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

March 2, 2023

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

RE: Tower Share Application
7 Broadway Avenue, Mystic CT 06355
Latitude: 41.349583 N
Longitude: 71.96375 W
Site#: BOBOS00067A

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 water tank site located at 7 Broadway Avenue, Mystic, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 140-foot level of the existing 156-foot water tank, three (3) Fiber cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 8'5"x20" lease area. Included are plans by Tectonic, dated February 15, 2023, Exhibit C. Also included is a structural analysis prepared by Tectonic, dated December 28, 2022 confirming that the existing water tank is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Town of Stonington Zoning Department, Permit No. #9-201 on August 14, 1997. 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 Danielle Chesebrough, First Selectman, Keith Brynes, Town Planner, as well as the property owner and 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 water tank is 156-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 140-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.

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Turnkey Wireless Development

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4.The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 10.39% 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 water tank 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 water tank such as this water tank in Mystic. 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 140-foot level of the existing 156-foot water tank would have an insignificant visual impact on the area around the water tank. 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 water tank 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 water tank. 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 Mystic.

Sincerely,

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

Attachments
Cc:
Danielle Chesebrough, First Selectman
Town of Stonington
152 Elm Street
Stonington, CT 06378

Keith Brynes, Town Planner
Town of Stonington
152 Elm Street
Stonington, CT 06378

Planeta Properties, Property Owner
PO BOX 218
Mystic, CT 06355

SBA, Tower Owners
8051 Congress Ave
Boca Raton, FL 33487

Exhibit A

Original Facility Approval

ZONING PERMIT

TOWN OF STONINGTON
PLANNING & ZONING COMMISSION

Date Issued: August 14, 1997 Permit No.: #97-201 ZON

NAME OF PROPERTY OWNER: EDWARD J. PLANETA, OWNER
CFM CONSTRUCTION, APPLICANT

LOCATION OF PROPERTY: 7 BROADWAY EXTENSION, MYSTIC

MAP: 174 BLOCK: 22 LOT: 1 ZONE: M-1

PERMITTED ACTIVITY: INSTALLATION OF CELLULAR EQUIPMENT FOR SNET

STIPULATIONS OR SPECIAL CONDITIONS: As per Planning and Zoning Commission consent agenda approval.

BY: Joseph M. Lash
Zoning Enforcement Officer

CONSTRUCTION MAY NOT PROCEED UNTIL A BUILDING PERMIT HAS BEEN OBTAINED

THIS PERMIT MUST BE PROMINENTLY POSTED ON THE PREMISES

TOWN OF STONINGTON

BUILDING PERMIT

DATE: August 27, 1997 **PERMIT #:** B-97-337

This permit is hereby granted to: Edward J. Planeta

of: c/o CFM Construction Corp., 150 Sycamore St.,Glastonbury, CT

for the purpose of: constructing site improvements for cellular radio equipment (SNET)

In compliance with the provisions of the Basic Building Code of the State of Connecticut

Property Location: 7 Broadway Ext., Mystic

Assessor's Map: 174 **Block:** 22 **Lot:** 1

Special conditions or stipulations: NA

In accordance with the application dated: August 19, 1997

BUILDING OFFICIAL

DATE: 8/27/97

Building Fee: $120.00 **Paid:**

ZONING PERMIT

TOWN OF STONINGTON
PLANNING & ZONING COMMISSION

Date Issued: December 17, 2001 Permit No.: #01-319 ZON

NAME OF PROPERTY OWNER: AT&T, APPLICANT; ACME WIRE PRODUCTS, OWNER

LOCATION OF PROPERTY: 7 BROADWAY EXT., MSYTIC

MAP: 174 BLOCK: 22 LOT: 1 ZONE: M-1

PERMITTED ACTIVITY: INSTALL OUTDOOR EQUIPMENT ON RAISED PLATFORM WITH ANTENNAS INSTALLED ON THE EXISTING WATER TANK FOR TELECOMMUNICATIONS FACILITY.

STIPULATIONS OR SPECIAL CONDITIONS: DEMO BOND TO BE REVIEWED AND RENEWED IN DECEMBER 2003.

BY: Joseph M. Larkin
Zoning Enforcement Officer

CONSTRUCTION MAY NOT PROCEED UNTIL A BUILDING PERMIT HAS BEEN OBTAINED

THIS PERMIT MUST BE PROMINENTLY POSTED ON THE PREMISES

This Permit Is Valid For 1 Year.

Town of Stonington
Building Permit

Permit number: B-2001-498

Permit Date: 1/2/2002

This permit is herby granted to: **PLANETA PROPERTIES DBA ACME WIRE PRODUCTS**

Of: 345 Ardenwood Avenue

Englewood FL 34223

For the purpose of: **install telecommuncations facility outdoor equipment on a raised platform with antennas installed on existing water tank** AT&T

In compliance with the provisions of the Basic Building Code of the State of Connecticut

Property Location: 7 **Broadway Ext.** **Mystic**

Assessor's Map: 174 **Block:** 22 **Lot:** 1 **Sub Lot:** 0

Special Conditions or Stipulations: NA

In accordance with the application dated: 12/20/2001

Building Official

Date: 1/2/02

Building Fee: $710.00 **Paid:** ☐

AT&T

ZONING PERMIT

TOWN OF STONINGTON

PLANNING & ZONING COMMISSION

DATE ISSUED: **January 30, 2004** NO. **03-389 ZON**

NAME OF OWNER / APPLICANT: **AT&T Wireless / Planeta Properties**

LOCATION OF PROPERTY: **7 Broadway Ave. Ext., Mystic, CT 06355**

MAP: **174** BLOCK: **22** LOT: **1** ZONE: **M-1**

PERMITTED ACTIVITY: **Installation of a parabolic subscriber antenna**

STIPULATIONS OR SPECIAL CONDITIONS:
1. **Bond#04-001 in place & to be reviewed & renewed in January 2006.**

APPROVED BY: Joseph M. Lachini
ZONING ENFORCEMENT OFFICER

1-30-04
DATE

CONSTRUCTION MAY NOT PROCEED UNTIL
A BUILDING PERMIT HAS BEEN OBTAINED

THIS PERMIT MUST BE PROMINENTLY POSTED ON THE PREMISES

THIS PERMIT IS VALID FOR 1 YEAR

Applicant may publish **Notice** of this approval as per Public Act No. 03-144

Town of Stonington
Building Permit

Permit number: B-2004-039

Permit Date: 2/4/2004

This permit is herby granted to: **AT&T WIRELESS, APPLICANT; PLANETA PROPERTIES - OWNER**

Of: 333 Crossways Park Drive

Woodbury NY

For the purpose of: **installation of a Parabolic Subscriber antenna**

In compliance with the provisions of the Basic Building Code of the State of Connecticut

Property Location: 7 **Broadway Ext.** **Mystic**

Assessor's Map: 174 **Block:** 22 **Lot:** 1 **Sub Lot:** 0

Special Conditions or Stipulations: NA

In accordance with the application dated: 2/4/2004

Wayne Jones

Building Official

Date: 2/4/04

Building Fee: $91.00 **Paid:** ☑

Exhibit B

Property Card

Town of Stonington, CT

Property Listing Report

Map Block Lot	174-22-1	Building #	1	PID	8983	Account	00664600

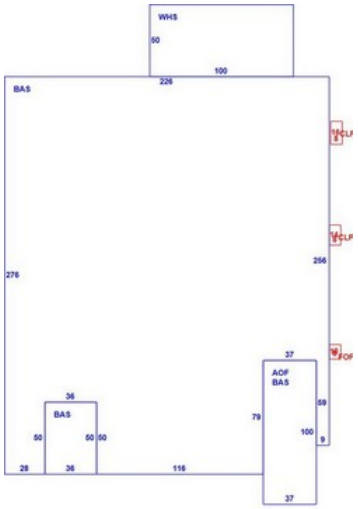
Property Information

Property Location	7 BROADWAY AVE EXT
Owner	PLANETA PROPERTIES
Co-Owner	
Mailing Address	PO BOX 218 MYSTIC CT 06355-0218
Land Use	4000 INDUSTRIAL M-96
Land Class	I
Zoning Code	M-1
Census Tract	7053

Neighborhood	3500
Acreage	4.3
Utilities	
Lot Setting/Desc	Suburban Level
Book / Page	0409/0933
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1950
Building Desc.	INDUSTRIAL M-96
Building Style	Industrial
Building Grade	Ave/Good
Stories	1
Occupancy	1
Exterior Walls	Brick/Masonry
Exterior Walls 2	Pre-finsh Metl
Roof Style	Flat
Roof Cover	Tar & Gravel
Interior Walls	Minim/Masonry
Interior Walls 2	Drywall/Sheet
Interior Floors 1	Concr Abv Grad
Interior Floors 2	Carpet

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

(*Industrial / Commercial Details)

Building Use	Ind/Comm
Building Condition	AV
Sprinkler %	
Heat / AC	NONE
Frame Type	MASONRY
Baths / Plumbing	AVERAGE
Ceiling / Wall	CEIL & MIN WL
Rooms / Prtns	AVERAGE
Wall Height	14
First Floor Use	4000
Foundation	

Report Created On 3/23/2022

Town of Stonington, CT

Property Listing Report

Map Block Lot	174-22-1	Building #	1	PID	8983	Account	00664600

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	2529700	1770800
Extras	49900	35000
Improvements		
Outbuildings	259000	181200
Land	740300	518200
Total	3578900	2505200

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Office, (Average)	3700	3700
First Floor	62973	62973
Loading Platform, Finished	240	0
Porch, Open	80	0
Warehouse	5000	3250
Total Area	71993	69923

