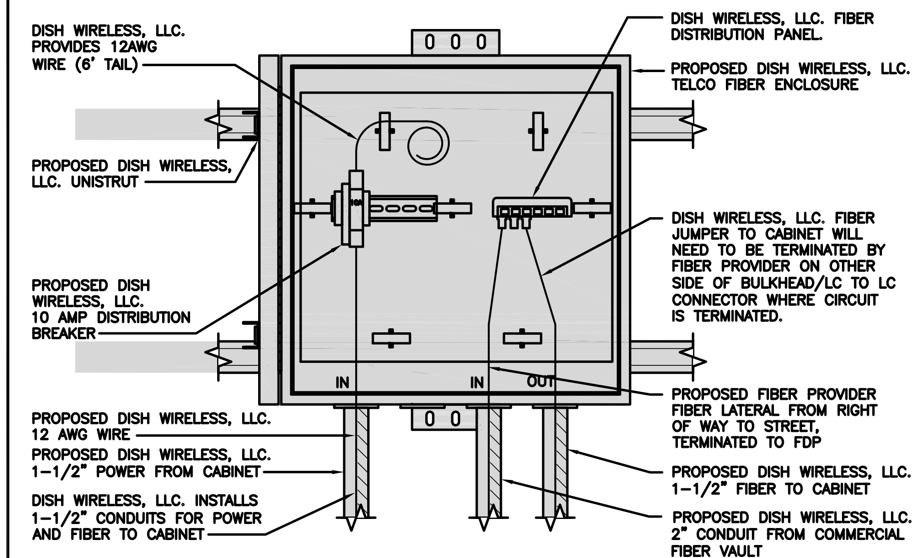
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

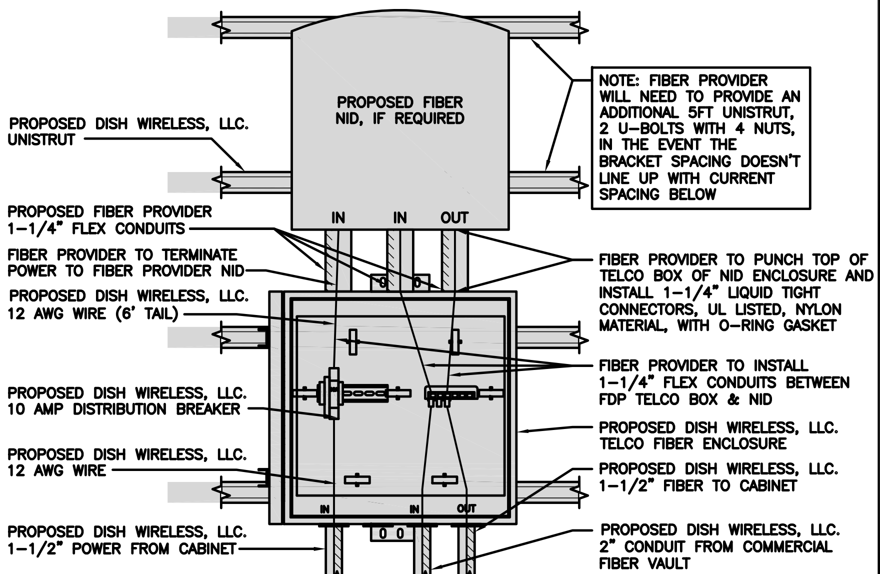
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT 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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CONSTRUCTION DOCUMENTS

SUBMITTALS

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0	09/24/21	ISSUED FOR PERMIT
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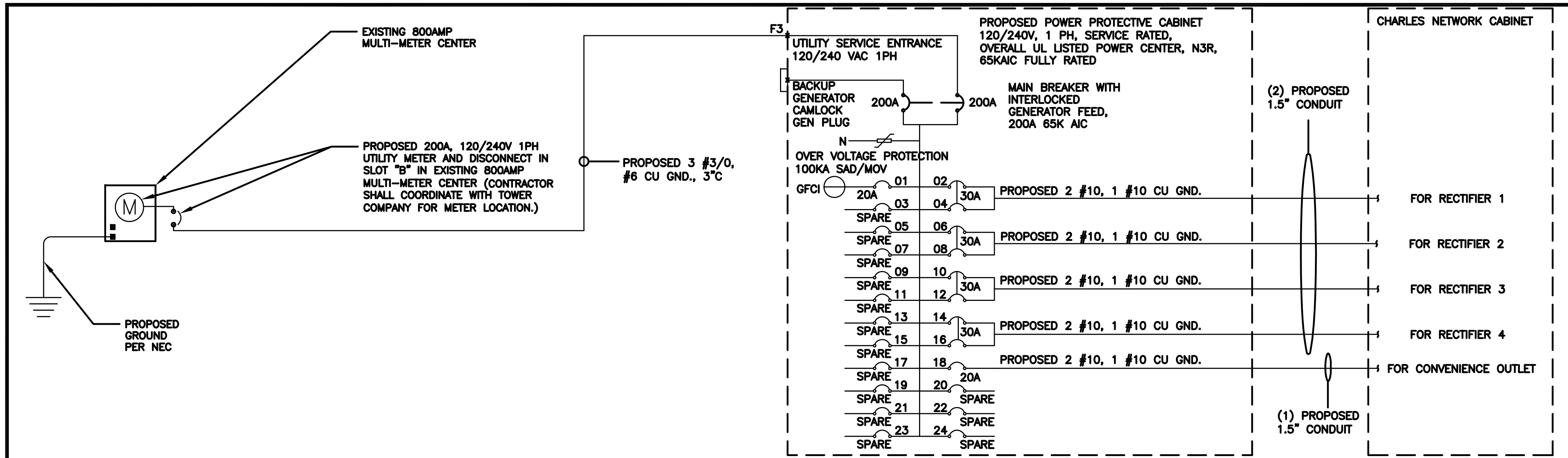
A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

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	30A	2880		ABB/GE INFINITY RECTIFIER 1
–SPARE–				3	B	4			2880	
–SPARE–				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
–SPARE–				7	B	8			2880	
–SPARE–				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
–SPARE–				11	B	12			2880	
–SPARE–				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
–SPARE–				15	B	16			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	

	L1	L2	
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

NOT USED — NO SCALE — 4

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DISH WIRELESS, LLC.
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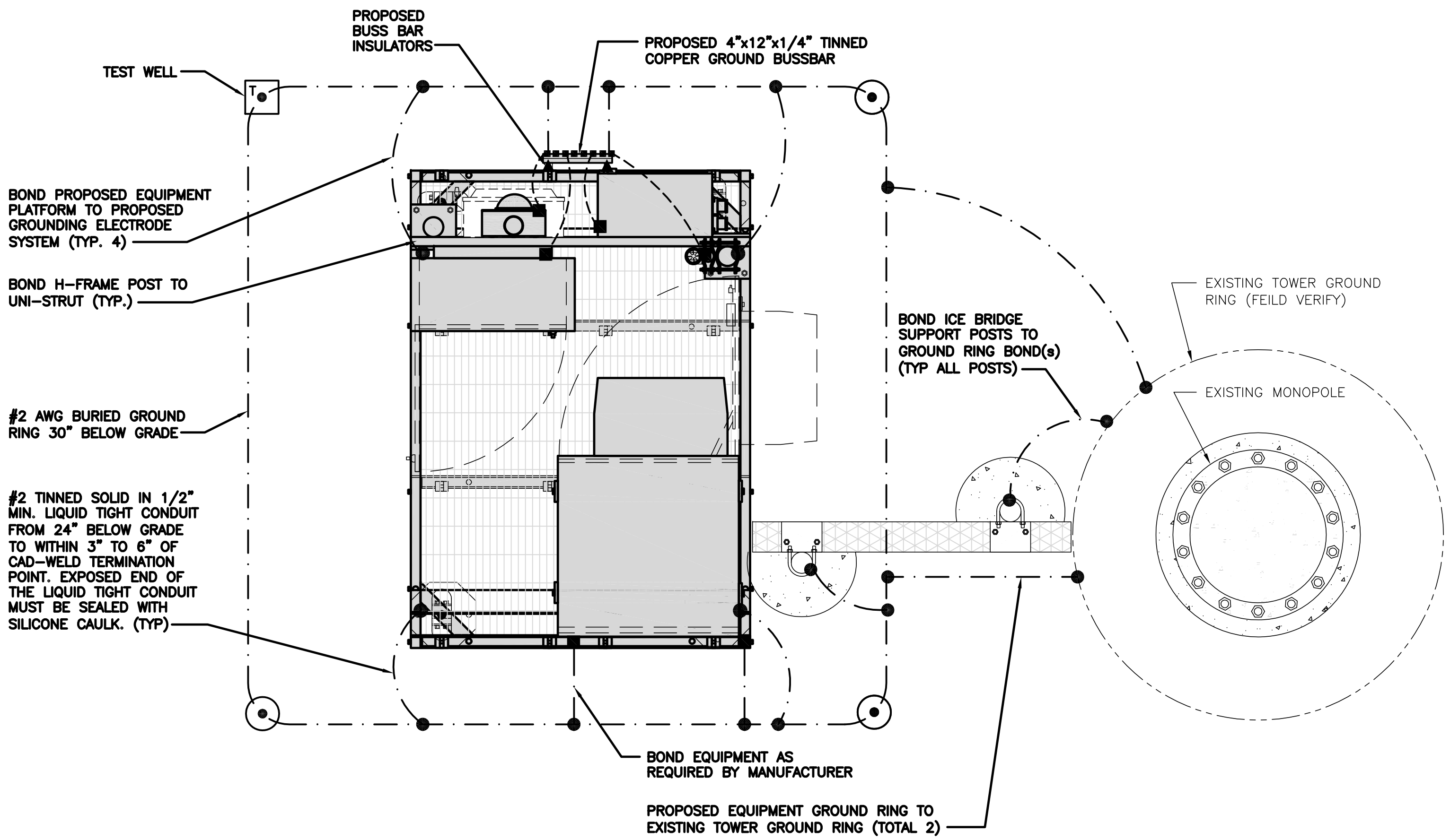
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

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

SHEET NUMBER
E-3

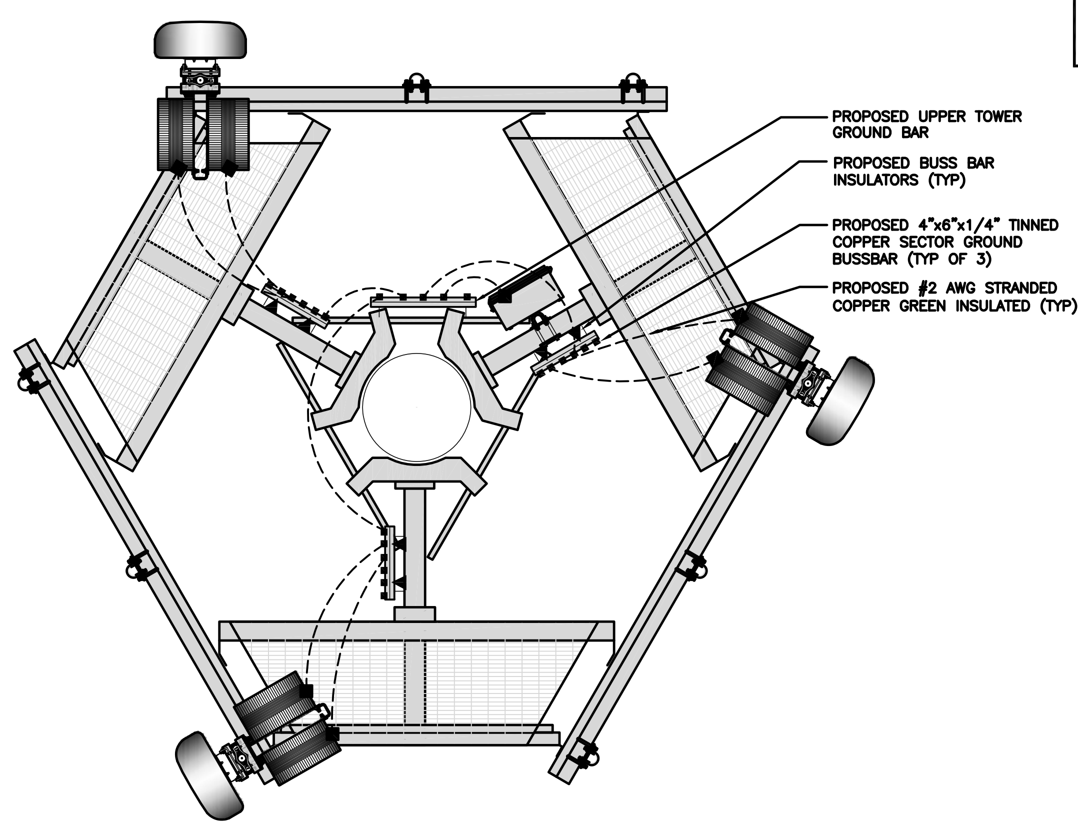


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

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

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS, LLC. 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) <u>EXTERIOR GROUND RING:</u> #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) <u>TOWER GROUND RING:</u> 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) <u>INTERIOR GROUND RING:</u> #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) <u>BOND TO INTERIOR GROUND RING:</u> #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) <u>GROUND ROD:</u> 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) <u>CELL REFERENCE GROUND BAR:</u> 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) <u>HATCH PLATE GROUND BAR:</u> 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) <u>EXTERIOR CABLE ENTRY PORT GROUND BARS:</u> 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) <u>TELCO GROUND BAR:</u> BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

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

(K) <u>INTERIOR UNIT BONDS:</u> 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) <u>FENCE AND GATE GROUNDING:</u> 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) <u>EXTERIOR UNIT BONDS:</u> METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) <u>ICE BRIDGE SUPPORTS:</u> 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, LLC. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3

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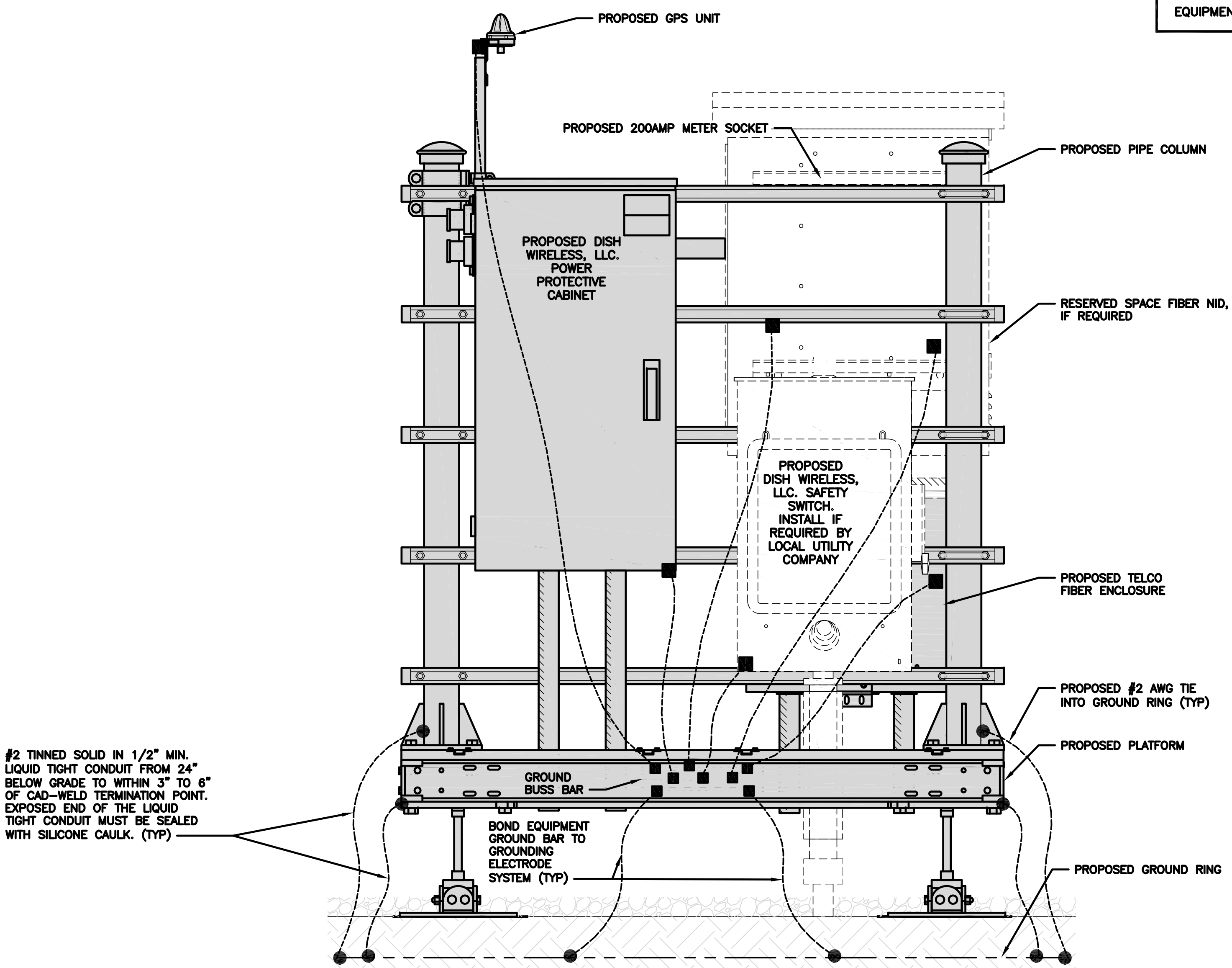
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
GROUNDING PLANS AND NOTES

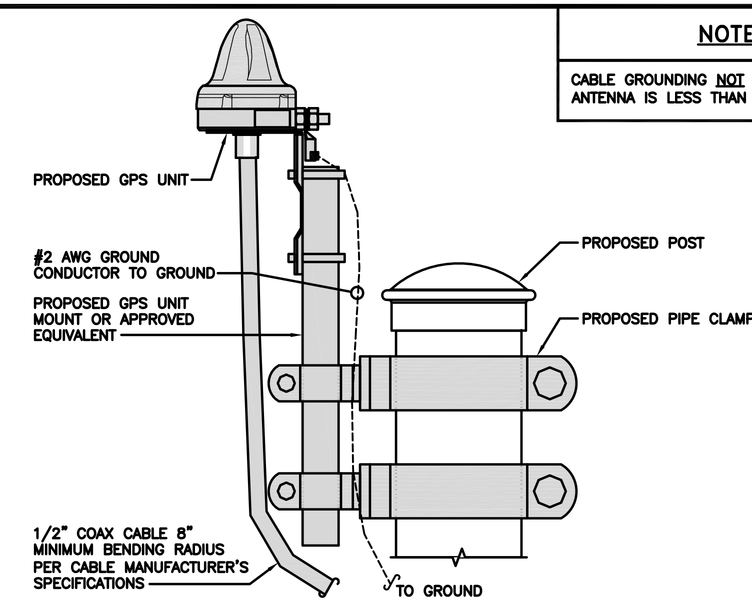
SHEET NUMBER
G-1

NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY

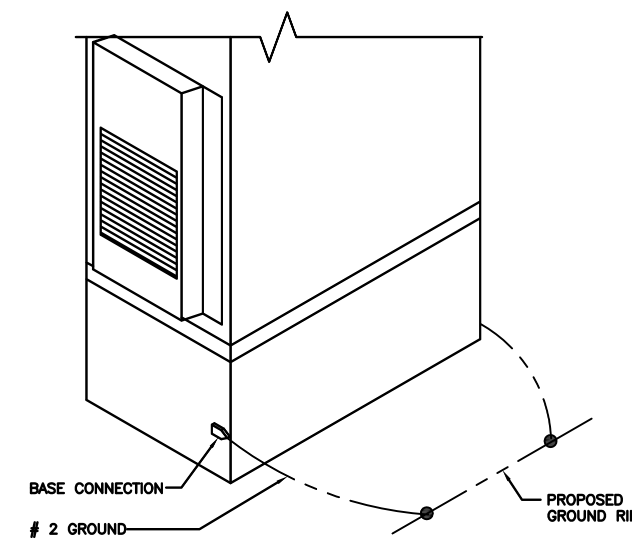


H-FRAME GROUNDING DETAIL	NO SCALE	1

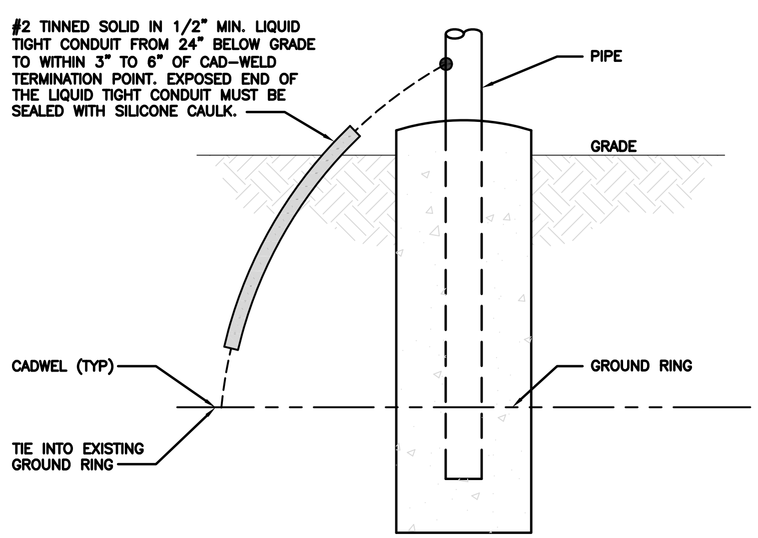
NOTES
CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET



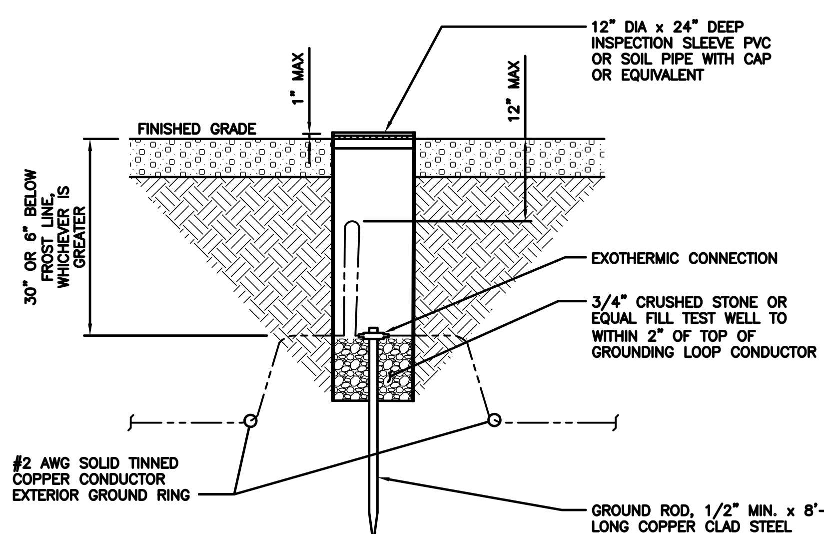
TYPICAL GPS UNIT GROUNDING	NO SCALE	2



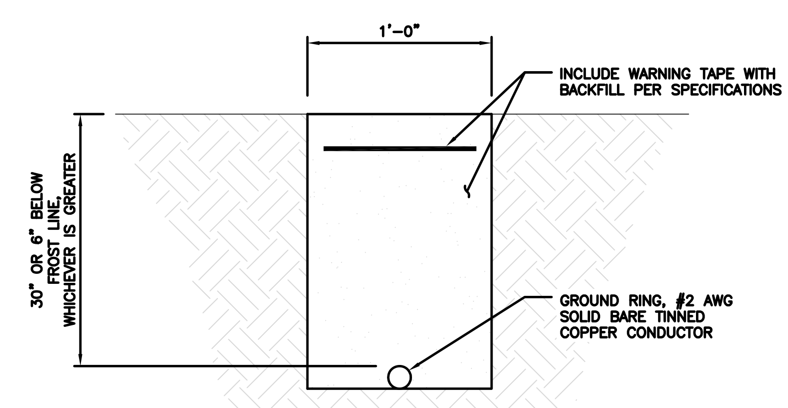
OUTDOOR CABINET GROUNDING	NO SCALE	3



TRANSITIONING GROUND DETAIL	NO SCALE	4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE	NO SCALE	5



TYPICAL GROUND RING TRENCH	NO SCALE	6

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SHEET TITLE

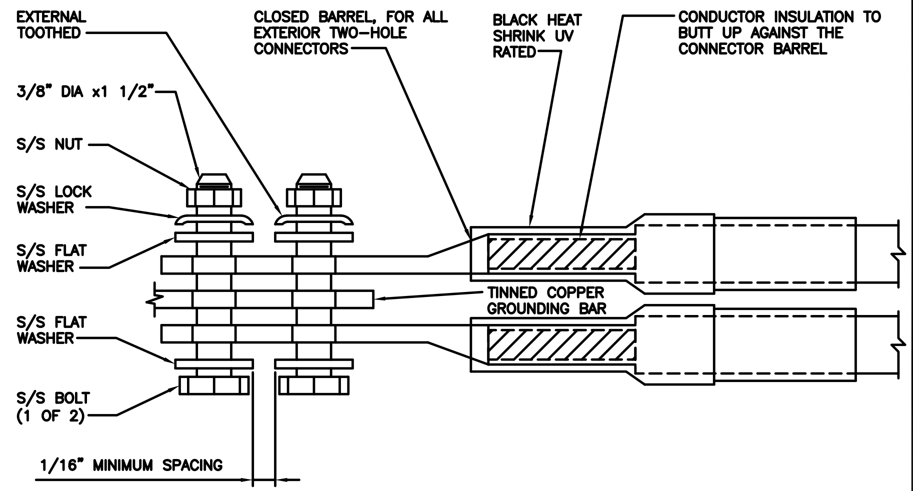
GROUNDING DETAILS

SHEET NUMBER

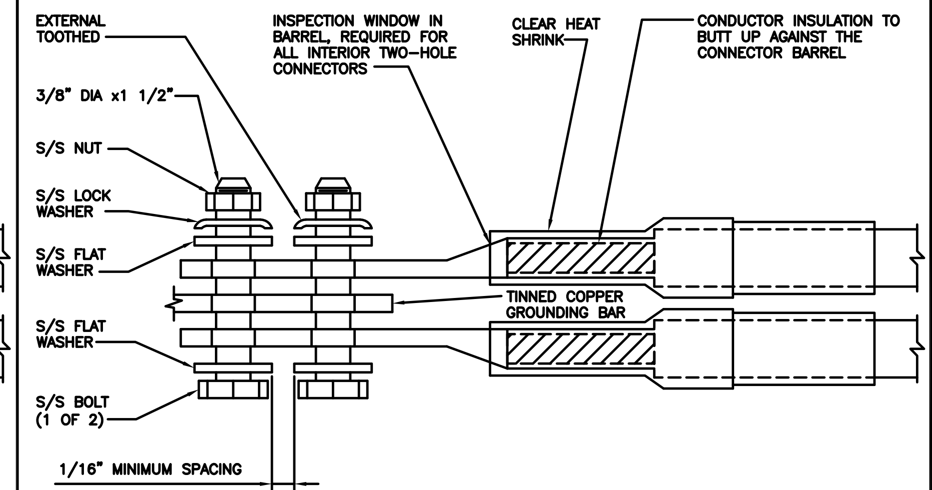
G-2

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

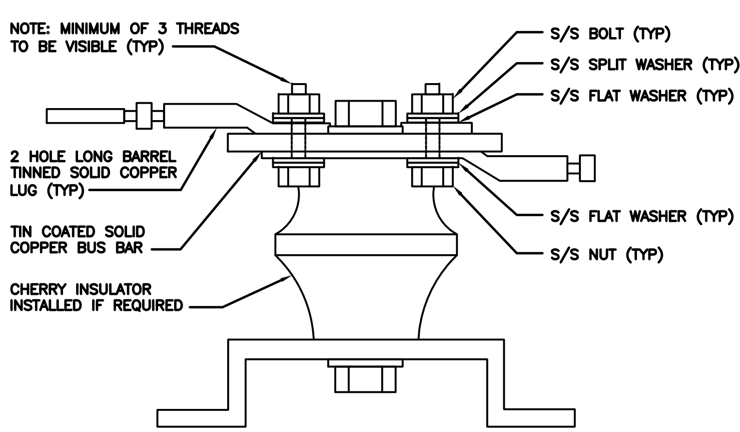
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

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

HYBRID/DISCREET CABLES

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

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

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

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

MID–BAND RRH
(AWS BANDS N66+N70)

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

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

HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3 COAX#1 (ALPHA)	CANISTER COAX #2 (ALPHA)
RED	RED	RED	RED
BLUE	BLUE		
GREEN	GREEN		RED
ORANGE	YELLOW		
PURPLE			

FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

POWER CABLES TO RRHs

LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

RET MOTORS AT ANTENNAS

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

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

ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN	ANTENNA 1 MID BAND IN	ANTENNA 1 LOW BAND IN
RED	RED	BLUE	BLUE	GREEN	GREEN
PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE

MICROWAVE RADIO LINKS

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

MICROWAVE CABLES WILL REQUIRE P–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.

FORWARD AZIMUTH OF 0–120 DEGREES		FORWARD AZIMUTH OF 120–240 DEGREES		FORWARD AZIMUTH OF 240–359 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED		BLUE		GREEN
	WHITE		WHITE		WHITE

RF CABLE COLOR CODES — 1

LOW BANDS (N71+N26) OPTIONAL – (N29)	AWS (N66+N70+H–BLOCK)
ORANGE	PURPLE

CBRS TECH (3 GHz)	NEGATIVE SLANT PORT ON ANT/RRH
YELLOW	WHITE

ALPHA SECTOR	BETA SECTOR	GAMMA SECTOR
RED	BLUE	GREEN

COLOR IDENTIFIER — 2

NOT USED — 3

NOT USED — 4

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SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER
RF-1

LEGEND	SYMBOL
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

LEGEND

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

ABBREVIATIONS

dish wireless.
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RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS
2	11/03/21	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SITE ACTIVITY REQUIREMENTS:

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

2. "LOOK UP" – DISH WIRELESS, LLC. 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, LLC. AND DISH WIRELESS, LLC. 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, LLC. 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, LLC. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS, LLC. 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, LLC. 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, LLC. 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, LLC.