Outbuilding and Extra Features

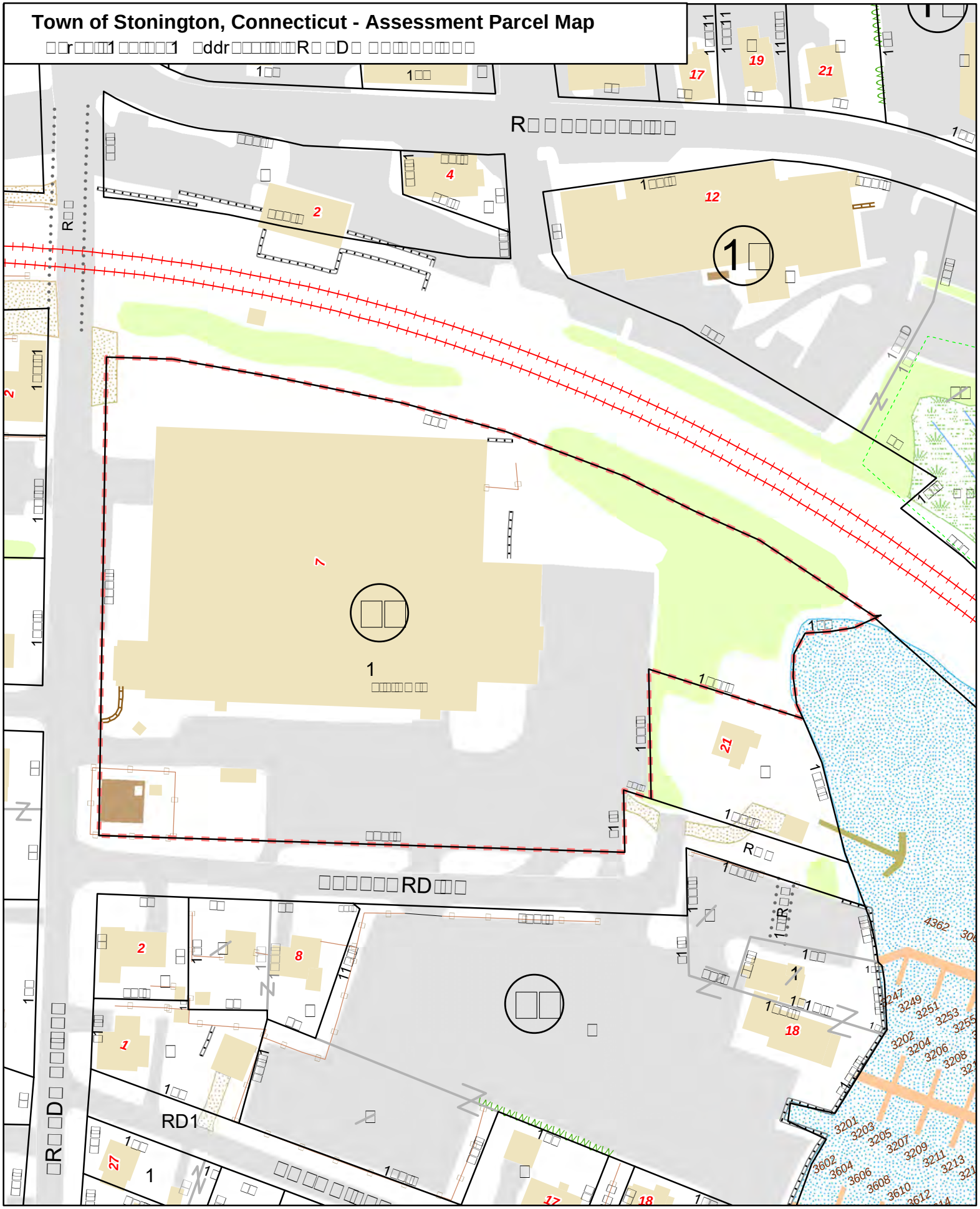
Type	Description
PAVING-ASPHALT	48000.00 S.F.
ELEVATED TANK	75000.00 GALS
FENCE-8' CHAIN	218.00 L.F.
W/LIGHTS ETC	64.00 S.F.
FENCE-6' CHAIN	288.00 L.F.
SHED FRAME	42.00 S.F.
SPRINKLERS-WET	64683.00 S.F.
WET/CONCEALED	6786.00 S.F.
DRY	777.00 S.F.
LOAD LEVELERS	2.00 UNITS

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
PLANETA PROPERTIES	0409/0933	10/20/1997	0
PLANETA EDWARD J	0221/0680	12/29/1978	0

Report Created On 3/23/2022

Town of Stonington, Connecticut - Assessment Parcel Map



Revised To Grand List: October 2021 Map Produced: February 2022

Exhibit C

Construction Drawings

dish wireless

DISH Wireless L.L.C. SITE ID:

BOBOS00067A

DISH Wireless L.L.C. SITE ADDRESS:

7 BROADWAY AVENUE EXTENSION
MYSTIC, CT 06355

CONNECTICUT CODE OF 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	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
MECHANICAL	2022 CT STATE BUILDING CODE/2021 IMC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

SHEET INDEX

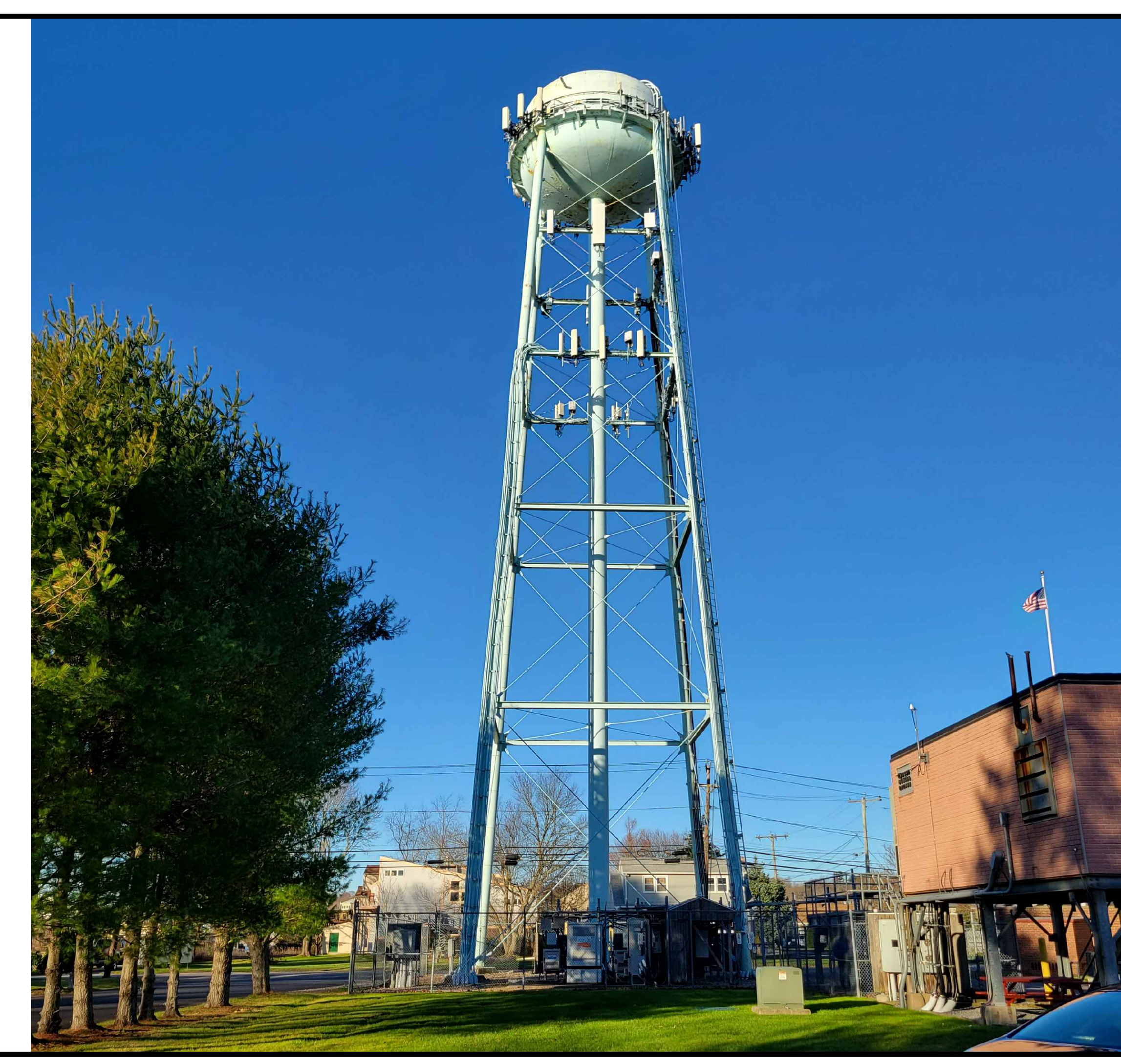
SCOPE OF WORK

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

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

GROUND SCOPE OF WORK:
- RE-USE EXISTING STEEL PLATFORM
- INSTALL (1) PROPOSED BBU IN CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED NEMA 3 TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET
- INSTALL (3) PROPOSED POWER BOOSTERS

SITE PHOTO



UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY MANAGER:	SBA
ADDRESS:	8051 CONGRESS AVE BOCA RATON, FL 33487
S.B.A. SITE ID:	CT-95630-L
STRUCTURE TYPE:	WATER TANK
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 20' 58.5" N 41.349583
LONGITUDE (NAD 83):	71° 57' 49.5" W 71.96375
ZONING JURISDICTION:	TOWN OF STONINGTON/ CT SITING COUNCIL
ZONING DISTRICT:	M1
PARCEL NUMBER:	137-174-22-1
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE
FIBER COMPANY:	CROWN CASTLE