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, LLC. 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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RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

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, LLC. 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, LLC.".

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

dish wireless.

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RCD	SS	CJW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	09/24/21	ISSUED FOR PERMIT
1	10/18/21	REVISED PER COMMENTS
2	11/03/21	REVISED PER COMMENTS

A&E PROJECT NUMBER
2039-Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-3

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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A&E PROJECT NUMBER

2039–Z5555C

DISH WIRELESS, LLC.
PROJECT INFORMATION
BOHVN00184A
NAUGATUCK
641 MAPLE HILL ROAD
NAUGATUCK, CT 06770

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

Exhibit D

Structural Analysis Report

AIROSMITH ENGINEERING

Structural Analysis Report

December 7, 2021

Tarpon Site Name:	Naugatuck
Tarpon Site ID:	CT1008
Dish Network Site ID:	BOHVN00184A
Airosmith Project ID:	Tarpon ENG 2020
Site Location	641 Maple Hill Road Naugatuck, CT 06770 New Haven County 41° 29' 17.24" N NAD83 73° 01' 12.73" W NAD83
Applicable Code	2018 CT State Building Code / 2015 IBC
Applicable Design Standard	ANSI/TIA-222-H
Structure	180' Monopole
Demand-Capacity Ratio (CSR)	79.5%
Overall Result	Pass

PREPARED FOR:

TARPON TOWERS

12/7/2021

APPROVED BY: Joseph R. Johnston, P.E.
CT License #: PEN.0029460

318 West Avenue, Saratoga Springs, NY 12866
Main Office / Fax: 518-306-1711
www.airosmithdevelopment.com

Table of Contents

1.0 Scope

Airosmith Engineering has been requested to perform a structural analysis on the existing 180 ft Monopole for Dish Network's proposed install. The structure was analyzed using tnxTower Version 8.0.7 analysis software. Selected output from the analysis is included in this report.

The proposed Dish Network install consists of installing (1) new platform mount, (3) new panel antennas, (6) new radio units, (1) new surge suppressor, and (1) new hybrid line.

2.0 Supporting Documentation

Collocation Application	Dish Network App, dated 3/8/2021
Tower Design Drawings	TAPP Customer Reference #TP-16944, dated 11/7/2018
Foundation Design Drawings	TAPP Customer Job #23518-555 dated 11/7/2018
Geotechnical Report	Welti Geotechnical, dated 9/24/2018

3.0 Analysis Code Requirements

Wind Speed	125 mph (3-Second Gust)
Wind Speed with Ice	50 mph (3-Second Gust) w/ 1.0" ice
Design Standard	ANSI/TIA-222-H
Adopted IBC	2018 CT State Building Code / 2015 IBC
Risk Category	II
Exposure Category	C
Topographic Factor Procedure	Method 1, Category 1
Crest Height	0 ft.
HSML (ft.)	690.0 ft.

4.0 Existing & Reserved Loading

RAD Center (ft.)	Qty.	Appurtenance	Mount Type	Lines	Carrier
177.0	2	DB Spectra DS1F03F36D-D	Platform w/ Handrails	(8) 7/8”	Borough of Naugatuck
	2	DB Spectra DS4C06F36D-D			
167.0	4	Ericsson AIR32	Low Profile Platform	(4) ¼” Fiber (1) 5/16” Fiber (2) CAT6	T-Mobile
	4	RFS APXVAA24_43-U-A20			
	4	RFS APX16DWV16DWVSEA20			
	1	Commscope VHLP1-23-CR4B			
	4	Ericsson RRUS-11 B12			
	4	Ericsson RRUS-11 B4			
	4	Ericsson Radio 4478 B71			
	4	Micro Data Telecom MI-554nn Diplexer			

5.0 To Be Removed Loading

RAD Center (ft.)	Qty.	Appurtenance	Mount Type	Lines	Carrier
No loading considered to be removed					

6.0 Proposed Loading

RAD Center (ft.)	Qty.	Appurtenance*	Mount Type	Lines	Carrier
157.0	3	JMA Wireless MX08FRO665 -21	Platform w/ Handrails	(1) 1-5/8” Hybrid	Dish Network
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	1	Generic Junction Box			

*The results of this analysis considers Dish Networks full 11,000 in^2 MLA loading

7.0 Final Configuration

RAD Center (ft.)	Qty.	Appurtenance	Mount Type	Lines	Carrier
177.0	2	DB Spectra DS1F03F36D-D	Platform w/ Handrails	(8) 7/8"	Borough of Naugatuck
	2	DB Spectra DS4C06F36D-D			
167.0	4	Ericsson AIR32	Low Profile Platform	(4) ¼" Fiber (1) 5/16" Fiber (2) CAT6	T-Mobile
	4	RFS APXVAA24_43-U-A20			
	4	RFS APX16DWV16DWVSEA20			
	1	Commscope VHLP1-23-CR4B			
	4	Ericsson RRUS-11 B12			
	4	Ericsson RRUS-11 B4			
	4	Ericsson Radio 4478 B71			
	4	Micro Data Telecom MI-554nn Diplexer			
157.0	3	JMA Wireless MX08FRO665 -21	Platform w/ Handrails	(1) 1-5/8" Hybrid	Dish Network
	3	Fujitsu TA08025-B604			
	3	Fujitsu TA08025-B605			
	1	Generic Junction Box			

*The results of this analysis considers Dish Networks full 11,000 in^2 MLA loading

Coax lines are assumed to be installed inside the pole.

8.0 Results and Conclusions

Upon reviewing the results of this analysis, it is our opinion that the existing structure meets the specified code requirements. The 180' monopole structure and foundation are considered acceptable to support the final loading configuration as listed within in this report. The controlling structure and foundation usages are displayed in the tables below:

Structure Usages

Component	Controlling Usage*
Pole	79.5%
Base Plate	55.6%
Anchor Bolts	64.8%

*Listed usage is for the controlling component. Refer to the appendix for detailed results on each individual member

Foundation Usages

Component	Design Reaction	Analysis Reaction	Usage
Axial (kips)	61.0	47.7	78.2%
Shear (kips)	44.0	33.9	77.0%
Moment (k-ft)	5932.0	4203.0	70.9%

The tower foundation is acceptable in comparison to original design reactions.

We appreciate the opportunity to be of service on this project. 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:

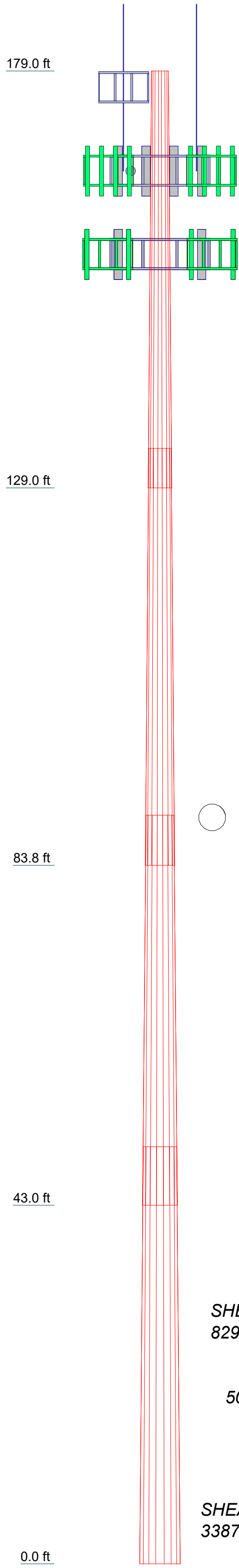
engineering@airosmithdevelopment.com

9.0 Assumptions & Limitations

The following assumptions have been made for this analysis:

- Structural calculations are completed assuming all information provided to Airosmith Development is accurate and applicable to this site.
- The existing structures were designed, manufactured, and constructed in accordance with the applicable codes and standards in effect at that time
- The existing structures have been properly maintained in accordance with industry standards.
- All structural and foundation elements, unless otherwise noted, are in good condition, and are capable of supporting their original design capacity.
- Steel grades have been assumed as follows, unless otherwise noted
  - Channel, Solid Round, Angle & Plate — ASTM A36 Gr. 36
  - HSS (Rectangular) — ASTM A500 Gr. B
  - HSS (Pipe) — ASTM A53 Gr. B
  - Threaded Rods — ASTM A36 Gr. 36
- Calculation-specific assumptions are as noted in the attached appendix

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	50.00	18	0.1875	4.75	24.0000	33.8500	A572-65	2909.8
2	50.00	18	0.3125	6.00	32.5393	42.3892		6269.6
3	46.75	18	0.3750	7.00	40.5823	49.7920		8485.0
4	50.00	18	0.4375		47.6630	57.5130		12321.1
								29985.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Angle Platform w/ Handrails (Borough of Naugatuck)	177	(2) RRUS 11 (Band 12) (T-Mobile)	167
(2) DS1F03F36D-D (Borough of Naugatuck)	177	RRUS 11 (Band 12) (T-Mobile)	167
(2) DS4C06F36D-D (Borough of Naugatuck)	177	RRUS 11 (Band 12) (T-Mobile)	167
Angle Low Profile Platform (T-Mobile)	167	(2) RRUS 11 (Band 4) (T-Mobile)	167
(2) AIR 32 (T-Mobile)	167	RRUS 11 (Band 4) (T-Mobile)	167
AIR 32 (T-Mobile)	167	RRUS 11 (Band 4) (T-Mobile)	167
AIR 32 (T-Mobile)	167	(2) RRH-4478 (T-Mobile)	167
(2) APXVAARR24_43-U-NA20 (T-Mobile)	167	RRH-4478 (T-Mobile)	167
APXVAARR24_43-U-NA20 (T-Mobile)	167	RRH-4478 (T-Mobile)	167
APXVAARR24_43-U-NA20 (T-Mobile)	167	(2) MI-554nn (T-Mobile)	167
(2) APX16DWV-16DWVS-E-A20 (T-Mobile)	167	MI-554nn (T-Mobile)	167
APX16DWV-16DWVS-E-A20 (T-Mobile)	167	MI-554nn (T-Mobile)	167
APX16DWV-16DWVS-E-A20 (T-Mobile)	167	VHLP1-23	167
		Reserved Loading (1/3*11,000 sq. in) (Dish Network)	157
		Reserved Loading (1/3*11,000 sq. in) (Dish Network)	157
		Reserved Loading (1/3*11,000 sq. in) (Dish Network)	157

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 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 1 with Crest Height of 0.00 ft
7. TOWER RATING: 79.5%

ALL REACTIONS ARE FACTORED

AXIAL 62573 lb

SHEAR 8292 lb

MOMENT 1035 kip-ft

TORQUE 6 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 47734 lb

SHEAR 33877 lb

MOMENT 4203 kip-ft

TORQUE 25 kip-ft
REACTIONS - 125 mph WIND

Airosmith Development	Job: CT1008 Naugatuck		
318 West Avenue	Project: Tarpon ENG 2020		
Saratoga Springs, NY 12866	Client: Tarpon Towers	Drawn by: BDavenport	App'd:
Phone: (518) 307-8700	Code: TIA-222-H	Date: 03/09/21	Scale: NTS
FAX:	Path: C:\Users\bdavenport\Desktop\CT1008 Naugatuck.eri		Dwg No. E-1

Tower Input Data

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

- Tower base elevation above sea level: 690.00 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 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.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	179.00-129.00	50.00	4.75	18	24.0000	33.8500	0.1875	0.7500	A572-65 (65 ksi)
L2	129.00-83.75	50.00	6.00	18	32.5393	42.3892	0.3125	1.2500	A572-65 (65 ksi)
L3	83.75-43.00	46.75	7.00	18	40.5823	49.7920	0.3750	1.5000	A572-65 (65 ksi)
L4	43.00-0.00	50.00		18	47.6630	57.5130	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	*Tip Dia.* *in*	*Area* in^2	*I* in^4	*r* *in*	*C* *in*	*I/C* in^3	*J* in^4	*It/Q* in^2	*w* *in*	*w/t*
L1	24.3413	14.1714	1015.2211	8.4534	12.1920	83.2694	2031.7780	7.0871	3.8940	20.768
	34.3433	20.0334	2868.0370	11.9502	17.1958	166.7871	5739.8478	10.0186	5.6276	30.014
L2	33.9432	31.9649	4194.1497	11.4405	16.5299	253.7305	8393.8181	15.9855	5.1769	16.566
	42.9950	41.7349	9335.1426	14.9372	21.5337	433.5124	18682.5687	20.8714	6.9105	22.114
L3	42.3507	47.8567	9774.3695	14.2736	20.6158	474.1207	19561.6003	23.9329	6.4825	17.287
	50.5023	58.8186	18146.9971	17.5430	25.2943	717.4332	36317.8726	29.4149	8.1034	21.609
L4	49.7311	65.5785	18477.8792	16.7651	24.2128	763.1450	36980.0721	32.7955	7.6187	17.414
	58.3327	79.2565	32619.0722	20.2618	29.2166	1116.4567	65281.0654	39.6358	9.3523	21.377

Tower Elevation *ft*	*Gusset Area (per face)* ft^2	*Gusset Thickness* *in*	*Gusset Grade*	*Adjust. Factor* A_f	*Adjust. Factor* A_r	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals* *in*	*Double Angle Stitch Bolt Spacing Horizontals* *in*	*Double Angle Stitch Bolt Spacing Redundants* *in*
L1 179.00-129.00				1	1	1			
L2 129.00-83.75				1	1	1			
L3 83.75-43.00				1	1	1			
L4 43.00-0.00				1	1	1			

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*
7/8" Coax	C	No	No	Inside Pole	177.00 - 0.00	8	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
**									
1/4" Coax	C	No	No	Inside Pole	167.00 - 0.00	4	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
5/16" coax	C	No	No	Inside Pole	167.00 - 0.00	1	No Ice	0.00	0.05
							1/2" Ice	0.00	0.05
							1" Ice	0.00	0.05
CAT6	C	No	No	Inside Pole	167.00 - 0.00	2	No Ice	0.00	0.05
							1/2" Ice	0.00	0.05

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
							1" Ice	0.00	0.05
***									
1-5/8" Hybird	C	No	No	Inside Pole	157.00 - 0.00	1	No Ice	0.00	1.00
							1/2" Ice	0.00	1.00
							1" Ice	0.00	1.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
L1	179.00-129.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	161.86
L2	129.00-83.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	175.12
L3	83.75-43.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	157.70
L4	43.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	166.41

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
L1	179.00-129.00	A	0.991	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	161.86
L2	129.00-83.75	A	0.955	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	175.12
L3	83.75-43.00	A	0.907	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	157.70
L4	43.00-0.00	A	0.815	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	166.41