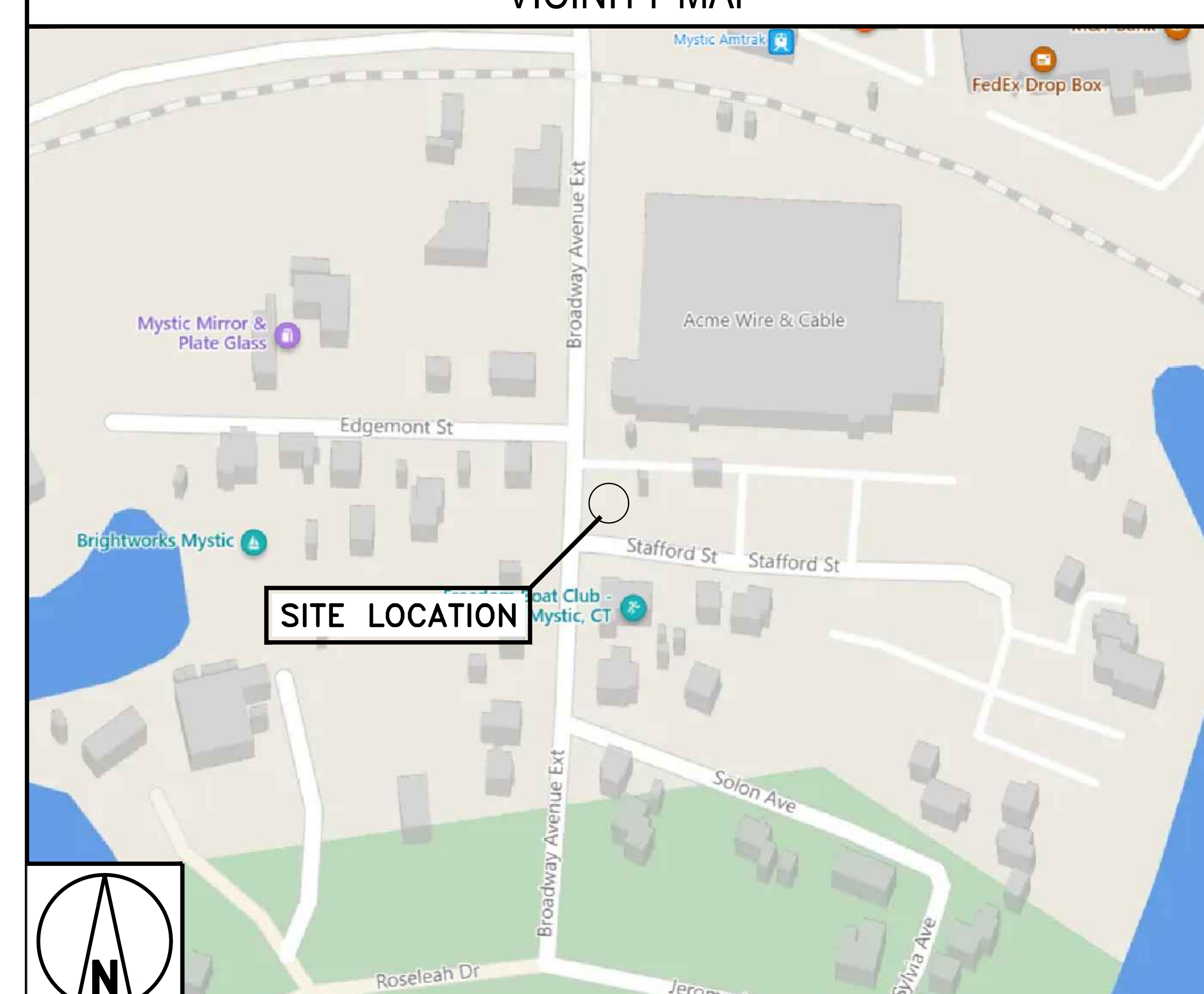
PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
PROPERTY OWNER:	ACME WIRE PRODUCTS 7 BROADWAY AVENUE EXTENSION MYSTIC, CT 06355 (800) 723-7015
SITE DESIGNER:	TECTONIC ENGINEERING CONSULTANTS GEOLOGISTS & LAND SURVEYORS D.P.C. INC. NEWBURGH, NY 12550 (845) 567-6656
SITE ACQUISITION:	DAVID GOODFELLOW DAVID.GOODFELLOW@DISH.COM
CONSTRUCTION MANAGER:	CHAD WILCOX CHAD.WILCOX@DISH.COM
RF ENGINEER:	DIPESH PARIKH DIPESH.PARIKH@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT (BDL):
1. HEAD NORTHWEST ON BRADLEY INTERNATIONAL AIRPORT FROM TERMINAL A
2. BEAR RIGHT ONTO CONNECTOR & TAKE RAMP LEFT.
3. KEEP STRAIGHT TO GET ONTO I-91/CT-20E.
4. TAKE RAMP RIGHT FOR I-91S TOWARDS HARTFORD.
5. TAKE RAMP RIGHT AT EXIT 34 FOR I-91S TOWARDS NORTH MAIN STREET
6. TAKE RAMP RIGHT AT EXIT 33 FOR JENNINGS ROAD. STAY ON I-91S
7. TAKE RAMP LEFT FOR I-84E/US-6E/US-44E
8. TAKE RAMP RIGHT AT EXIT 55 FOR CT-2E TOWARDS NEW LONDON/NORWITCH
9. TAKE RAMP RIGHT AT EXIT 28S FOR CT-2AS/I-395S TOWARDS NEW HAVEN
10. TAKE RAMP LEFT AT EXIT 5 FOR CT-32 TOWARDS NEW LONDON
11. TAKE RAMP RIGHT FOR I-95N/US-1N & TAKE RIGHT EXIT 90 FOR CT-27
12. TURN RIGHT ONTO CT-27/GREENMANVILLE AVE
13. TURN RIGHT ONTO E MAIN ST & TAKE 3RD EXIT AT ROUNDABOUT FOR BROADWAY AVE
14. TURN RIGHT ONTO BROADWAY AVENUE EXTENSION. SITE IS ON THE LEFT.

VICINITY MAP



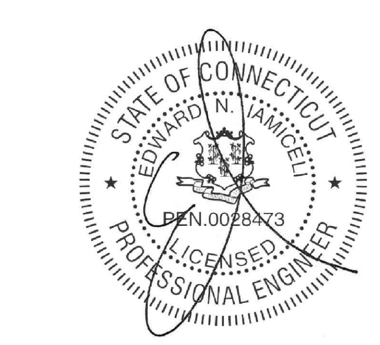
NO SCALE

dish wireless

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
(800) 829-6531
www.tectonicengineering.com

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development



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:
BWY	JQ/EI	EI

RFDS REV #: 3

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	01/18/2023	ISSUED FOR CONSTRUCTION
1	02/15/2023	REVISED PER COMMENTS

A&E PROJECT NUMBER
BOBOS00067A

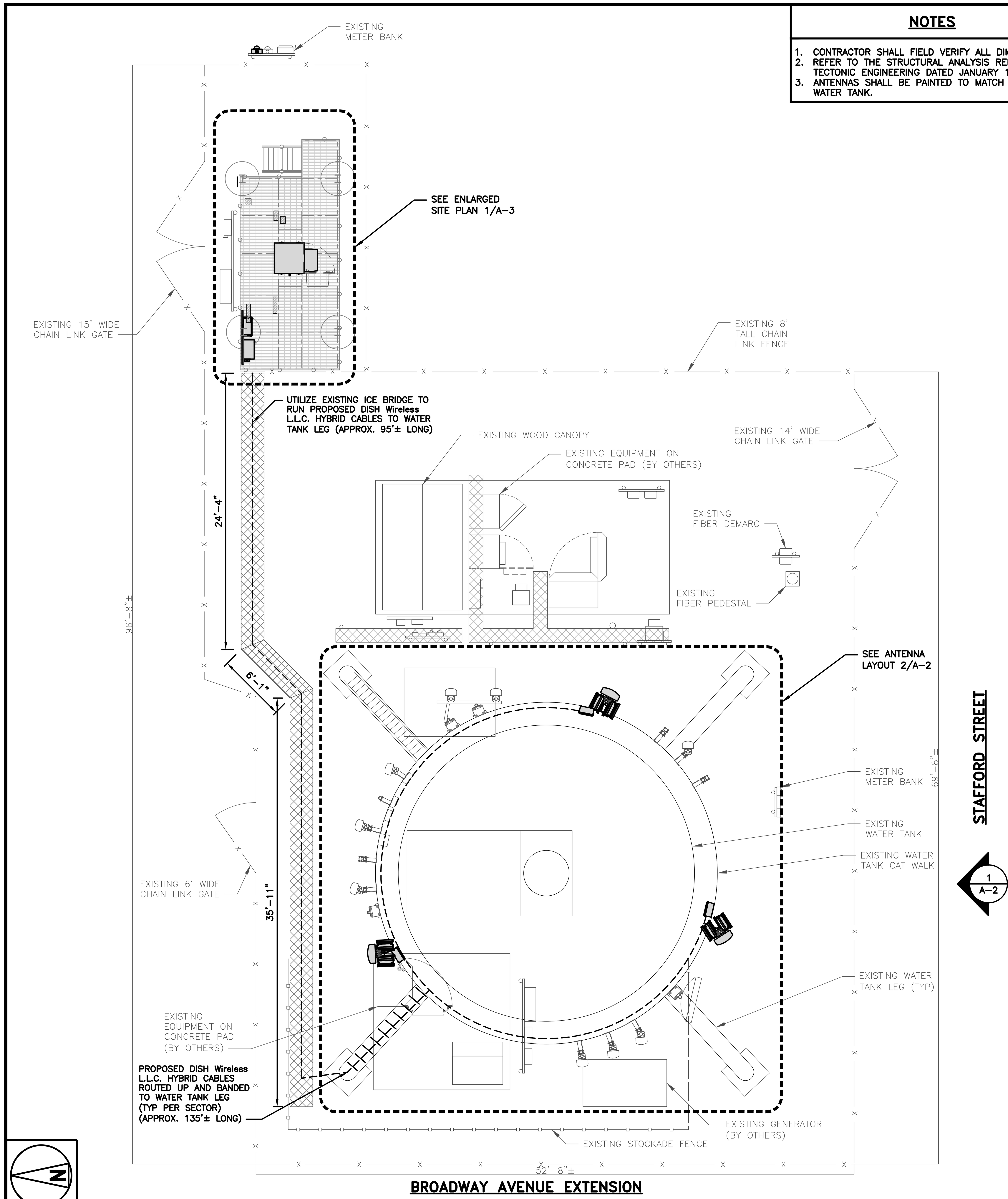
DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING DATED JANUARY 16, 2023.
3. ANTENNAS SHALL BE PAINTED TO MATCH EXISTING WATER TANK.

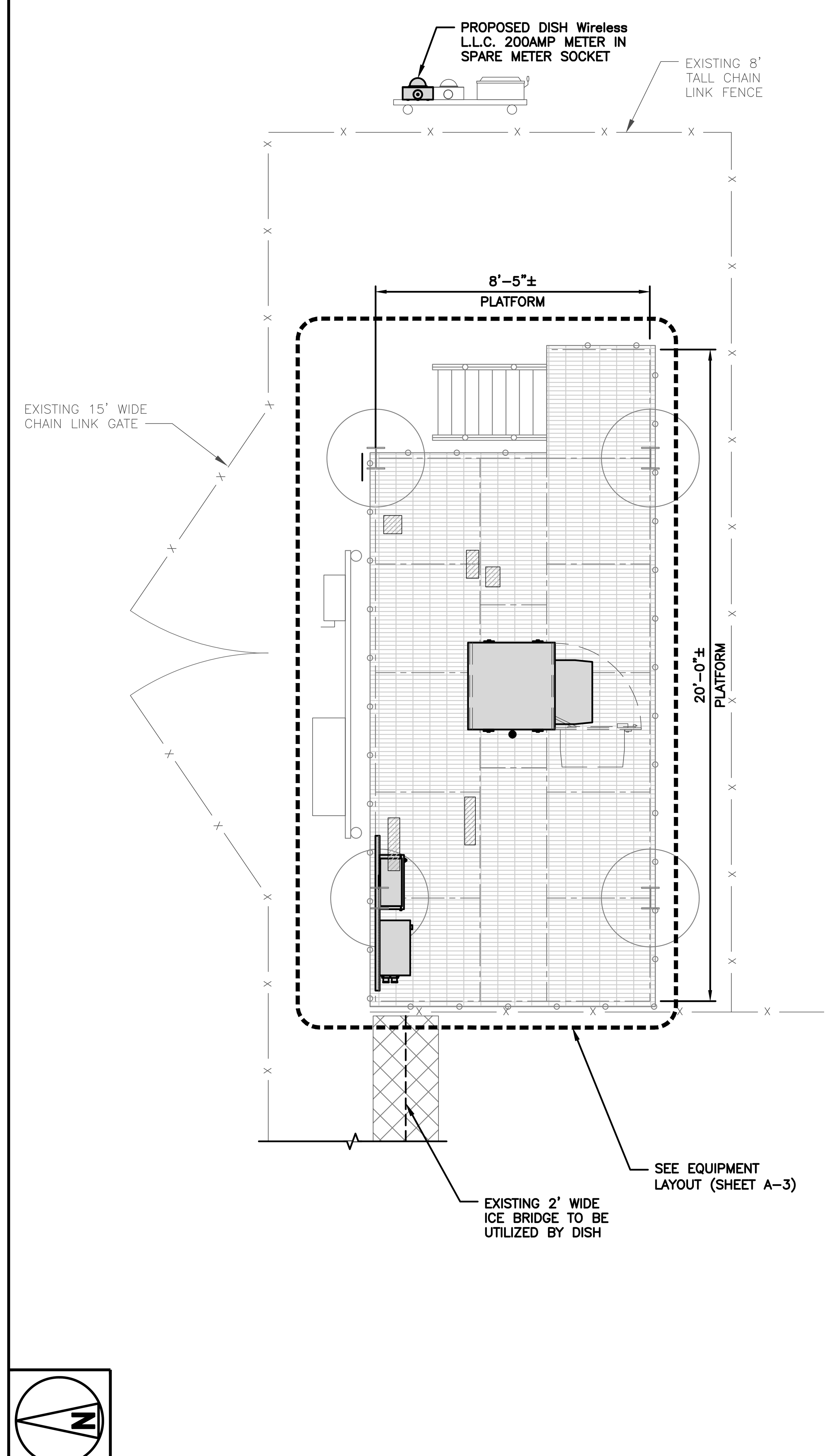


OVERALL SITE PLAN

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' 6' 7'
3/8"=1'-0"
2

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
(800) 829-6531
www.tectonicengineering.com

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER

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:
BWY	JQ/EI	EI

RFDS REV #: 3

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	01/18/2023	ISSUED FOR CONSTRUCTION
1	02/15/2023	REVISED PER COMMENTS

A&E PROJECT NUMBER
BOBOS00067A

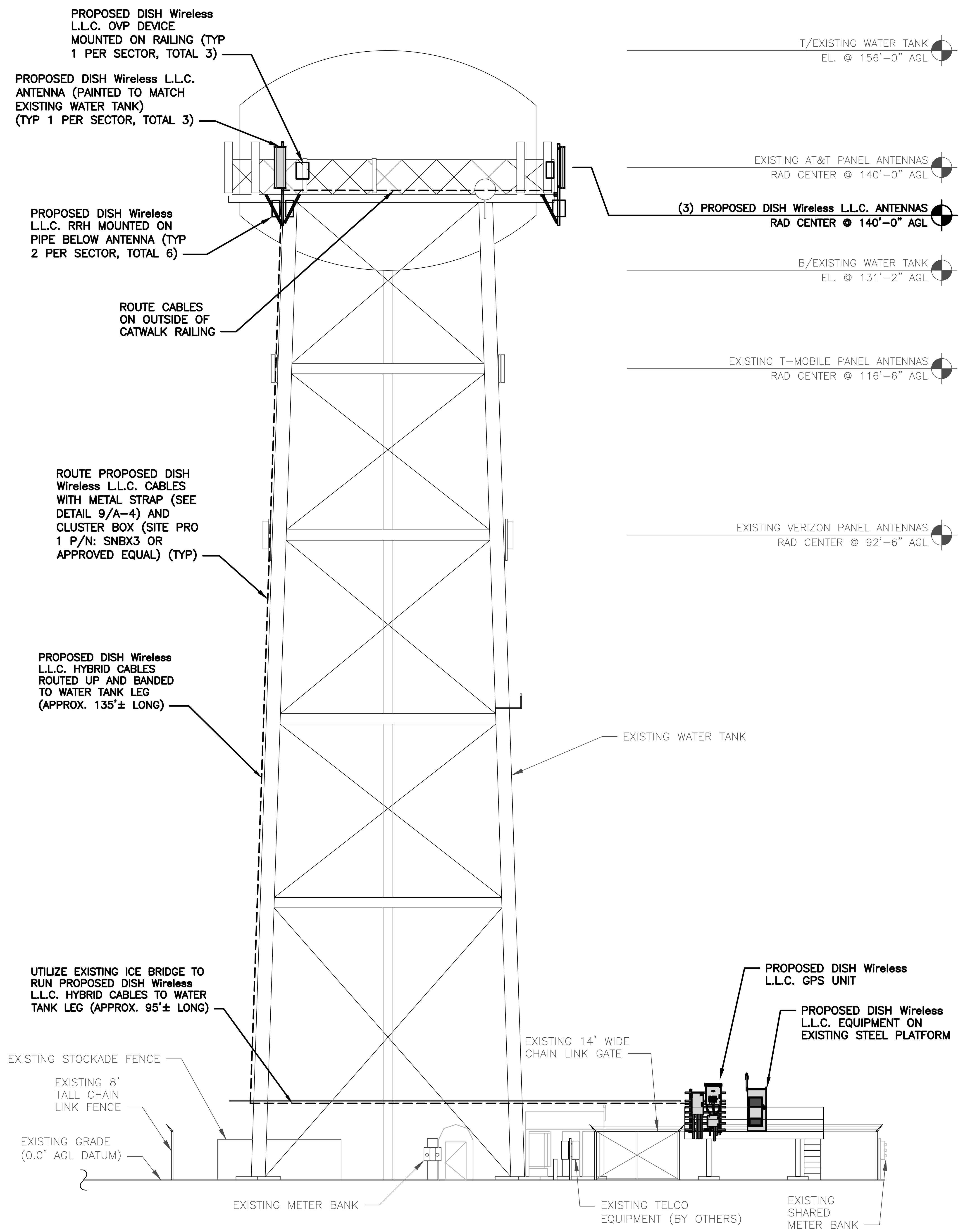
DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE
OVERALL AND ENLARGED SITE PLAN

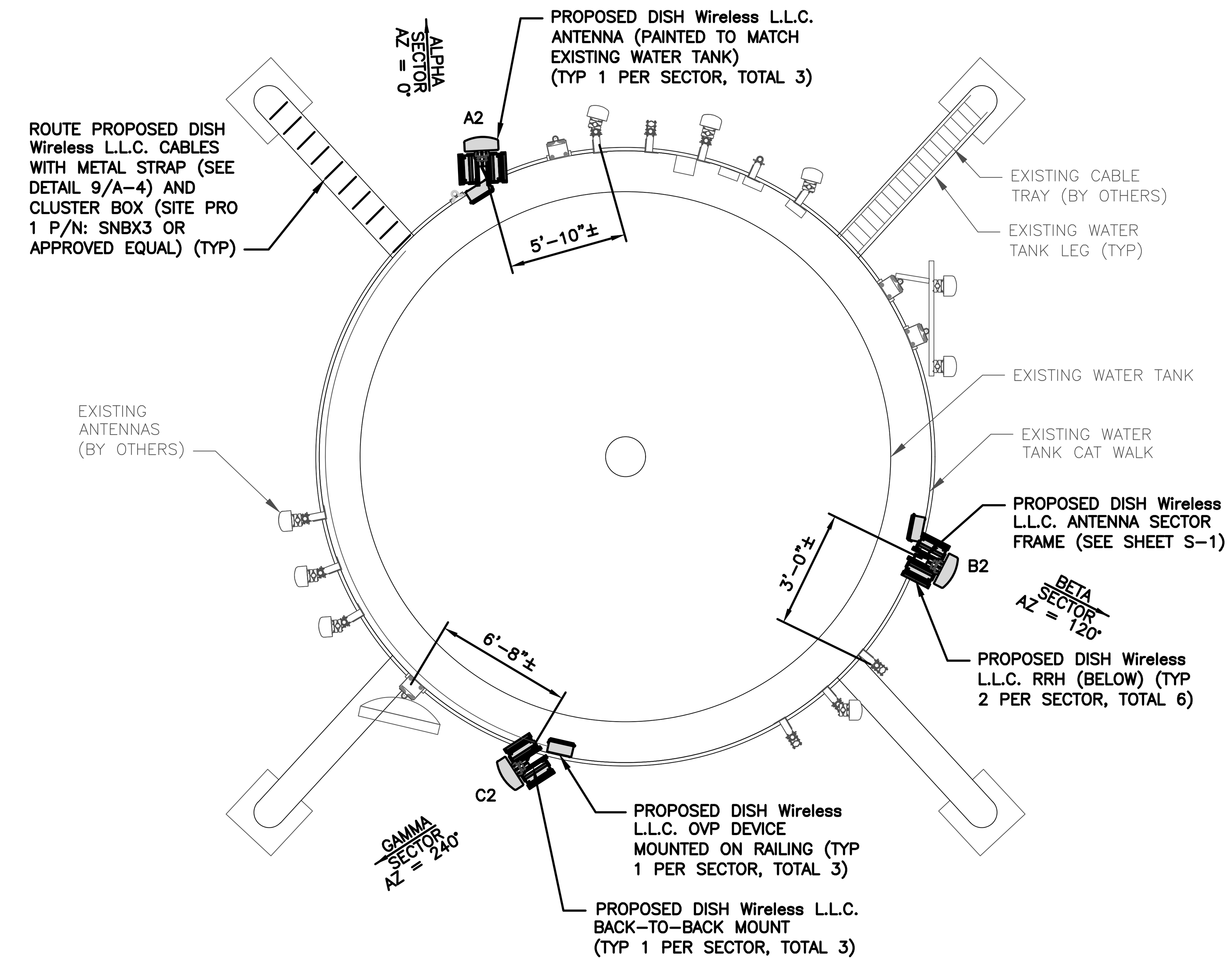
SHEET NUMBER
A-1

NOTES

1. 1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. 2. FOR ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
3. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING DATED JANUARY 16, 2023.