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	179.00-129.00	0.0000	0.0000	0.0000	0.0000
L2	129.00-83.75	0.0000	0.0000	0.0000	0.0000
L3	83.75-43.00	0.0000	0.0000	0.0000	0.0000
L4	43.00-0.00	0.0000	0.0000	0.0000	0.0000

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
Angle Platform w/ Handrails	A	From Face	4.00	0.0000	177.00	No Ice	42.40	42.40	2000.00
(Borough of Naugatuck)			0.00			1/2" Ice	48.40	48.40	2450.00
			0.00			1" Ice	54.40	54.40	2900.00
(2) DS1F03F36D-D	A	From Face	4.00	0.0000	177.00	No Ice	5.58	5.58	63.00
(Borough of Naugatuck)			0.00			1/2" Ice	7.83	7.83	104.18
			0.00			1" Ice	10.11	10.11	159.39
(2) DS4C06F36D-D	B	From Face	4.00	0.0000	177.00	No Ice	6.16	6.16	50.00
(Borough of Naugatuck)			0.00			1/2" Ice	8.18	8.18	94.30
			0.00			1" Ice	10.17	10.17	150.92
***									
Angle Low Profile Platform	A	From Face	4.00	0.0000	167.00	No Ice	26.10	26.10	1500.00
(T-Mobile)			0.00			1/2" Ice	31.60	31.60	1700.00
			0.00			1" Ice	37.10	37.10	1900.00
(2) AIR 32	A	From Face	4.00	0.0000	167.00	No Ice	5.80	4.41	108.50
(T-Mobile)			0.00			1/2" Ice	6.16	4.75	150.34
			0.00			1" Ice	6.52	5.10	197.22
AIR 32	B	From Face	4.00	0.0000	167.00	No Ice	5.80	4.41	108.50
(T-Mobile)			0.00			1/2" Ice	6.16	4.75	150.34
			0.00			1" Ice	6.52	5.10	197.22
AIR 32	C	From Face	4.00	0.0000	167.00	No Ice	5.80	4.41	108.50
(T-Mobile)			0.00			1/2" Ice	6.16	4.75	150.34
			0.00			1" Ice	6.52	5.10	197.22
(2)	A	From Face	3.00	0.0000	167.00	No Ice	8.73	3.20	127.80
APXVAARR24_43-U-NA20			0.00			1/2" Ice	9.33	4.11	165.83
(T-Mobile)			0.00			1" Ice	9.93	5.04	210.98
APXVAARR24_43-U-NA20	B	From Face	3.00	0.0000	167.00	No Ice	8.73	3.20	127.80
(T-Mobile)			0.00			1/2" Ice	9.33	4.11	165.83
			0.00			1" Ice	9.93	5.04	210.98
APXVAARR24_43-U-NA20	C	From Face	3.00	0.0000	167.00	No Ice	8.73	3.20	127.80
(T-Mobile)			0.00			1/2" Ice	9.33	4.11	165.83
			0.00			1" Ice	9.93	5.04	210.98
(2)	A	From Face	3.00	0.0000	167.00	No Ice	8.34	4.61	53.90
APX16DWV-16DWVS-E-A			0.00			1/2" Ice	8.75	4.99	106.81
20			0.00			1" Ice	9.17	5.38	165.33
(T-Mobile)									
APX16DWV-16DWVS-E-A	B	From Face	3.00	0.0000	167.00	No Ice	8.34	4.61	53.90
20			0.00			1/2" Ice	8.75	4.99	106.81
(T-Mobile)			0.00			1" Ice	9.17	5.38	165.33
APX16DWV-16DWVS-E-A	C	From Face	3.00	0.0000	167.00	No Ice	8.34	4.61	53.90

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*
20			0.00			1/2" Ice	8.75	4.99	106.81
(T-Mobile)			0.00			1" Ice	9.17	5.38	165.33
(2) RRUS 11 (Band 12)	A	From Face	3.00	0.0000	167.00	No Ice	2.52	1.07	55.00
(T-Mobile)			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 11 (Band 12)	B	From Face	3.00	0.0000	167.00	No Ice	2.52	1.07	55.00
(T-Mobile)			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 11 (Band 12)	C	From Face	3.00	0.0000	167.00	No Ice	2.52	1.07	55.00
(T-Mobile)			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
(2) RRUS 11 (Band 4)	A	From Face	3.00	0.0000	167.00	No Ice	2.57	1.07	44.00
(T-Mobile)			0.00			1/2" Ice	2.76	1.21	63.57
			0.00			1" Ice	2.97	1.36	86.08
RRUS 11 (Band 4)	B	From Face	3.00	0.0000	167.00	No Ice	2.57	1.07	44.00
(T-Mobile)			0.00			1/2" Ice	2.76	1.21	63.57
			0.00			1" Ice	2.97	1.36	86.08
RRUS 11 (Band 4)	C	From Face	3.00	0.0000	167.00	No Ice	2.57	1.07	44.00
(T-Mobile)			0.00			1/2" Ice	2.76	1.21	63.57
			0.00			1" Ice	2.97	1.36	86.08
(2) RRH-4478	A	From Face	3.00	0.0000	167.00	No Ice	2.57	1.07	44.00
(T-Mobile)			0.00			1/2" Ice	2.76	1.21	63.57
			0.00			1" Ice	2.97	1.36	86.08
RRH-4478	B	From Face	3.00	0.0000	167.00	No Ice	2.57	1.07	44.00
(T-Mobile)			0.00			1/2" Ice	2.76	1.21	63.57
			0.00			1" Ice	2.97	1.36	86.08
RRH-4478	C	From Face	3.00	0.0000	167.00	No Ice	2.57	1.07	44.00
(T-Mobile)			0.00			1/2" Ice	2.76	1.21	63.57
			0.00			1" Ice	2.97	1.36	86.08
(2) MI-554nn	A	From Face	3.00	0.0000	167.00	No Ice	0.62	0.45	14.77
(T-Mobile)			0.00			1/2" Ice	0.72	0.54	20.63
			0.00			1" Ice	0.84	0.65	28.16
MI-554nn	B	From Face	3.00	0.0000	167.00	No Ice	0.62	0.45	14.77
(T-Mobile)			0.00			1/2" Ice	0.72	0.54	20.63
			0.00			1" Ice	0.84	0.65	28.16
MI-554nn	C	From Face	3.00	0.0000	167.00	No Ice	0.62	0.45	14.77
(T-Mobile)			0.00			1/2" Ice	0.72	0.54	20.63
			0.00			1" Ice	0.84	0.65	28.16
**									
Reserved Loading	A	From Face	4.00	0.0000	157.00	No Ice	25.46	25.46	1200.00
(1/3*11,000 sq. in)			0.00			1/2" Ice	26.83	26.83	1560.00
(Dish Network)			0.00			1" Ice	28.21	28.21	1920.00
Reserved Loading	B	From Face	4.00	0.0000	157.00	No Ice	25.46	25.46	1200.00
(1/3*11,000 sq. in)			0.00			1/2" Ice	26.83	26.83	1560.00
(Dish Network)			0.00			1" Ice	28.21	28.21	1920.00
Reserved Loading	C	From Face	4.00	0.0000	157.00	No Ice	25.46	25.46	1200.00
(1/3*11,000 sq. in)			0.00			1/2" Ice	26.83	26.83	1560.00
(Dish Network)			0.00			1" Ice	28.21	28.21	1920.00

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
VHLP1-23	A	Paraboloid w/Shroud (HP)	From Face	3.00 0.00 0.00	0.0000		167.00	1.27	No Ice 1/2" Ice 1" Ice	1.28 1.45 1.62	14.00 21.44 28.89

Load Combinations

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

Airosmith Development
318 West Avenue
Saratoga Springs, NY 12866
Phone: (518) 307-8700
FAX:

Comb. No.	Description
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	179 - 129	30.874	49	1.6653	0.0641
L2	133.75 - 83.75	16.532	49	1.2437	0.0226
L3	89.75 - 43	7.117	49	0.7708	0.0093
L4	50 - 0	2.168	49	0.3961	0.0037

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.00	Angle Platform w/ Handrails	49	30.195	1.6476	0.0619	36236
167.00	VHLP1-23	49	26.818	1.5586	0.0514	15098
157.00	Reserved Loading (1/3*11,000 sq. in)	49	23.521	1.4681	0.0413	8235

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	179 - 129	136.283	22	7.0489	0.2929
L2	133.75 - 83.75	74.334	22	5.5320	0.1035
L3	89.75 - 43	32.233	22	3.4788	0.0424
L4	50 - 0	9.852	22	1.7981	0.0169

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.00	Angle Platform w/ Handrails	22	133.369	6.9895	0.2831	9452
167.00	VHLP1-23	22	118.867	6.6891	0.2345	3937
157.00	Reserved Loading (1/3*11,000 sq. in)	22	104.677	6.3753	0.1887	2145

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	179 - 129 (1)	TP33.85x24x0.1875	50.00	0.00	0.0	19.4765	-12418.60	1139380.00	0.011
L2	129 - 83.75 (2)	TP42.3893x32.5393x0.3125	50.00	0.00	0.0	40.5625	-19884.50	2372910.00	0.008
L3	83.75 - 43 (3)	TP49.792x40.5823x0.375	46.75	0.00	0.0	57.1772	-30146.20	3344870.00	0.009
L4	43 - 0 (4)	TP57.513x47.663x0.4375	50.00	0.00	0.0	79.2565	-47709.50	4636500.00	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	179 - 129 (1)	TP33.85x24x0.1875	609.87	781.36	0.781	0.00	781.36	0.000
L2	129 - 83.75 (2)	TP42.3893x32.5393x0.3125	1566.47	2307.21	0.679	0.00	2307.21	0.000
L3	83.75 - 43 (3)	TP49.792x40.5823x0.375	2624.61	3848.78	0.682	0.00	3848.78	0.000
L4	43 - 0 (4)	TP57.513x47.663x0.4375	4202.66	6298.73	0.667	0.00	6298.73	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	179 - 129 (1)	TP33.85x24x0.1875	19267.50	341813.00	0.056	2.94	979.65	0.003
L2	129 - 83.75 (2)	TP42.3893x32.5393x0.3125	24245.60	711872.00	0.034	2.92	2549.47	0.001
L3	83.75 - 43 (3)	TP49.792x40.5823x0.375	28902.50	1003460.00	0.029	2.92	4221.48	0.001
L4	43 - 0 (4)	TP57.513x47.663x0.4375	33895.00	1390950.00	0.024	2.91	6952.51	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	179 - 129 (1)	0.011	0.781	0.000	0.056	0.003	0.795 ✔	1.000	4.8.2 ✔
L2	129 - 83.75 (2)	0.008	0.679	0.000	0.034	0.001	0.689 ✔	1.000	4.8.2 ✔
L3	83.75 - 43 (3)	0.009	0.682	0.000	0.029	0.001	0.692 ✔	1.000	4.8.2 ✔
L4	43 - 0 (4)	0.010	0.667	0.000	0.024	0.000	0.678 ✔	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	179 - 129	Pole	TP33.85x24x0.1875	1	-12418.60	1139380.00	79.5	Pass
L2	129 - 83.75	Pole	TP42.3893x32.5393x0.3125	2	-19884.50	2372910.00	68.9	Pass
L3	83.75 - 43	Pole	TP49.792x40.5823x0.375	3	-30146.20	3344870.00	69.2	Pass
L4	43 - 0	Pole	TP57.513x47.663x0.4375	4	-47709.50	4636500.00	67.8	Pass
							Summary	
						Pole (L1)	79.5	Pass
						RATING =	**79.5**	**Pass**

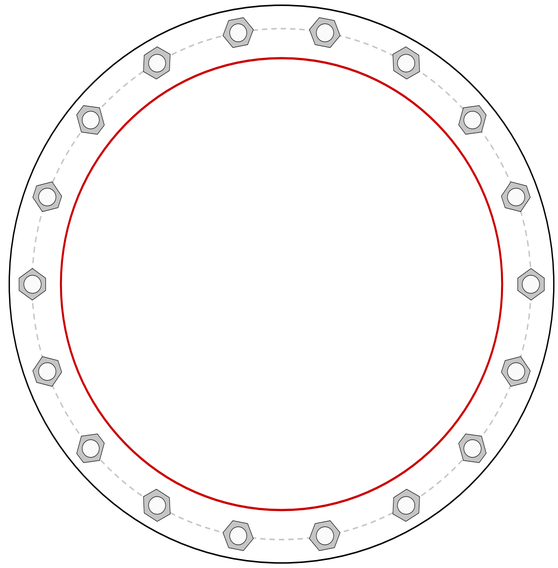
Monopole Base Plate Connection

Site Info	
BU #	
Site Name	CT1008
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{ar} (in)	3

Applied Loads	
Moment (kip-ft)	4202.66
Axial Force (kips)	47.71
Shear Force (kips)	33.89

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(18) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 65" BC

Base Plate Data

71" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

57.513" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 174.98	ϕPn_c = 268.39	**Stress Rating**
Vu = 1.88	ϕVn = 120.77	**64.8%**
Mu = 3.67	ϕMn = 128.14	**Pass**

Base Plate Summary

Max Stress (ksi):	26.25	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**55.6%**	**Pass**

Exhibit E

Mount Analysis

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1033 WATERVLIET SHAKER RD ALBANY, NY 12205

Mount Analysis Report

October 29, 2021

Dish Wireless Site Number	BOHVN00184A
Job Number	2039-Z5555C
Client	Northeast Site Solutions
Carrier	Dish Wireless
Site Location	641 Maple Hill Road, Naugatuck, CT 06770 41.4881 N NAD83 73.0202 W NAD83
Mount Centerline EL.	157 ft
Mount Classification	Platform
Structural Usage Ratio	**58%**
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 platform for the proposed carrier is therefore deemed **adequate** to support the final loading configuration as listed in this report.

STATE OF CONNECTICUT
DMITRIY V. ALBUL
No. 26725
LICENSED
PROFESSIONAL ENGINEER

10-29-21

Dmitriy Albul, P.E.
Engineering Consultant to Infinigy

Contents

October 29, 2021

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 analysis software.

Supporting Documentation

Platform Drawings	SitePro1 Assembly Drawings No. SNP8HR-3XX
Construction Drawings	Infinigy Engineering PLLC, Job No. 2039-Z5555C, dated April 29, 2021
RF Design Sheet	Dish Wireless, dated February 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
Adopted IBC	2018 Connecticut Building Code (2015 IBC)
Structure Class	II
Exposure Category	B
Topographic Method	Method 2
Topographic Category	1
Spectral Response	S_s=0.186, S_1=0.062
Site Class	D – Default (Assumed)
HMSL	690.23 ft.

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The proposed platform is 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

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
157.0	157.0	-	4.0	3	JMA WIRELESS MX08FRO665-21	Dish Wireless
			4.0	3	Fujitsu TA08025-B605	
			4.0	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

Plates	58%	Pass
Cross Arms	37%	Pass
Arms	38%	Pass
Mount Pipes	51%	Pass
Angle	32%	Pass
Handrails	21%	Pass
Frame Rails	17%	Pass
Rating	**58%**	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.

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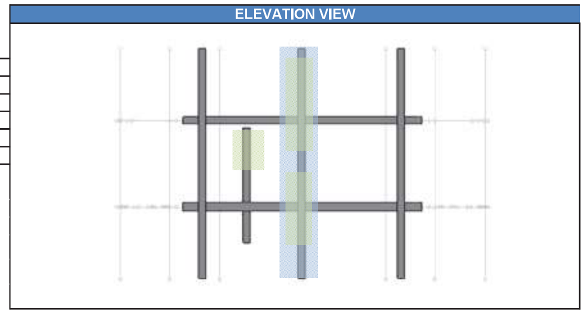
Date:	10/29/2021
Site Name:	BOHVN00184A
Project Engineer:	DVA
Project No:	2039-Z5555C
Customer:	Infinigy Engineering, PLLC
Carrier:	Dish Wireless

Building Code:	2015	
ASCE Standard:	ASCE 7-10	
TIA Standard:	G	
Mount Type:	Platform	
	Proposed	
Mount Centerline:	157	ft
Superstructure Height:	180	ft
Structure Type:	Tower	

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:	1.75	in
Topographic Method:	1	
Topographic Category:	1	

ELEVATION VIEW



Factors	
Gh:	1.000
K_{zmin}:	0.700
K_z:	1.124
K_d:	0.950
K_{zt}:	1.000
Ka:	0.900
I wind:	1.000
I ice:	1.000

Run Seismic?	Yes	
Site Soil:	D (Default)	
Short-Period Accel. (Ss):	0.1860	
1-Second Accel. (S1):	0.0620	
Short-Period Design (SDS):	0.2020	
1-Second Design (SD1):	0.1020	
Short-Period Coeff. (Fa):	1.6000	
1-Second Coeff. (Fv):	2.4000	
Cs	0.1010	
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

q_z:	25.63	psf
Surface Wind Pressure:	0.00	psf

PLAN VIEW

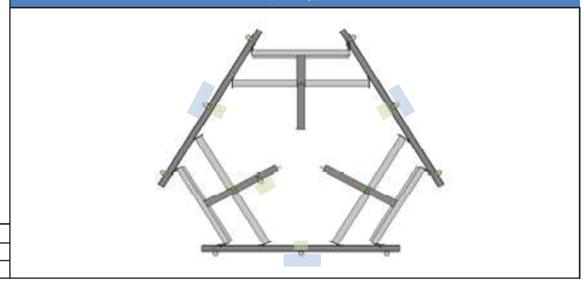


Table 1. Equipment Specifications and Wind Pressure

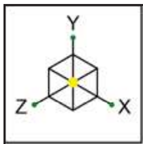
Manufacturer	Model	Elevation	Pipe Label	Weight (lb)	Height (in)	Width (in)	Depth (in)	EPA_N	EPA_T	$EPA_{N\ w/\ ice}$	$EPA_{T\ w/\ ice}$	q_z:	$q_{z\ ice}$:	$q_{z\ live}$:
JMA WIRELESS	MX08FRO665 - 21	157	4, 118, 107	64.50	72	20	8	12.49	5.87	15.18	8.33	25.63	6.83	2.46
Fujitsu	TA08025-B605	157	4, 118, 107	74.95	15.75	14.96	9.06	1.86	1.16	2.80	1.94	25.63	6.83	2.46
Fujitsu	TA08025-B604	157	4, 118, 107	63.93	15.75	14.96	7.87	1.86	1.01	2.80	1.77	25.63	6.83	2.46
Raycap	RDIDC-9181-PF-48	157	104	21.85	16	14	8	1.77	1.05	2.70	1.81	25.63	6.83	2.46

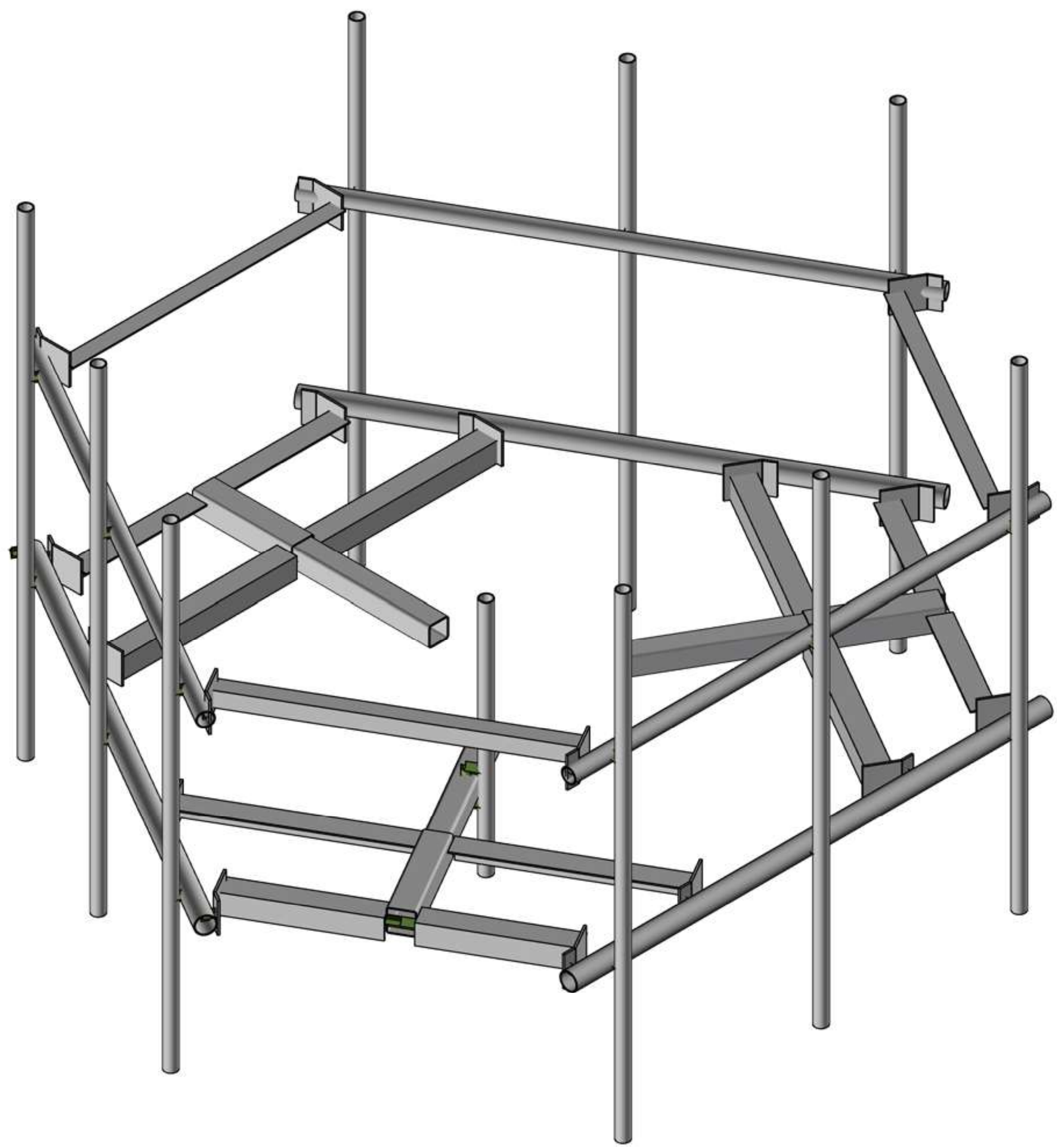
Table 2. Equipment Wind and Seismic Loads

Manufacturer	Model	Wind Load (F_A), lb		Wind Load Ice Case (F_A), lb			Wind Load Service Case		Seismic
JMA WIRELESS	MX08FRO665 - 21	288	135	93	51	306	28	13	6.5
Fujitsu	TA08025-B605	43	27	17	12	55	4	3	7.6
Fujitsu	TA08025-B604	43	23	17	11	54	4	2	6.5
Raycap	RDIDC-9181-PF-48	41	24	17	11	52	4	2	2.2

Table 3. Member Capacities

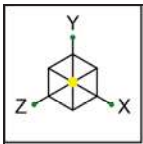
Member Name	Member Shape	Wind load (plf)	Wind Load Ice (plf)	Weight Ice (plf)	Bending Check	Shear Check	Total Capacity	Controlling Capacity
Arm	**HSS4X4X4**	**17.09**	**4.56**	**1.37**	**38%**	**12%**	**38%**	**58%**
Arm 2	**HSS4.5X4.5X3**	**19.22**	**5.13**	**1.46**	**7%**	**10%**	**10%**	
Cross Arm	**L4X4X4**	**17.09**	**4.56**	**1.37**	**37%**	**8%**	**37%**	
Frame Rail	**PIPE_3.0**	**8.97**	**2.39**	**1.28**	**10%**	**17%**	**17%**	
Handrail	**PIPE_2.5**	**7.37**	**1.97**	**1.16**	**16%**	**21%**	**21%**	
Mount Pipe	**PIPE_2.0**	**6.09**	**1.62**	**1.07**	**51%**	**22%**	**51%**	
Plate	**6" x 0.375" Plate**	**25.63**	**6.83**	**1.73**	**58%**	**53%**	**58%**	
Angle	**L3X3X3**	**12.82**	**3.42**	**1.19**	**32%**	**3%**	**32%**	

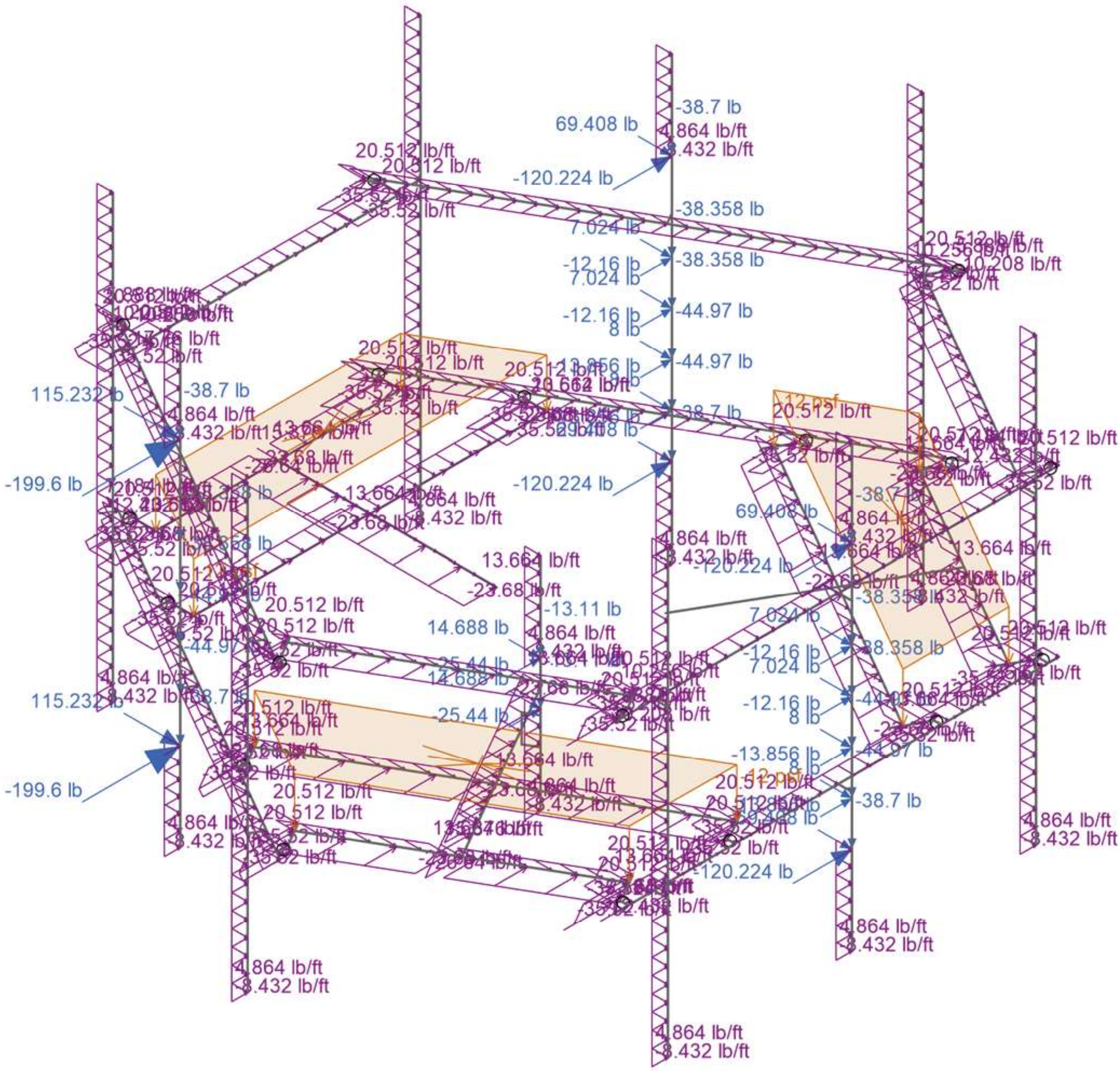




Envelope Only Solution

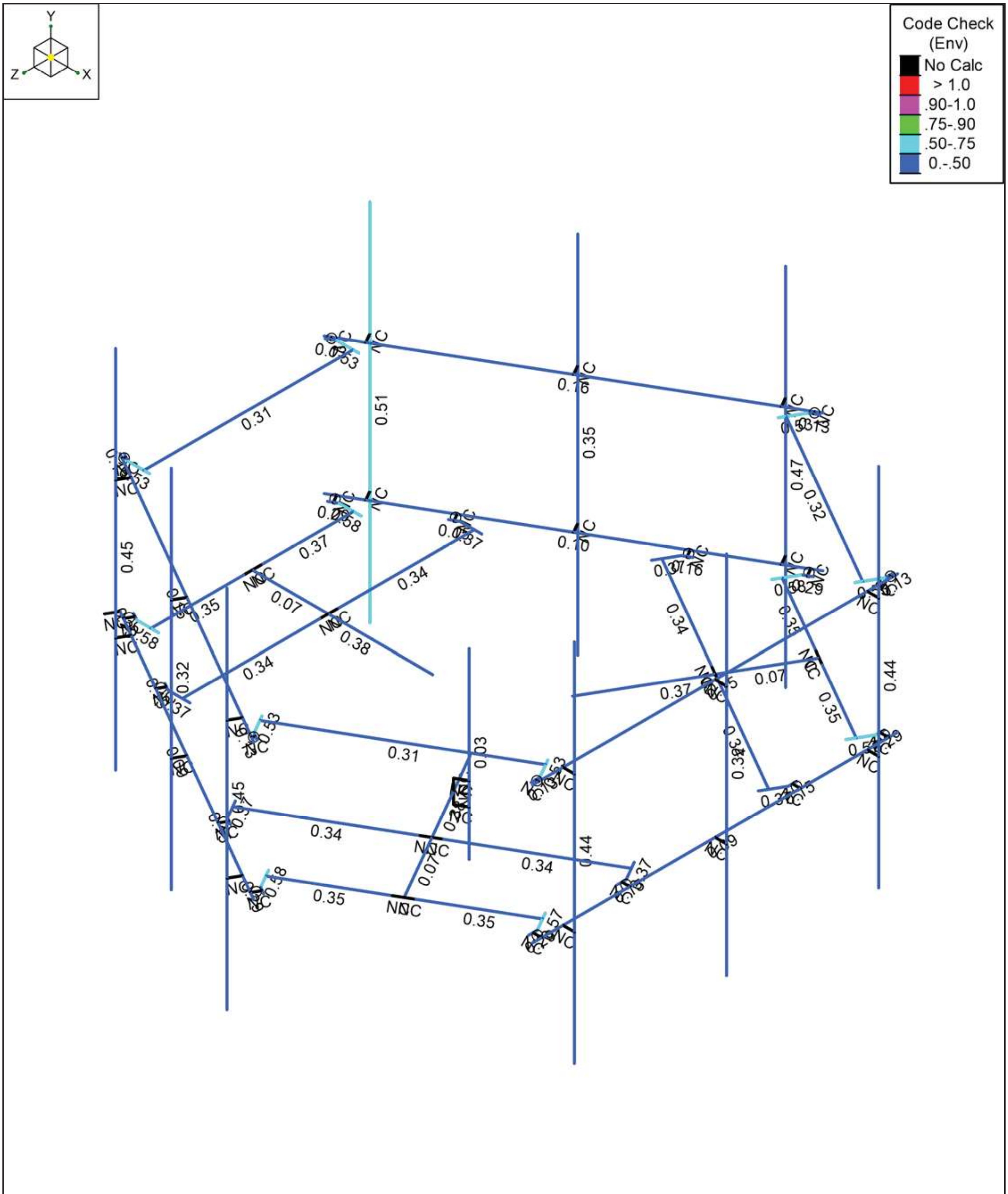
Infinigy Engineering, PLLC	BOHVN00184A	SK-1
DVA		Oct 29, 2021
2039-Z5555C	Proposed Configuration Model	BOHVN00184A.R3D