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



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

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	HYBRID CABLE (250' LONG) WITH POWER BOOSTER (RDIC-100-3R-1U)	FUJITSU-TA08025-B605	N71	A2	RAYCAP-RDIC-9181-PF-48
A2	PROPOSED	JMA-MX08FRO665-21	N66,N70, N71	0°	140'-0"		FUJITSU-TA08025-B604	N70,N66	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	HYBRID CABLE (270' LONG) WITH POWER BOOSTER (RDIC-100-3R-1U)	FUJITSU-TA08025-B605	N71	B2	RAYCAP-RDIC-9181-PF-48
B2	PROPOSED	JMA-MX08FRO665-21	N66,N70, N71	120°	140'-0"		FUJITSU-TA08025-B604	N70,N66	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	HYBRID CABLE (250' LONG) WITH POWER BOOSTER (RDIC-100-3R-1U)	FUJITSU-TA08025-B605	N71	C2	RAYCAP-RDIC-9181-PF-48
C2	PROPOSED	JMA-MX08FRO665-21	N66,N70, N71	240°	140'-0"		FUJITSU-TA08025-B604	N70,N66	C2	
C3	--	--	--	--	--		--	--	--	

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.
3. ANTENNAS SHALL BE PAINTED TO MATCH EXISTING WATER TANK.

ANTENNA SCHEDULE — NO SCALE — 3

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BWY	JQ/EI	EI

RFDS REV #: 3

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A&E PROJECT NUMBER

BOBOS00067A

DISH Wireless L.L.C. PROJECT INFORMATION

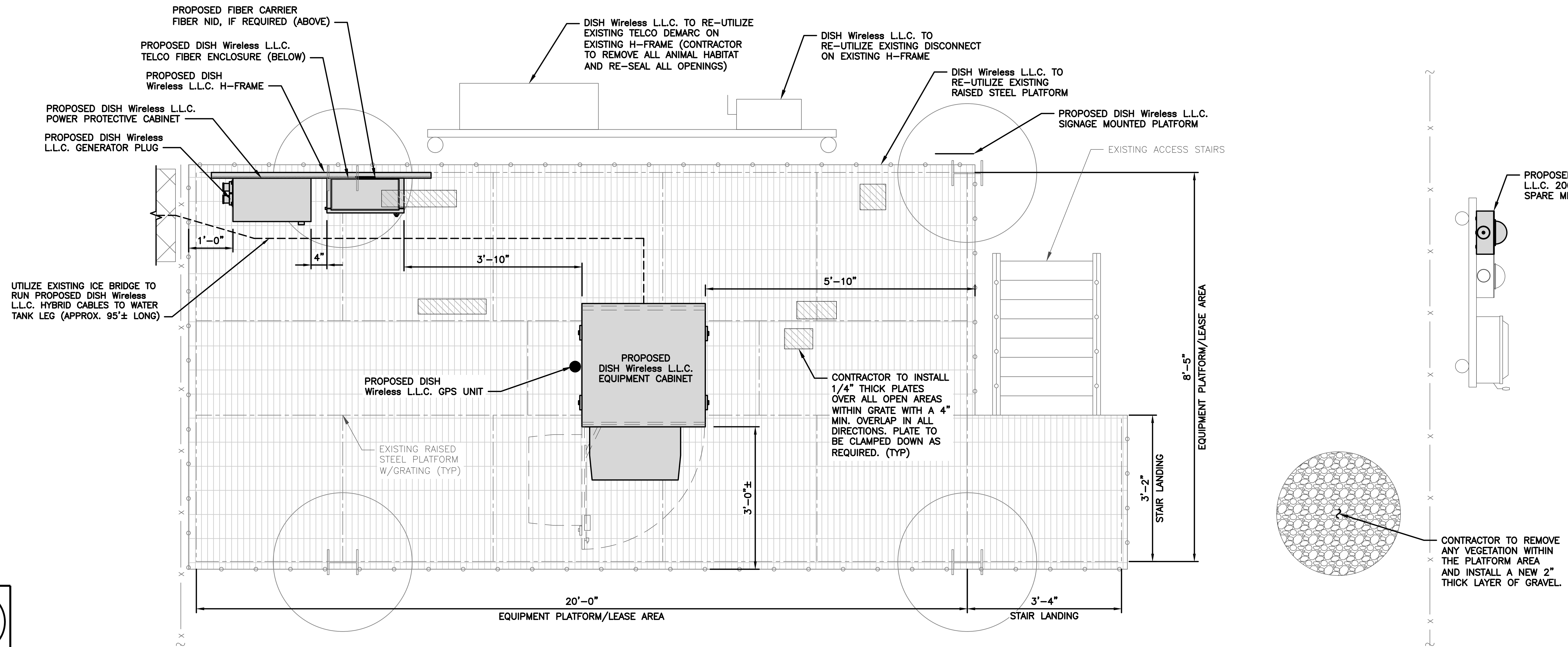
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

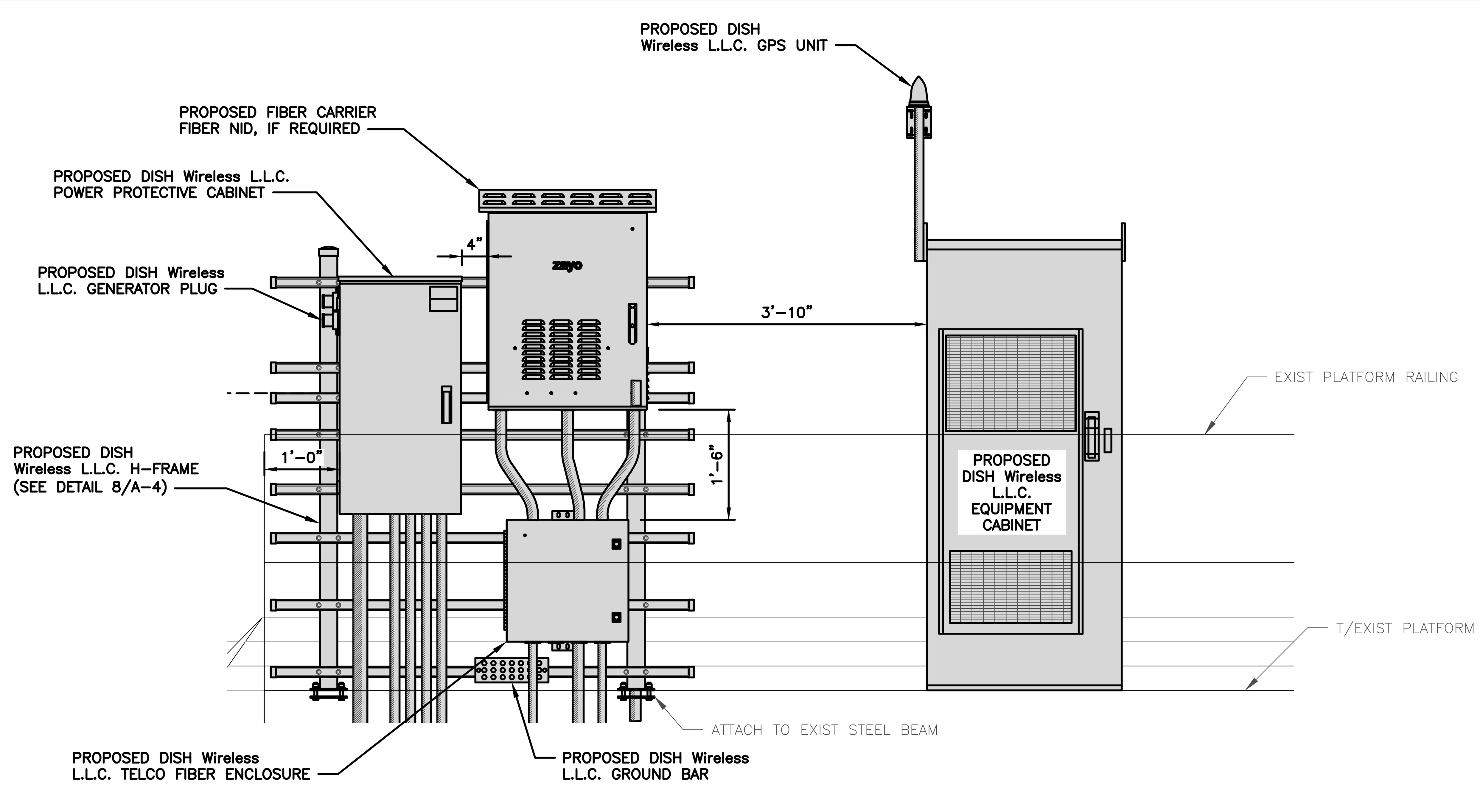
A-2



PLATFORM EQUIPMENT PLAN

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

1



PLATFORM EQUIPMENT ELEVATION

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

2

NOTES

1. GPS MAY BE MOVED TO ICE BRIDGE OR H-FRAME.
2. ALL CONDUIT TO BE ROUTED THROUGH PLATFORM GRATING USING LIQUIDTIGHT, EMT, RIGID OR PVC COUPLERS. CONDUIT QUANTITY AND SIZES ARE PER ONE-LINE DIAGRAM ON E-3 SHEET OF CDS. (DC PLANT DEPENDENT.)
3. CONTRACTOR MAY FIELD INSTALL CONDUIT HOLES IN BOTTOM OF PPC CABINET TO MATCH CONDUIT SIZES. (SEAL TO PPC MANUFACTURER SPECIFICATIONS).
4. H-FRAME POSTS ARE STAGGERED TO ALLOW FIBER NID BOXES TO BE INSTALLED CLOSE TO PERIMETER FRAME OF PLATFORM.
5. CONDUITS FROM PPC/FIBER DEMARK CABINETS TO EQUIPMENT CABINET (BBU) SHALL BE INSTALLED INSIDE PERIMETER OF PLATFORM AND UNDER GRATING.