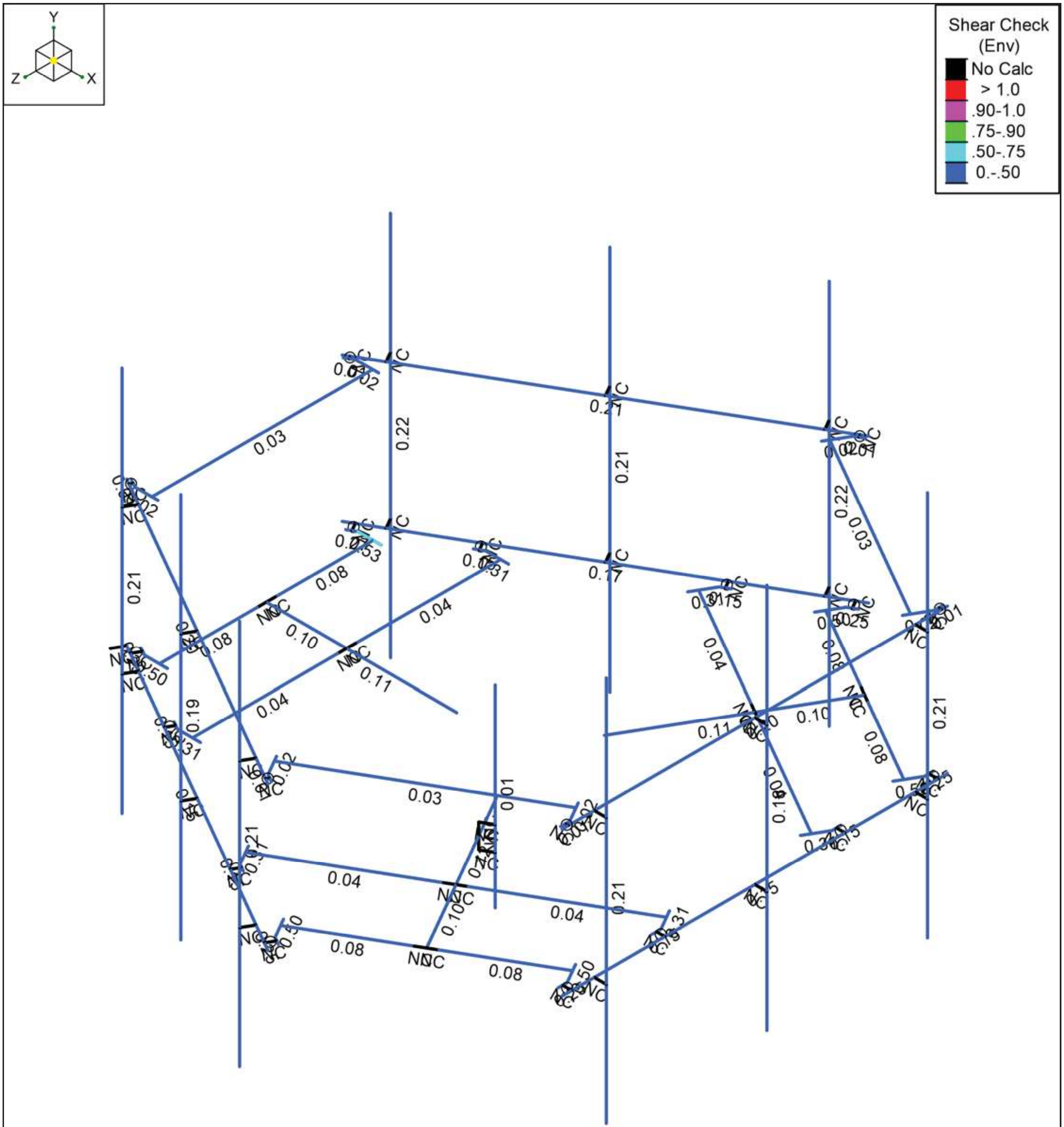
Loads: LC 6, 1.2DL + 1.6WL AZI 120
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00184A	SK-2
DVA		Oct 29, 2021
2039-Z5555C	Controlling Load Case	BOHVN00184A.R3D



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00184A	SK-3
DVA		Oct 29, 2021
2039-Z5555C	Member Bending Check	BOHVN00184A.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Infinigy Engineering, PLLC	BOHVN00184A	SK-4
DVA		Oct 29, 2021
2039-Z5555C	Member Shear Check	BOHVN00184A.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)	12
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		Arm	Beam	Tube	A500 Gr.B Rect	Typical
2	M2	N5	N6		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
3	M3	N7	N8		Handrail	HBrace	Pipe	A53 Gr.B	Typical
4	M4	N10	N11		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
5	M5	N4	N3		Arm 2	Beam	Tube	A500 Gr.B Rect	Typical
6	M6	N15	N35	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N33	N13	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N12	N34	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N36	N14	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N18	N20		Plate	Beam	BAR	A36 Gr.36	Typical
11	M11	N17	N19		Plate	Beam	BAR	A36 Gr.36	Typical
12	M12	N21	N22		Plate	Beam	BAR	A36 Gr.36	Typical
13	M13	N23	N24		Plate	Beam	BAR	A36 Gr.36	Typical
14	M14	N28	N25	90	Angle	HBrace	Single Angle	A36 Gr.36	Typical
15	M15	N26	N27		Plate	Beam	BAR	A36 Gr.36	Typical
16	M16	N29	N30		Plate	Beam	BAR	A36 Gr.36	Typical
17	M17	N31	N9		RIGID	None	None	RIGID	Typical
18	M18	N32	N16		RIGID	None	None	RIGID	Typical
19	M19	N4	N35		RIGID	None	None	RIGID	Typical
20	M20	N4	N33		RIGID	None	None	RIGID	Typical
21	M21	N3	N34		RIGID	None	None	RIGID	Typical
22	M22	N36	N3		RIGID	None	None	RIGID	Typical
23	M23	N19	N37		Plate	Beam	BAR	A36 Gr.36	Typical
24	M24	N22	N38		Plate	Beam	BAR	A36 Gr.36	Typical
25	M25	N39	N41		RIGID	None	None	RIGID	Typical
26	M26	N40	N42		RIGID	None	None	RIGID	Typical
27	M27	N27	N43		Plate	Beam	BAR	A36 Gr.36	Typical
28	M28	N44	N45		RIGID	None	None	RIGID	Typical
29	M29	N20	N46		Plate	Beam	BAR	A36 Gr.36	Typical
30	M30	N24	N47		Plate	Beam	BAR	A36 Gr.36	Typical
31	M31	N48	N50		RIGID	None	None	RIGID	Typical
32	M32	N49	N51		RIGID	None	None	RIGID	Typical
33	M33	N30	N52		Plate	Beam	BAR	A36 Gr.36	Typical
34	M34	N53	N54		RIGID	None	None	RIGID	Typical
35	M35	N56	N57		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
36	M36	N59	N55		RIGID	None	None	RIGID	Typical
37	M37	N60	N58		RIGID	None	None	RIGID	Typical
38	M38	N62	N63		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
39	M39	N65	N61		RIGID	None	None	RIGID	Typical
40	M40	N66	N64		RIGID	None	None	RIGID	Typical
41	M41	N67	N68		Arm	Beam	Tube	A500 Gr.B Rect	Typical
42	M42	N70	N69		Arm 2	Beam	Tube	A500 Gr.B Rect	Typical
43	M43	N74	N91	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
44	M44	N89	N72	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
45	M45	N71	N90	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
46	M46	N92	N73	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
47	M47	N76	N78		Plate	Beam	BAR	A36 Gr.36	Typical
48	M48	N75	N77		Plate	Beam	BAR	A36 Gr.36	Typical
49	M49	N79	N80		Plate	Beam	BAR	A36 Gr.36	Typical
50	M50	N81	N82		Plate	Beam	BAR	A36 Gr.36	Typical
51	M51	N86	N83	90	Angle	HBrace	Single Angle	A36 Gr.36	Typical
52	M52	N84	N85		Plate	Beam	BAR	A36 Gr.36	Typical
53	M53	N87	N88		Plate	Beam	BAR	A36 Gr.36	Typical
54	M54	N70	N91		RIGID	None	None	RIGID	Typical
55	M55	N70	N89		RIGID	None	None	RIGID	Typical
56	M56	N69	N90		RIGID	None	None	RIGID	Typical
57	M57	N92	N69		RIGID	None	None	RIGID	Typical
58	M58	N77	N93		Plate	Beam	BAR	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
59	M59	N80	N94		Plate	Beam	BAR	A36 Gr.36	Typical
60	M60	N95	N97		RIGID	None	None	RIGID	Typical
61	M61	N96	N98		RIGID	None	None	RIGID	Typical
62	M62	N85	N99		Plate	Beam	BAR	A36 Gr.36	Typical
63	M63	N100	N101		RIGID	None	None	RIGID	Typical
64	M64	N78	N102		Plate	Beam	BAR	A36 Gr.36	Typical
65	M65	N82	N103		Plate	Beam	BAR	A36 Gr.36	Typical
66	M66	N104	N106		RIGID	None	None	RIGID	Typical
67	M67	N105	N107		RIGID	None	None	RIGID	Typical
68	M68	N88	N108		Plate	Beam	BAR	A36 Gr.36	Typical
69	M69	N109	N110		RIGID	None	None	RIGID	Typical
70	M70	N111	N112		Arm	Beam	Tube	A500 Gr.B Rect	Typical
71	M71	N114	N113		Arm 2	Beam	Tube	A500 Gr.B Rect	Typical
72	M72	N118	N135	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
73	M73	N133	N116	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
74	M74	N115	N134	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
75	M75	N136	N117	90	Cross Arm	Beam	Single Angle	A36 Gr.36	Typical
76	M76	N120	N122		Plate	Beam	BAR	A36 Gr.36	Typical
77	M77	N119	N121		Plate	Beam	BAR	A36 Gr.36	Typical
78	M78	N123	N124		Plate	Beam	BAR	A36 Gr.36	Typical
79	M79	N125	N126		Plate	Beam	BAR	A36 Gr.36	Typical
80	M80	N130	N127	90	Angle	HBrace	Single Angle	A36 Gr.36	Typical
81	M81	N128	N129		Plate	Beam	BAR	A36 Gr.36	Typical
82	M82	N131	N132		Plate	Beam	BAR	A36 Gr.36	Typical
83	M83	N114	N135		RIGID	None	None	RIGID	Typical
84	M84	N114	N133		RIGID	None	None	RIGID	Typical
85	M85	N113	N134		RIGID	None	None	RIGID	Typical
86	M86	N136	N113		RIGID	None	None	RIGID	Typical
87	M87	N121	N137		Plate	Beam	BAR	A36 Gr.36	Typical
88	M88	N124	N138		Plate	Beam	BAR	A36 Gr.36	Typical
89	M89	N139	N141		RIGID	None	None	RIGID	Typical
90	M90	N140	N142		RIGID	None	None	RIGID	Typical
91	M91	N129	N143		Plate	Beam	BAR	A36 Gr.36	Typical
92	M92	N144	N145		RIGID	None	None	RIGID	Typical
93	M93	N122	N146		Plate	Beam	BAR	A36 Gr.36	Typical
94	M94	N126	N147		Plate	Beam	BAR	A36 Gr.36	Typical
95	M95	N148	N150		RIGID	None	None	RIGID	Typical
96	M96	N149	N151		RIGID	None	None	RIGID	Typical
97	M97	N132	N152		Plate	Beam	BAR	A36 Gr.36	Typical
98	M98	N153	N154		RIGID	None	None	RIGID	Typical
99	M99	N156	N155		RIGID	None	None	RIGID	Typical
100	M100	N157	N158		RIGID	None	None	RIGID	Typical
101	M101	N159	N157		RIGID	None	None	RIGID	Typical
102	M102	N158	N160		RIGID	None	None	RIGID	Typical
103	M103	N159	N161		RIGID	None	None	RIGID	Typical
104	M104	N162	N163		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
105	M105	N164	N165		Frame Rail	Beam	Pipe	A53 Gr.B	Typical
106	M106	N166	N167		Handrail	HBrace	Pipe	A53 Gr.B	Typical
107	M107	N169	N170		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
108	M108	N172	N168		RIGID	None	None	RIGID	Typical
109	M109	N173	N171		RIGID	None	None	RIGID	Typical
110	M110	N175	N176		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
111	M111	N178	N174		RIGID	None	None	RIGID	Typical
112	M112	N179	N177		RIGID	None	None	RIGID	Typical
113	M113	N181	N182		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
114	M114	N184	N180		RIGID	None	None	RIGID	Typical
115	M115	N185	N183		RIGID	None	None	RIGID	Typical
116	M116	N156	N186		Frame Rail	Beam	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
117	M117	N187	N188		Handrail	HBrace	Pipe	A53 Gr.B	Typical
118	M118	N190	N191		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
119	M119	N193	N189		RIGID	None	None	RIGID	Typical
120	M120	N194	N192		RIGID	None	None	RIGID	Typical
121	M121	N196	N197		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
122	M122	N199	N195		RIGID	None	None	RIGID	Typical
123	M123	N200	N198		RIGID	None	None	RIGID	Typical
124	M124	N202	N203		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
125	M125	N205	N201		RIGID	None	None	RIGID	Typical
126	M126	N206	N204		RIGID	None	None	RIGID	Typical

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [lb/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	490	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	490	50	1.4	65	1.3

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
1	Self Weight	DL		-1		20		3
2	Wind Load AZI 0	WLX				40	260	
3	Wind Load AZI 30	None				40	260	
4	Wind Load AZI 60	None				40	260	
5	Wind Load AZI 90	WLZ				40	260	
6	Wind Load AZI 120	None				40	260	
7	Wind Load AZI 150	None				40	260	
8	Wind Load AZI 180	None				40	260	
9	Wind Load AZI 210	None				40	260	
10	Wind Load AZI 240	None				40	260	
11	Wind Load AZI 270	None				40	260	
12	Wind Load AZI 300	None				40	260	
13	Wind Load AZI 330	None				40	260	
14	Ice Weight	OL1				20	126	3
15	Ice Wind Load AZI 0	OL2				40	260	
16	Ice Wind Load AZI 30	None				40	260	
17	Ice Wind Load AZI 60	None				40	260	
18	Ice Wind Load AZI 90	OL3				40	260	
19	Ice Wind Load AZI 120	None				40	260	
20	Ice Wind Load AZI 150	None				40	260	
21	Ice Wind Load AZI 180	None				40	260	
22	Ice Wind Load AZI 210	None				40	260	
23	Ice Wind Load AZI 240	None				40	260	
24	Ice Wind Load AZI 270	None				40	260	
25	Ice Wind Load AZI 300	None				40	260	
26	Ice Wind Load AZI 330	None				40	260	
27	Seismic Load X	ELX			-0.101	20		
28	Seismic Load Z	ELZ	-0.101			20		
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		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
34	Maintenance Load 5	LL				1		
35	Maintenance Load 6	LL				1		
36	Maintenance Load 7	LL				1		
37	Maintenance Load 8	LL				1		
38	Maintenance Load 9	LL				1		
39	Maintenance Load 10	LL				1		
40	Maintenance Load 11	LL				1		
41	Maintenance Load 12	LL				1		
46	BLC 1 Transient Area Loads	None					144	
47	BLC 14 Transient Area Loads	None					144	

Load Combinations

	Description	Solve	P-Delta	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		
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	1.24	27	1	28	
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.24	27	0.866	28	0.5
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.24	27	0.5	28	0.866
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.24	27		28	1
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.24	27	-0.5	28	0.866
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.24	27	-0.866	28	0.5
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.24	27	-1	28	

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.24	27	-0.866	28	-0.5
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.24	27	-0.5	28	-0.866
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.24	27		28	-1
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.24	27	0.5	28	-0.866
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.24	27	0.866	28	-0.5
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.86	27	1	28	
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.86	27	0.866	28	0.5
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.86	27	0.5	28	0.866
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.86	27		28	1
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.86	27	-0.5	28	0.866
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.86	27	-0.866	28	0.5
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.86	27	-1	28	
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.86	27	-0.866	28	-0.5
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.86	27	-0.5	28	-0.866
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.86	27		28	-1
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.86	27	0.5	28	-0.866
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.86	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
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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
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
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
147	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	40	1.5	2	0.154
148	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	40	1.5	3	0.154
149	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	40	1.5	4	0.154
150	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	40	1.5	5	0.154
151	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	40	1.5	6	0.154
152	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	40	1.5	7	0.154
153	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	40	1.5	8	0.154
154	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	40	1.5	9	0.154
155	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	40	1.5	10	0.154
156	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	40	1.5	11	0.154
157	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	40	1.5	12	0.154
158	1.2DL + 1.5LM7 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	40	1.5	13	0.154
159	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	41	1.5	2	0.154
160	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	41	1.5	3	0.154
161	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	41	1.5	4	0.154

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
162	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	41	1.5	5	0.154
163	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	41	1.5	6	0.154
164	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	41	1.5	7	0.154
165	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	41	1.5	8	0.154
166	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	41	1.5	9	0.154
167	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	41	1.5	10	0.154
168	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	41	1.5	11	0.154
169	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	41	1.5	12	0.154
170	1.2DL + 1.5LM8 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	41	1.5	13	0.154
171	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	42	1.5	2	0.154
172	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	42	1.5	3	0.154
173	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	42	1.5	4	0.154
174	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	42	1.5	5	0.154
175	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	42	1.5	6	0.154
176	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	42	1.5	7	0.154
177	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	42	1.5	8	0.154
178	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	42	1.5	9	0.154
179	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	42	1.5	10	0.154
180	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	42	1.5	11	0.154
181	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	42	1.5	12	0.154
182	1.2DL + 1.5LM9 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	42	1.5	13	0.154
183	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	43	1.5	2	0.154
184	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	43	1.5	3	0.154
185	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	43	1.5	4	0.154
186	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	43	1.5	5	0.154
187	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	43	1.5	6	0.154
188	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	43	1.5	7	0.154
189	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	43	1.5	8	0.154
190	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	43	1.5	9	0.154
191	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	43	1.5	10	0.154
192	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	43	1.5	11	0.154
193	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	43	1.5	12	0.154
194	1.2DL + 1.5LM10 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	43	1.5	13	0.154
195	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	44	1.5	2	0.154
196	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	44	1.5	3	0.154
197	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	44	1.5	4	0.154
198	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	44	1.5	5	0.154
199	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	44	1.5	6	0.154
200	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	44	1.5	7	0.154
201	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	44	1.5	8	0.154
202	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	44	1.5	9	0.154
203	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	44	1.5	10	0.154
204	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	44	1.5	11	0.154
205	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	44	1.5	12	0.154
206	1.2DL + 1.5LM11 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	44	1.5	13	0.154
207	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 0	Yes	Y	1	1.2	45	1.5	2	0.154
208	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 30	Yes	Y	1	1.2	45	1.5	3	0.154
209	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 60	Yes	Y	1	1.2	45	1.5	4	0.154
210	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 90	Yes	Y	1	1.2	45	1.5	5	0.154
211	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 120	Yes	Y	1	1.2	45	1.5	6	0.154
212	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 150	Yes	Y	1	1.2	45	1.5	7	0.154
213	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 180	Yes	Y	1	1.2	45	1.5	8	0.154
214	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 210	Yes	Y	1	1.2	45	1.5	9	0.154
215	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 240	Yes	Y	1	1.2	45	1.5	10	0.154
216	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 270	Yes	Y	1	1.2	45	1.5	11	0.154
217	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 300	Yes	Y	1	1.2	45	1.5	12	0.154
218	1.2DL + 1.5LM12 + 1.6SWL (30 mph) AZI 330	Yes	Y	1	1.2	45	1.5	13	0.154

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Arm	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	Arm 2	HSS4.5X4.5X3	Beam	Tube	A500 Gr.B Rect	Typical	2.93	9.02	9.02	14.4
3	Cross Arm	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	0.044
4	Frame Rail	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
5	Handrail	PIPE_2.5	HBrace	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
6	Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	Plate	6" x 0.375" Plate	Beam	BAR	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
8	Angle	L3X3X3	HBrace	Single Angle	A36 Gr.36	Typical	1.09	0.948	0.948	0.014

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	N1	max	1216.611	25	1562.352	27	1209.388	6	13123.468	168	25366.786	6	18757.421	20
2		min	-1372.013	8	-150.529	20	-1210.576	10	-13130.886	78	-25586.677	12	-65101.133	2
3	N67	max	1551.728	2	1663.757	35	1410.386	5	16477.687	16	32588.932	13	33378.524	12
4		min	-1458.945	20	-116.848	16	-1271.483	24	-57283.141	10	-26631.797	6	-9384.327	16
5	N111	max	1462.11	2	1562.923	31	1179.033	16	56379.485	6	25785.212	10	34708.31	137
6		min	-1369.291	20	-167.051	24	-1379.59	12	-17102.168	24	-25549.833	4	-9890.82	24
7	Totals:	max	4175.441	14	4373.535	34	3662.629	17						
8		min	-4175.444	20	1702.8	53	-3838.378	24						

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	M79	6" x 0.375" Plate	0.578	2.036	6	0.498	2.036	y	6	62722.329	72900	6834.391	109350	2.519	H1-1b
2	M49	6" x 0.375" Plate	0.578	2.036	10	0.497	2.036	y	10	62722.329	72900	6834.391	109350	2.519	H1-1b
3	M13	6" x 0.375" Plate	0.576	2.036	2	0.498	2.036	y	2	62722.329	72900	6834.391	109350	2.519	H1-1b
4	M12	6" x 0.375" Plate	0.576	2.036	2	0.528	2.036	y	13	62722.329	72900	6834.391	109350	2.519	H1-1b
5	M78	6" x 0.375" Plate	0.572	2.036	6	0.498	2.036	y	6	62722.329	72900	6834.391	109350	2.518	H1-1b
6	M50	6" x 0.375" Plate	0.571	2.036	10	0.498	2.036	y	10	62722.329	72900	6834.391	109350	2.518	H1-1b
7	M52	6" x 0.375" Plate	0.527	1.557	10	0.021	5.75	z	10	62722.329	72900	6834.391	109350	2.198	H1-1b
8	M53	6" x 0.375" Plate	0.527	1.557	10	0.021	5.75	z	10	62722.329	72900	6834.391	109350	2.2	H1-1b
9	M82	6" x 0.375" Plate	0.527	1.557	6	0.021	5.75	z	6	62722.329	72900	6834.391	109350	2.195	H1-1b
10	M81	6" x 0.375" Plate	0.527	1.557	6	0.021	5.75	z	6	62722.329	72900	6834.391	109350	2.203	H1-1b
11	M16	6" x 0.375" Plate	0.527	1.557	2	0.021	5.75	z	2	62722.329	72900	6834.391	109350	2.199	H1-1b
12	M15	6" x 0.375" Plate	0.527	1.557	2	0.021	5.75	z	13	62722.329	72900	6834.391	109350	2.199	H1-1b
13	M110	PIPE_2.0	0.505	30	13	0.216	30		13	14916.096	32130	22459.5	22459.5	2.669	H1-1b
14	M113	PIPE_2.0	0.468	30	25	0.218	30		13	14916.096	32130	22459.5	22459.5	3	H1-1b
15	M124	PIPE_2.0	0.453	30	3	0.209	30		2	14916.096	32130	22459.5	22459.5	2.369	H1-1b
16	M121	PIPE_2.0	0.453	30	9	0.209	30		10	14916.096	32130	22459.5	22459.5	3	H1-1b
17	M35	PIPE_2.0	0.444	30	6	0.209	30		6	14916.096	32130	22459.5	22459.5	3	H1-1b
18	M38	PIPE_2.0	0.444	30	10	0.209	30		10	14916.096	32130	22459.5	22459.5	3	H1-1b
19	M1	HSS4X4X4	0.383	0	13	0.113	0	y	169	133649.326	139518	194166	194166	1.664	H1-1b
20	M41	HSS4X4X4	0.382	0	12	0.123	12.017	z	13	133649.326	139518	194166	194166	1.722	H1-1b
21	M77	6" x 0.375" Plate	0.375	2.036	10	0.313	2.036	y	37	62722.329	72900	6834.391	109350	2.2	H1-1b
22	M47	6" x 0.375" Plate	0.374	2.036	6	0.311	2.036	y	29	62722.329	72900	6834.391	109350	2.199	H1-1b
23	M48	6" x 0.375" Plate	0.371	2.036	2	0.312	2.036	y	29	62722.329	72900	6834.391	109350	2.198	H1-1b
24	M76	6" x 0.375" Plate	0.371	2.036	2	0.312	2.036	y	37	62722.329	72900	6834.391	109350	2.199	H1-1b
25	M7	L4X4X4	0.37	0	13	0.084	0	z	12	54411.715	62532	37651.159	80578.632	1.472	H2-1
26	M70	HSS4X4X4	0.37	0	4	0.112	0	y	137	133649.326	139518	194166	194166	1.709	H1-1b
27	M10	6" x 0.375" Plate	0.369	2.036	10	0.311	2.036	y	33	62722.329	72900	6834.391	109350	2.198	H1-1b
28	M11	6" x 0.375" Plate	0.369	2.036	6	0.311	2.036	y	33	62722.329	72900	6834.391	109350	2.199	H1-1b
29	M107	PIPE_2.0	0.355	30	13	0.212	38		13	14916.096	32130	22459.5	22459.5	3	H1-1b
30	M43	L4X4X4	0.353	24.375	12	0.084	24.375	z	12	54411.715	62532	37651.159	80578.632	1.471	H2-1
31	M6	L4X4X4	0.349	24.375	4	0.083	0	z	10	54411.715	62532	37651.159	80578.632	1.469	H2-1
32	M72	L4X4X4	0.349	24.375	8	0.084	0	z	13	54411.715	62532	37651.159	80578.632	1.469	H2-1
33	M44	L4X4X4	0.348	0	153	0.083	24.375	z	2	54411.715	62532	37651.159	80578.632	1.5	H2-1