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DISH Wireless L.L.C.
PROJECT INFORMATION

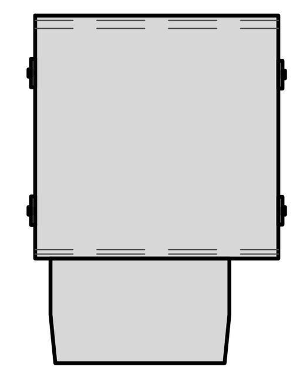
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

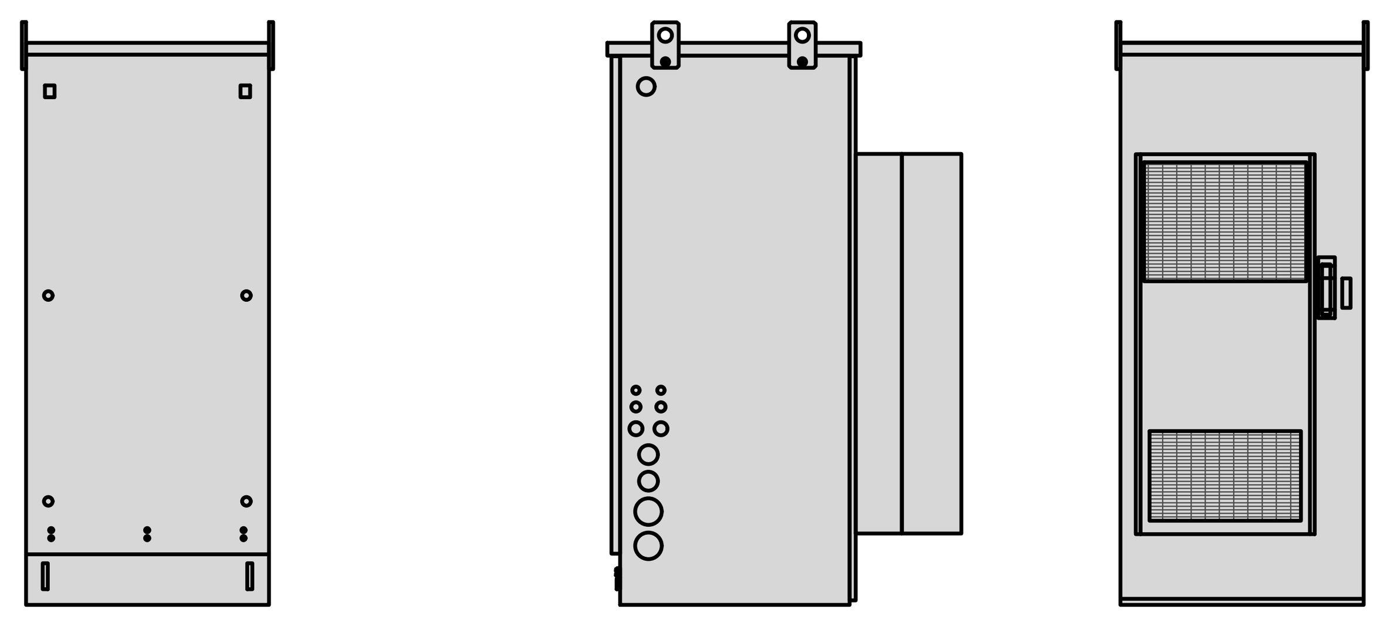
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-3

CHARLES INDUSTRY HEX CUBE–PM639155N4

DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs

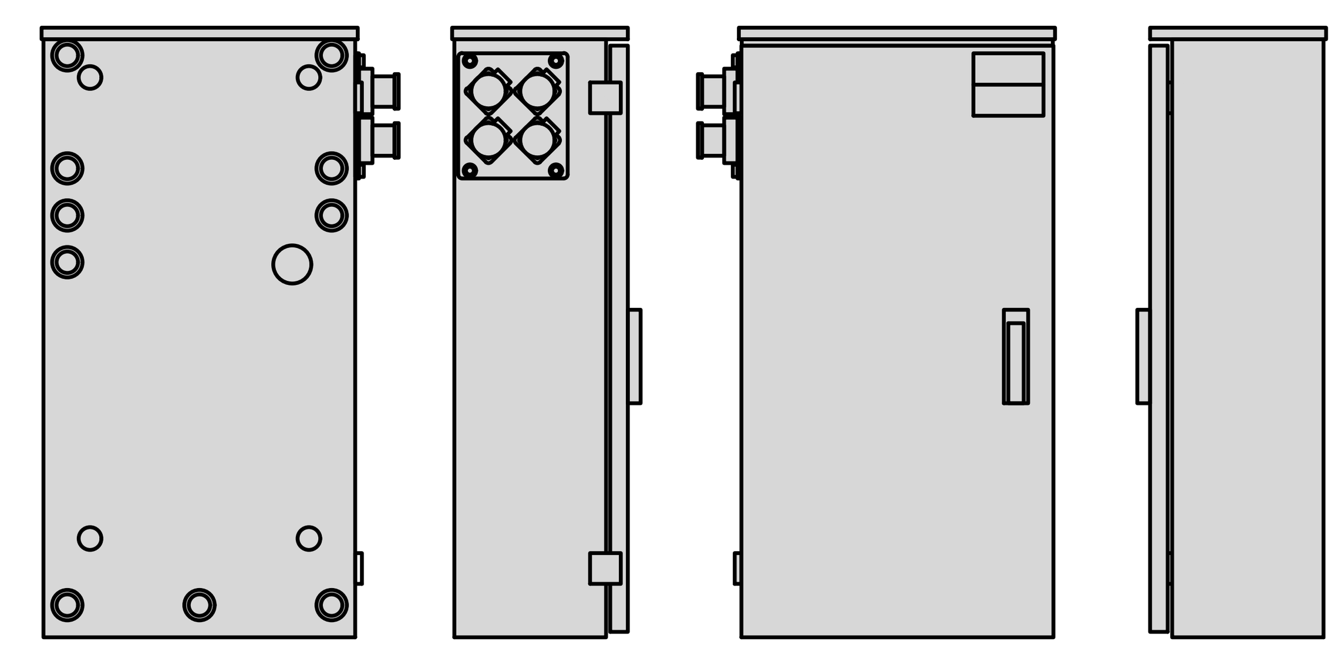




CABINET DETAIL — NO SCALE — 1

RAYCAP PPC RDIAC–2465–P–240–MTS

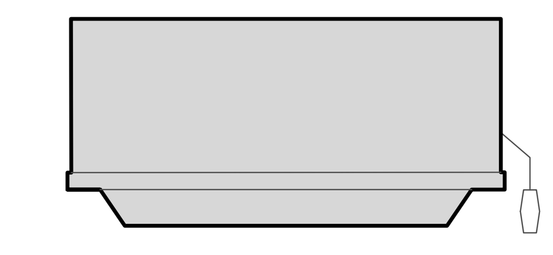
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

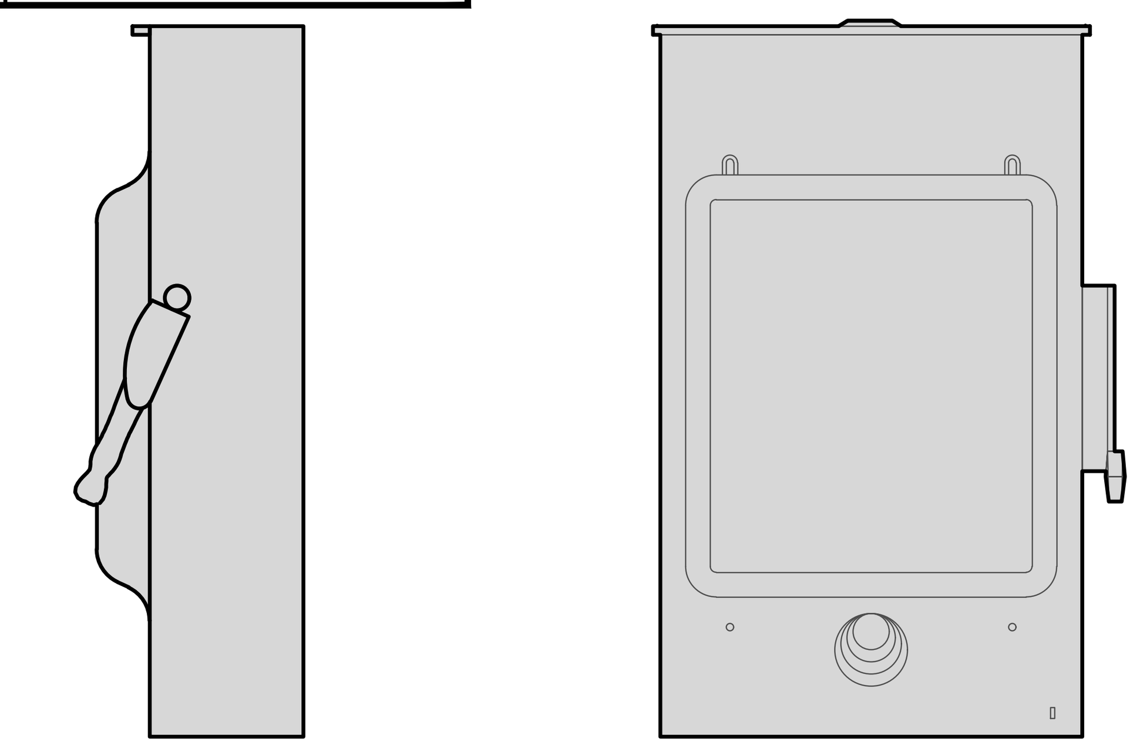


POWER PROTECTION CABINET (PPC) DETAIL — NO SCALE — 2

SQUARE D SAFETY SWITCHES D224NRB

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

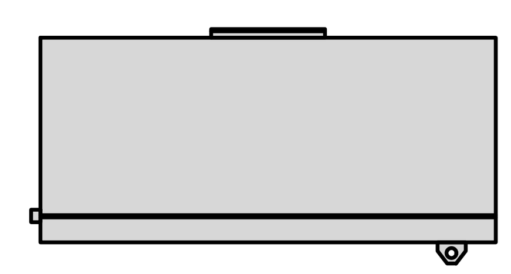


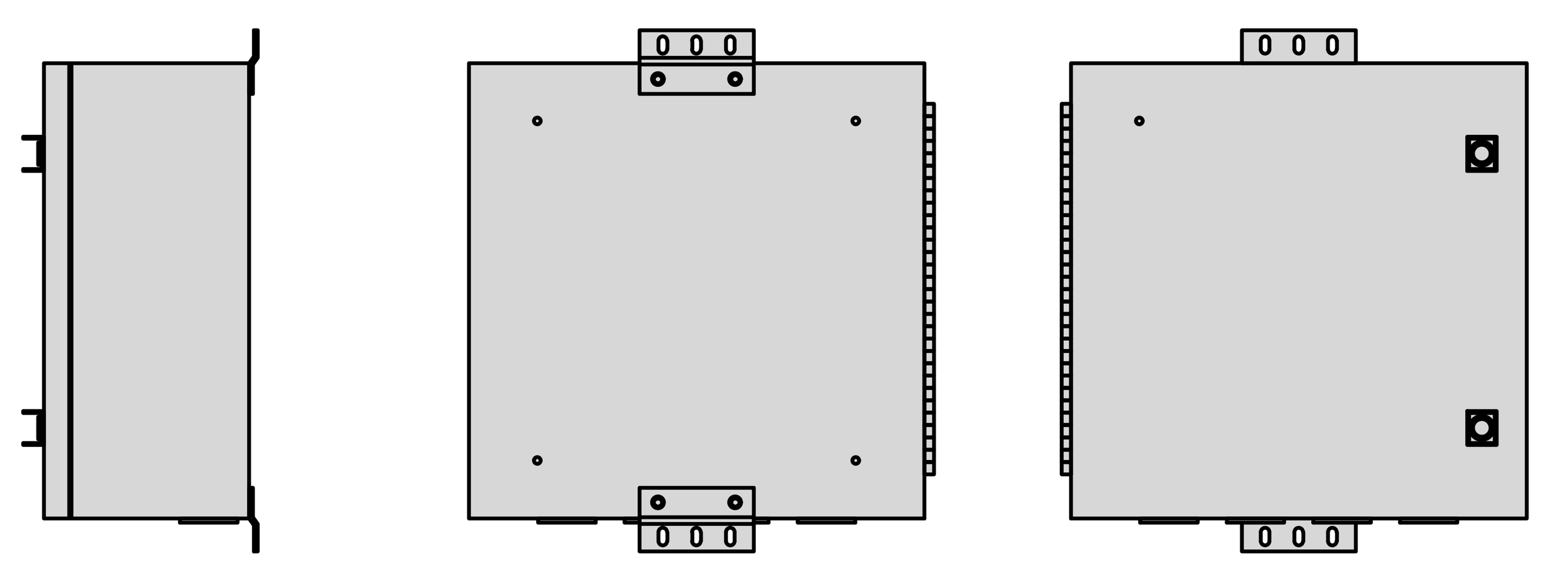


SAFETY SWITCH DETAIL — NO SCALE — 3

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE

ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

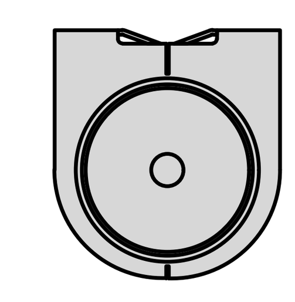


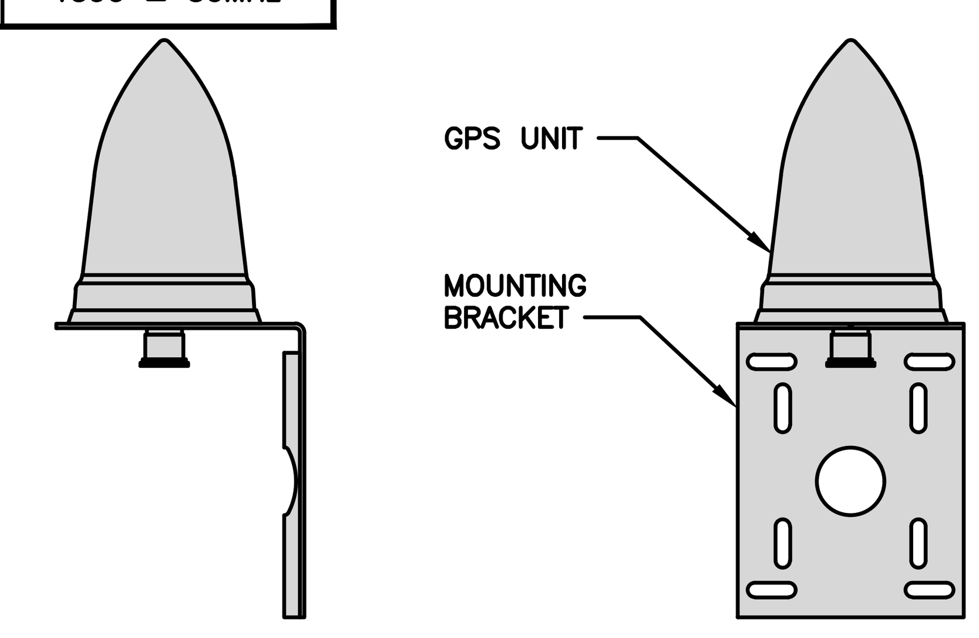


FIBER TELCO ENCLOSURE DETAIL — NO SCALE — 4

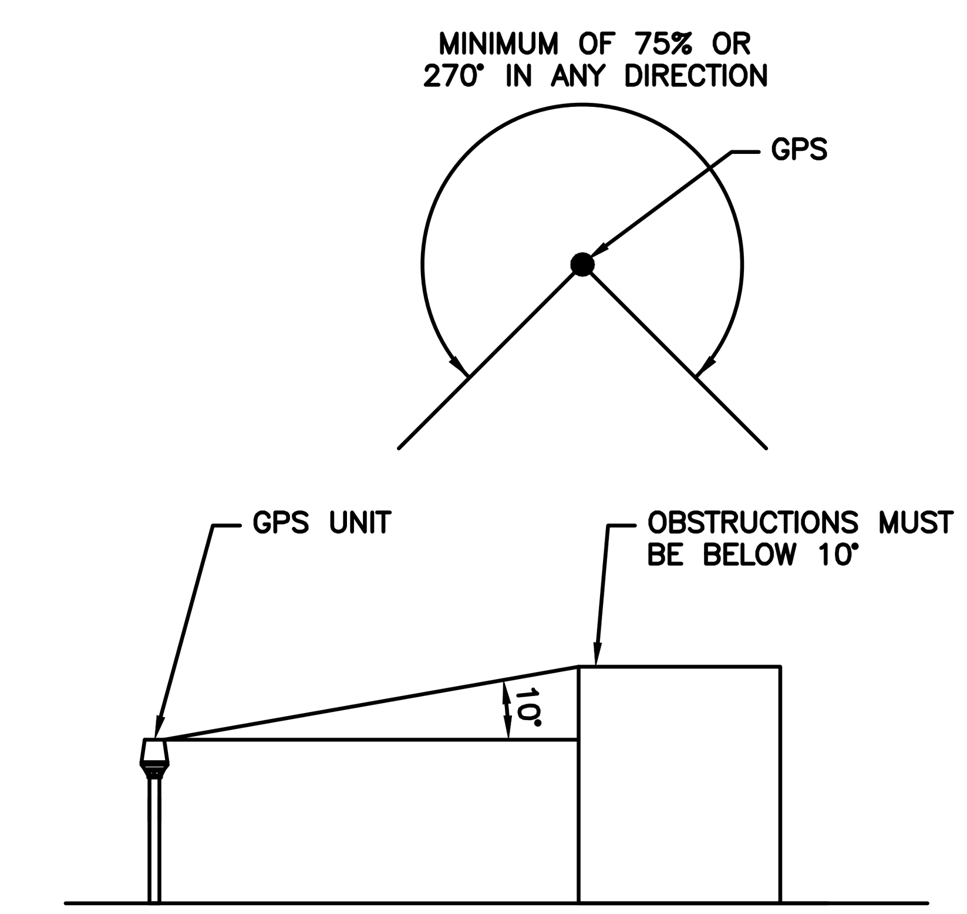
PCTEL GPSGL–TMG–SPI–40NCB

DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	0.75 lbs
CONNECTOR	N–FEMALE
FREQUENCY RANGE	1590 ± 30MHz