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

	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
34	M73	L4X4X4	0.348	0	137	0.083	24.375	z	10	54411.715	62532	37651.159	80578.632	1.5	H2-1
35	M74	L4X4X4	0.339	36.125	34	0.036	36.125	z	137	51466.784	62532	37651.159	80578.632	1.5	H2-1
36	M45	L4X4X4	0.339	36.125	38	0.036	36.125	z	153	51466.784	62532	37651.159	80578.632	1.5	H2-1
37	M9	L4X4X4	0.338	0	35	0.036	0	z	77	51466.784	62532	37651.159	80578.632	1.5	H2-1
38	M75	L4X4X4	0.338	0	28	0.036	0	z	93	51466.784	62532	37651.159	80578.632	1.5	H2-1
39	M8	L4X4X4	0.338	36.125	31	0.036	36.125	z	169	51466.784	62532	37651.159	80578.632	1.5	H2-1
40	M46	L4X4X4	0.337	0	31	0.036	0	y	13	51466.784	62532	37651.159	80578.632	1.5	H2-1
41	M4	PIPE_2.0	0.323	30	12	0.185	38		12	14916.096	32130	22459.5	22459.5	2.137	H1-1b
42	M80	L3X3X3	0.317	27.5	12	0.028	55	z	9	21109.581	35316	15841.16	29014.121	1.016	H2-1
43	M118	PIPE_2.0	0.316	30	8	0.19	38		9	14916.096	32130	22459.5	22459.5	3	H1-1b
44	M51	L3X3X3	0.312	27.5	4	0.031	55	y	13	21109.581	35316	15841.16	29016.181	1.016	H2-1
45	M14	L3X3X3	0.312	27.5	8	0.028	0	y	12	21109.581	35316	15841.16	29016.232	1.016	H2-1
46	M94	6" x 0.375" Plate	0.292	0	6	0.255	0	y	6	71110.261	72900	6834.391	109350	1.353	H1-1b
47	M59	6" x 0.375" Plate	0.292	0	10	0.255	0	y	10	71110.261	72900	6834.391	109350	1.353	H1-1b
48	M30	6" x 0.375" Plate	0.292	0	2	0.255	0	y	2	71110.261	72900	6834.391	109350	1.353	H1-1b
49	M24	6" x 0.375" Plate	0.291	0	2	0.274	0	y	13	71110.261	72900	6834.391	109350	1.353	H1-1b
50	M88	6" x 0.375" Plate	0.289	0	6	0.255	0	y	6	71110.261	72900	6834.391	109350	1.353	H1-1b
51	M65	6" x 0.375" Plate	0.288	0	10	0.255	0	y	10	71110.261	72900	6834.391	109350	1.353	H1-1b
52	M93	6" x 0.375" Plate	0.157	0	13	0.147	0	y	37	71110.261	72900	6834.391	109350	1.35	H1-1b
53	M106	PIPE_2.5	0.156	88	13	0.214	88		13	30038.461	50715	43155	43155	1.706	H1-1b
54	M64	6" x 0.375" Plate	0.15	0	4	0.147	0	y	29	71110.261	72900	6834.391	109350	1.351	H1-1b
55	M87	6" x 0.375" Plate	0.15	0	12	0.148	0	y	37	71110.261	72900	6834.391	109350	1.351	H1-1b
56	M29	6" x 0.375" Plate	0.149	0	8	0.147	0	y	33	71110.261	72900	6834.391	109350	1.351	H1-1b
57	M23	6" x 0.375" Plate	0.149	0	8	0.147	0	y	33	71110.261	72900	6834.391	109350	1.351	H1-1b
58	M58	6" x 0.375" Plate	0.149	0	4	0.148	0	y	29	71110.261	72900	6834.391	109350	1.351	H1-1b
59	M3	PIPE_2.5	0.147	88	6	0.205	8		10	30038.461	50715	43155	43155	1.721	H1-1b
60	M117	PIPE_2.5	0.147	8	2	0.205	88		10	30038.461	50715	43155	43155	1.721	H1-1b
61	M62	6" x 0.375" Plate	0.133	0	10	0.015	0	z	10	71110.261	72900	6834.391	109350	1.35	H1-1b
62	M68	6" x 0.375" Plate	0.133	0	10	0.015	0	z	10	71110.261	72900	6834.391	109350	1.35	H1-1b
63	M97	6" x 0.375" Plate	0.133	0	6	0.015	0	z	6	71110.261	72900	6834.391	109350	1.35	H1-1b
64	M91	6" x 0.375" Plate	0.133	0	6	0.015	0	z	6	71110.261	72900	6834.391	109350	1.35	H1-1b
65	M33	6" x 0.375" Plate	0.133	0	2	0.015	0	z	2	71110.261	72900	6834.391	109350	1.35	H1-1b
66	M27	6" x 0.375" Plate	0.133	0	2	0.015	0	z	2	71110.261	72900	6834.391	109350	1.35	H1-1b
67	M105	PIPE_3.0	0.101	88	13	0.169	88		13	60482.561	65205	68985	68985	1.654	H1-1b
68	M116	PIPE_3.0	0.095	8	2	0.154	8		3	60482.561	65205	68985	68985	1.672	H1-1b
69	M2	PIPE_3.0	0.095	88	6	0.15	8		10	60482.561	65205	68985	68985	1.672	H1-1b
70	M71	HSS4.5X4.5X3	0.067	20	6	0.096	8.958	y	93	120246.398	121302	194994	194994	1.495	H1-1b
71	M42	HSS4.5X4.5X3	0.067	20	10	0.096	8.958	y	153	120246.398	121302	194994	194994	1.495	H1-1b
72	M5	HSS4.5X4.5X3	0.066	20	2	0.096	8.958	y	169	120246.398	121302	194994	194994	1.495	H1-1b
73	M104	PIPE_2.0	0.032	18	7	0.009	18		19	26521.424	32130	22459.5	22459.5	2.432	H1-1b

BOLT CONNECTION CALCULATION

BOLT PROPERTIES

Date:	10/29/2021
Site:	*BOHVN00184A*
Engineer:	*DVA*
Project No:	*2039-Z5555C*
Connection Location:	*Arm to Collar*

Bolt Capacity Equation	TIA-222-G	
Connection Type	Steel	
Bolt Size, **d**	5/8	in
Threads per Inch, **n**	11	
Steel Grade	A325	
Bolt Ultimate Tensile Stress, $\mathbf{F_u}$	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), $\boldsymbol{\varphi R_{nt}}$	20340	lbs
Shear Steel Strength (per bolt), $\boldsymbol{\varphi R_{nv}}$	12425	lbs

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

BOLT CONNECTION CALCULATION

BOLT GROUP CHECK

Date:	*10/29/2021*
Contractor:	*Infinigy Engineering, PLLC*
Site:	*BOHVN00184A*
Engineer:	*DVA*
Project No:	*2039-Z5555C*
Connection Location:	*Arm to Collar*

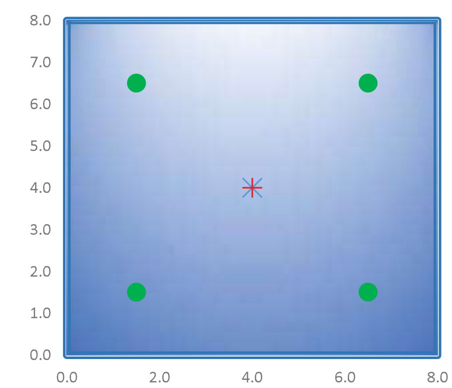
Loads Properties

Controlling LC:	13				
Load Point Number:	N1				
X-Coordinate (in.)	4.00				
Y-Coordinate (in.)	4.00				
Z-Coordinate (in.)	0.00				
Shear Load, Px (lbs)	-653.000	0	0	0	0
Shear Load, Py (lbs)	1432.000	0	0	0	0
Axial Load, Pz (lbs)	1191.000	0	0	0	0
Moment, Mx (lb-in)	60767.000	0	0	0	0
Moment, My (lb-in)	-12804.000	0	0	0	0
Moment, Mz (lb-in)	6322.000	0	0	0	0

Member Properties

	X	***Y***
Start Coordinates:	0.0	0.0
Dimentions:	8.0	8.0

Bolt Group Pattern



Number of Bolts: 4

		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	1.50	1.50	-7059.35	827.16	0.0%	6.7%	6.7%	6.7%
2	Main Type	6.50	1.50	-4498.55	481.18	0.0%	3.9%	3.9%	3.9%
3	Main Type	1.50	6.50	5094.05	691.21	25.0%	5.6%	25.0%	25.0%
4	Main Type	6.50	6.50	7654.85	158.49	37.6%	1.3%	37.6%	37.6%

Bolt Group Properties:

Xc =	4.00	in.
Yc =	4.00	in.
Ic.y =	7.67	in.^2
Ic.x =	7.67	in.^2
Ic.xy =	15.34	in.^2

Loads at Center of Gravity of Bolt Group:

Pz =	1191.00	lbs
Px =	-653.00	lbs
Py =	1432.00	lbs
Mx =	60767.00	lb-in
My =	-12804.00	lb-in
Mz =	6322.00	lb-in

Total Capacity of Bolt Group: 37.6%

U-bolt Connection: No

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

Dish Wireless Existing Facility

Site ID: BOHVN00184A

BOHVN00184A
641 Maple Hill Road
Naugatuck, Connecticut 06770

November 16, 2021

EBI Project Number: 6221005693

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**3.17%**

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

November 16, 2021

Dish Wireless

Emissions Analysis for Site: BOHVN00184A - BOHVN00184A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **641 Maple Hill Road** in **Naugatuck, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 641 Maple Hill Road in Naugatuck, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

3) 4 n66 channels (AWS Band - 2190 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

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

estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz / 2190 MHz channel(s) in Sector C.. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerline of the proposed antennas is 157 feet above ground level (AGL).

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

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

Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz	Frequency Bands:	600 MHz / 1900 MHz / 2190 MHz
Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd	Gain:	17.45 dBd / 22.65 dBd / 22.65 dBd
Height (AGL):	157 feet	Height (AGL):	157 feet	Height (AGL):	157 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	5,236.31	ERP (W):	5,236.31	ERP (W):	5,236.31
Antenna A1 MPE %:	**1.04%**	Antenna B1 MPE %:	**1.04%**	Antenna C1 MPE %:	**1.04%**

Site Composite MPE %	
Carrier	**MPE %**
Dish Wireless (Max at Sector A):	1.04%
T-Mobile	2.13%
Site Total MPE %:	3.17%

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	1.04%
Dish Wireless Sector B Total:	1.04%
Dish Wireless Sector C Total:	1.04%
Site Total MPE %:	3.17%

Dish Wireless Maximum MPE Power Values (Sector A)

Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (µW/cm²)	Frequency (MHz)	Allowable MPE (µW/cm²)	Calculated % MPE
Dish Wireless 600 MHz n71	4	223.68	157.0	1.41	600 MHz n71	400	0.35%
Dish Wireless 1900 MHz n70	4	542.70	157.0	3.42	1900 MHz n70	1000	0.34%
Dish Wireless 2190 MHz n66	4	542.70	157.0	3.42	2190 MHz n66	1000	0.34%
						Total:	**1.04%**

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

Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	1.04%
Sector B:	1.04%
Sector C:	1.04%
Dish Wireless Maximum MPE % (Sector A):	1.04%
Site Total:	3.17%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.17%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Exhibit G

Letter of Authorization

September 27, 2021

CT - Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051
Attn: Melanie A. Bachman, Executive Director

Re: Tower Share Application
Tarpon Towers II, LLC - telecommunications site at:
641 MAPLE HILL ROAD, NAUGATUCK, NEW HAVEN COUNTY, CONNECTICUT, 06770

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

Tarpon ID/Name: CT1008 Naugatuck
Customer Site ID: BOHVN00184A / TAR - Maple Hill Road
Site Address: 641 MAPLE HILL ROAD, NAUGATUCK, NEW HAVEN COUNTY, CONNECTICUT, 06770

Tarpon Towers II, LLC

Brett Buggeln
COO
September 27, 2021

Exhibit H

Recipient Mailings

BOHVN00184A

UNITED STATES POSTAL SERVICE.

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

12/08/2021 02:13 PM

Product	Qty	Unit Price	Price
Prepaid Mail Naugatuck, CT 06770 Weight: 0 lb 8.40 oz Acceptance Date: Wed 12/08/2021 Tracking #: 9405 5036 9930 0087 2867 30	1		$0.00
Prepaid Mail Naugatuck, CT 06770 Weight: 0 lb 8.40 oz Acceptance Date: Wed 12/08/2021 Tracking #: 9405 5036 9930 0087 2867 23	1		$0.00
Prepaid Mail Bradenton, FL 34202 Weight: 0 lb 1.90 oz Acceptance Date: Wed 12/08/2021 Tracking #: 9405 5036 9930 0087 2867 47	1		$0.00

Grand Total: $0.00

****

NORTHEAST SITE SOLUTIONS, LLC
1053 FARMINGTON AVE STE G
FARMINGTON, CT 06032

WEBSTER BANK
51-7010/2111

4960

12/08/2021

PAY TO THE ORDER OF Connecticut Siting Council $ *625.00

EXACTLY SIX HUNDRED TWENTY-FIVE DOLLARS DOLLARS

Connecticut Siting Council
10 Franklin Square
New Britain CT 06051

MEMO

AUTHORIZED SIGNATURE

⑈004960⑈ ⑆211170101⑆10 0010608887⑈

NORTHEAST SITE SOLUTIONS, LLC 4960

Check#: 4960 **Date: 12/08/2021** **Vendor#: 10023 Connecticut Siting Council Check Total: *625.00**

Invoice#	Invoice Date	Job/Description	Balance	Retain	Discount	This Check
BOHVN00184A Zoning	12/08/2021	506 DISH 5G NSD BOS	625.00			625.00

NORTHEAST SITE SOLUTIONS, LLC 4960

Check#: 4960 **Date: 12/08/2021** **Vendor#: 10023 Connecticut Siting Council Check Total: *625.00**

Invoice#	Invoice Date	Job/Description	Balance	Retain	Discount	This Check
BOHVN00184A Zoning	12/08/2021	506 DISH 5G NSD BOS	625.00			625.00

UNITED STATES POSTAL SERVICE® **Click-N-Ship®**

usps.com
9405 5036 9930 0087 2867 23 0087 0000 0010 6770
$8.70
US POSTAGE
Flat Rate Env

US POSTAGE PAID

12/07/2021 Mailed from 01566

P

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 12/10/21

0006

C004

SHIP
TO: WARREN HESS III
MAYOR, BOROUGH OF NAUGATUK
229 CHURCH ST
NAUGATUCK CT 06770-4145

USPS TRACKING #

9405 5036 9930 0087 2867 23

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0087 2867 23

Trans. #:	550297211
Print Date:	12/07/2021
Ship Date:	12/07/2021
Expected Delivery Date:	12/10/2021

Priority Mail® Postage:	$8.70
Total:	$8.70

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

To: WARREN HESS III
MAYOR, BOROUGH OF NAUGATUK
229 CHURCH ST
NAUGATUCK CT 06770-4145

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

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usps.com
$8.70
US POSTAGE
Flat Rate Env

9405 5036 9930 0087 2867 30 0087 0000 0010 6770

12/07/2021 Mailed from 01566

US POSTAGE PAID

PRIORITY MAIL 2-DAY™

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

Expected Delivery Date: 12/10/21

0006

C004

SHIP TO: ROBERT S PEASE
BOROUGH OF NAUGATUCK, PLANNING COMMISSION
229 CHURCH ST
NAUGATUCK CT 06770-4145

USPS TRACKING #

9405 5036 9930 0087 2867 30

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

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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 0087 2867 30

Trans. #:	550297211	Priority Mail® Postage:	$8.70
Print Date:	12/07/2021	Total:	$8.70
Ship Date:	12/07/2021		
Expected Delivery Date:	12/10/2021		

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

To: ROBERT S PEASE
BOROUGH OF NAUGATUCK, PLANNING COMMISSION
229 CHURCH ST
NAUGATUCK CT 06770-4145

* 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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Check the status of your shipment on the USPS Tracking® page at usps.com

UNITED STATES POSTAL SERVICE® **Click-N-Ship®**

P

usps.com
$8.70
US POSTAGE
Flat Rate Env

9405 5036 9930 0087 2867 47 0087 0000 0063 4202

U.S. POSTAGE PAID

12/07/2021 Mailed from 01566

PRIORITY MAIL 3-DAY™

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

Expected Delivery Date: 12/11/21

0006

R054

SHIP TO:
TARPON TOWERS II, LLC
8916 77TH TER E
LAKEWOOD RCH FL 34202-6415

USPS TRACKING #

9405 5036 9930 0087 2867 47

Electronic Rate Approved #038555749

Cut on dotted line.

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2. **Place your label so it does not wrap around the edge of the package.**
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4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :

9405 5036 9930 0087 2867 47

Trans. #:	550297211	Priority Mail® Postage:	$8.70
Print Date:	12/07/2021	Total:	$8.70
Ship Date:	12/07/2021		
Expected Delivery Date:	12/11/2021		

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

To: TARPON TOWERS II, LLC
8916 77TH TER E
LAKEWOOD RCH FL 34202-6415

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