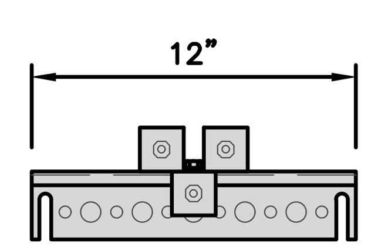
GPS DETAIL — NO SCALE — 5

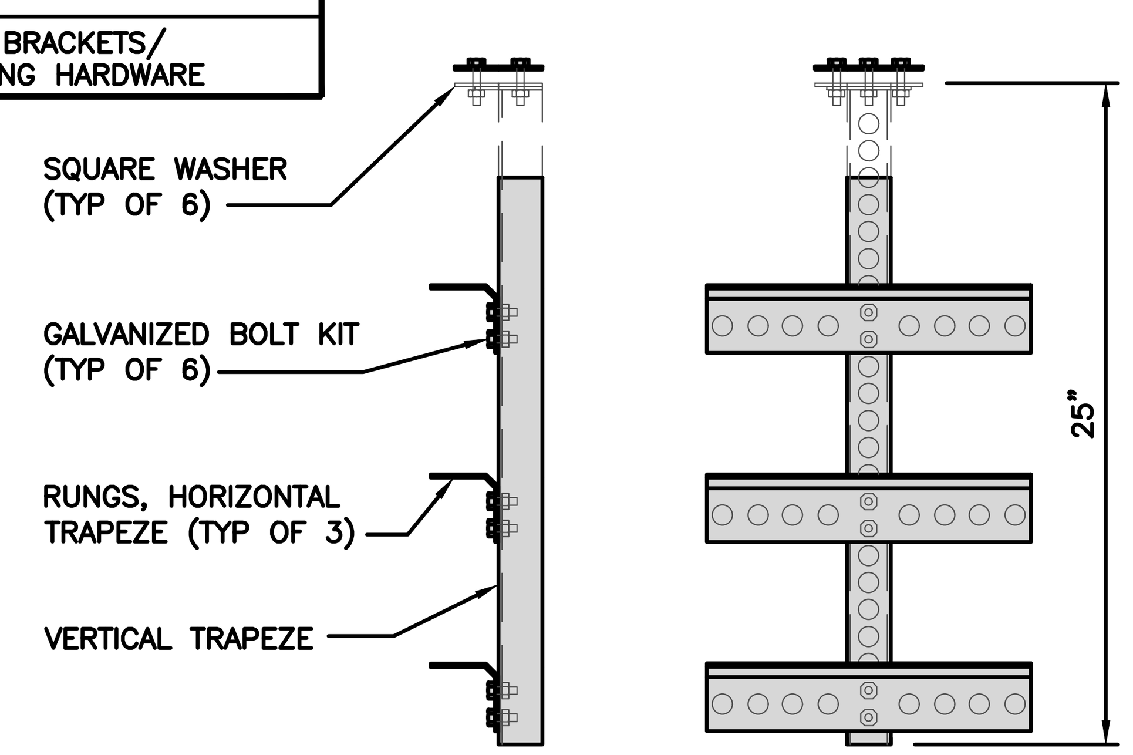


GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 6

COMMSCOPE WB–T12–3 TRAPEZE KIT

DIMENSIONS (HxWxL)	3"x12"x25"
WEIGHT	9.039 LBS
RUNGS (QTY)	3
INCLUDED PRODUCTS:	ANGLE BRACKETS/ MOUNTING HARDWARE



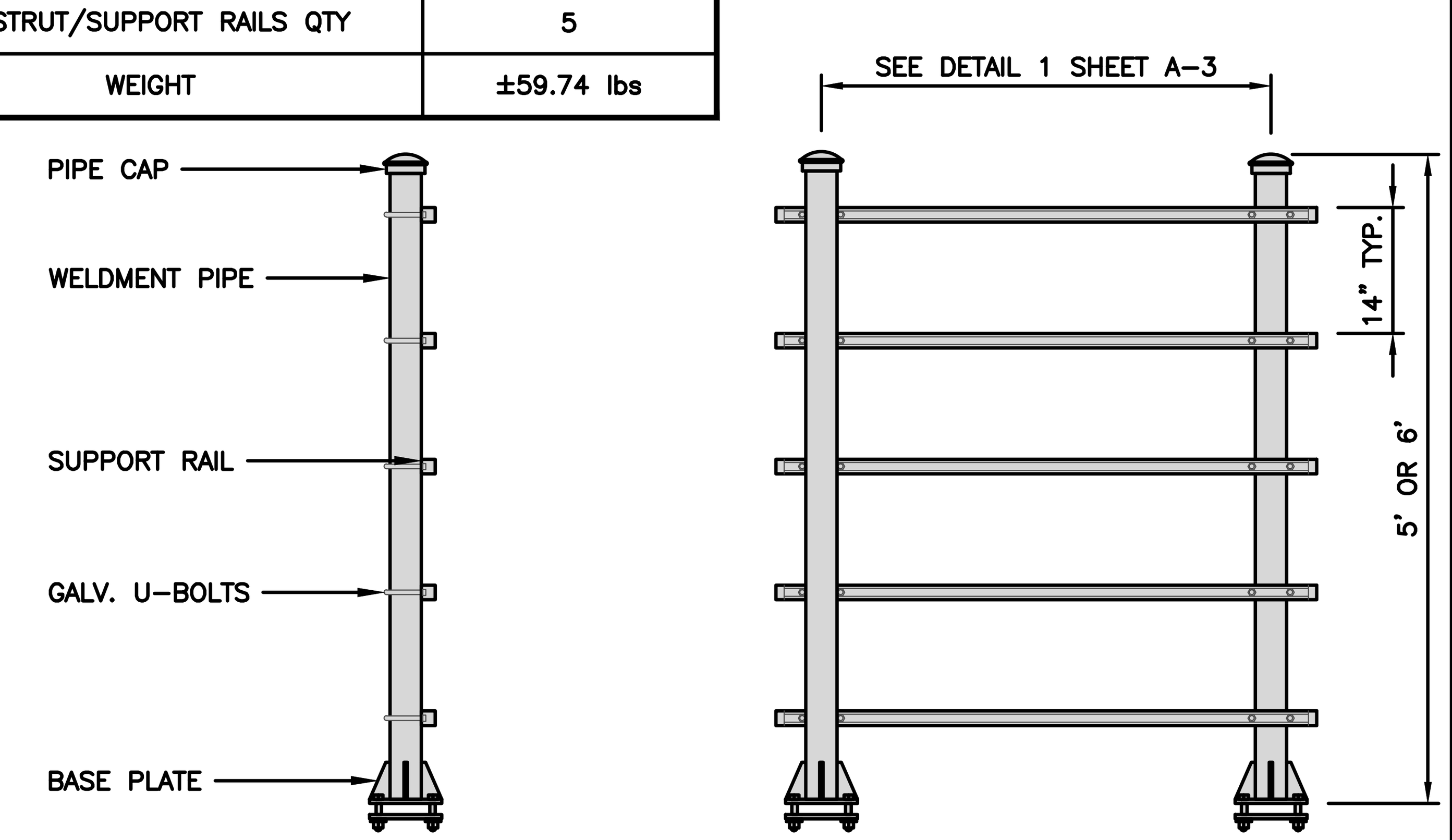


ICE BRIDGE MOUNT DETAIL — NO SCALE — 7

COMMSCOPE MTC4045HFLD H–FRAME

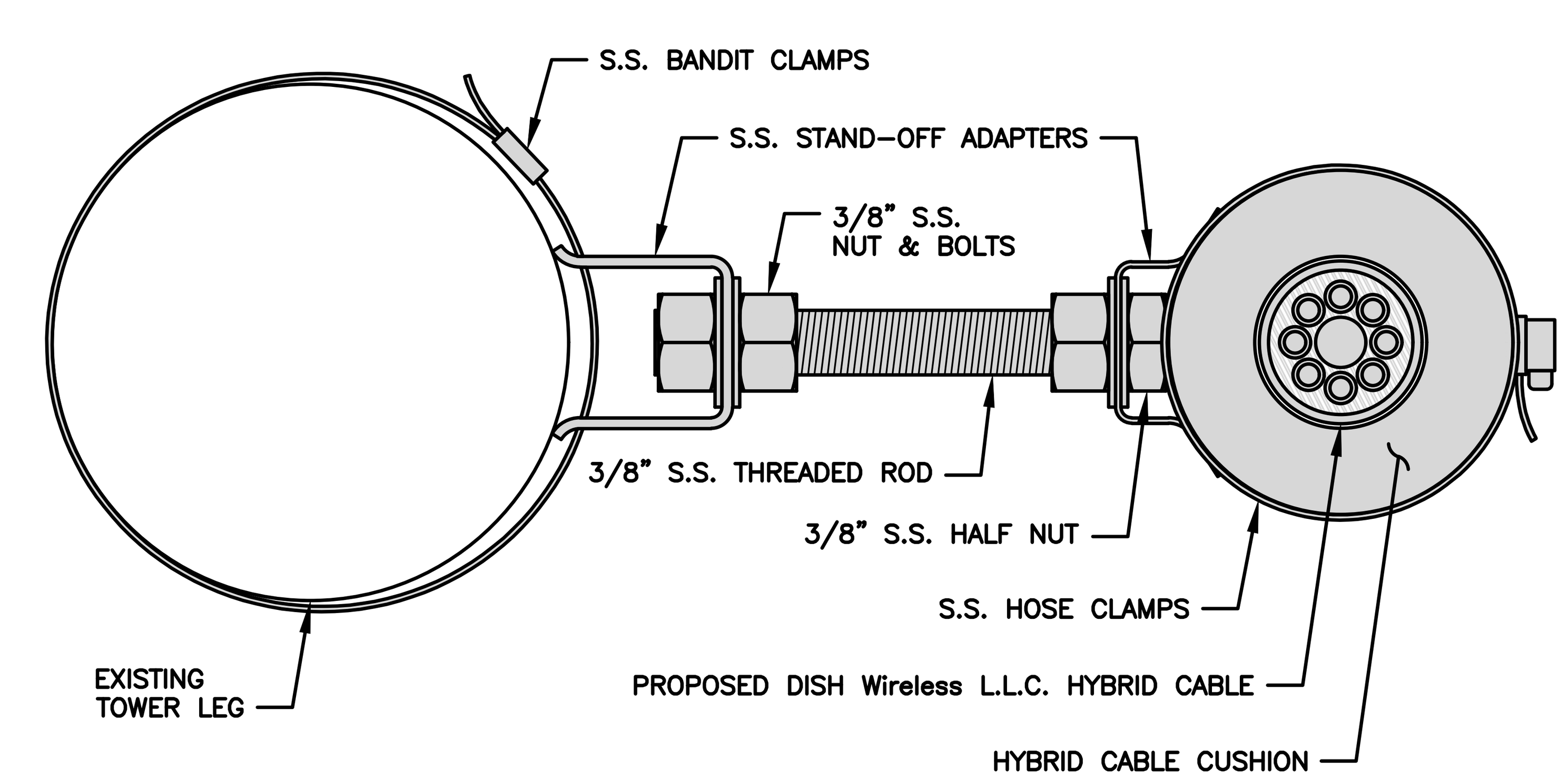
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	±59.74 lbs

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



H–FRAME DETAIL — NO SCALE — 8

NOTE: PROVIDED & INSTALLED BY CONTRACTOR



HYBRID CABLE TOWER LEG RUN — NO SCALE — 9

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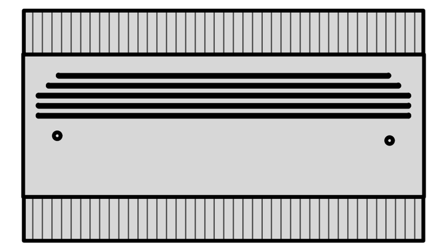
DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

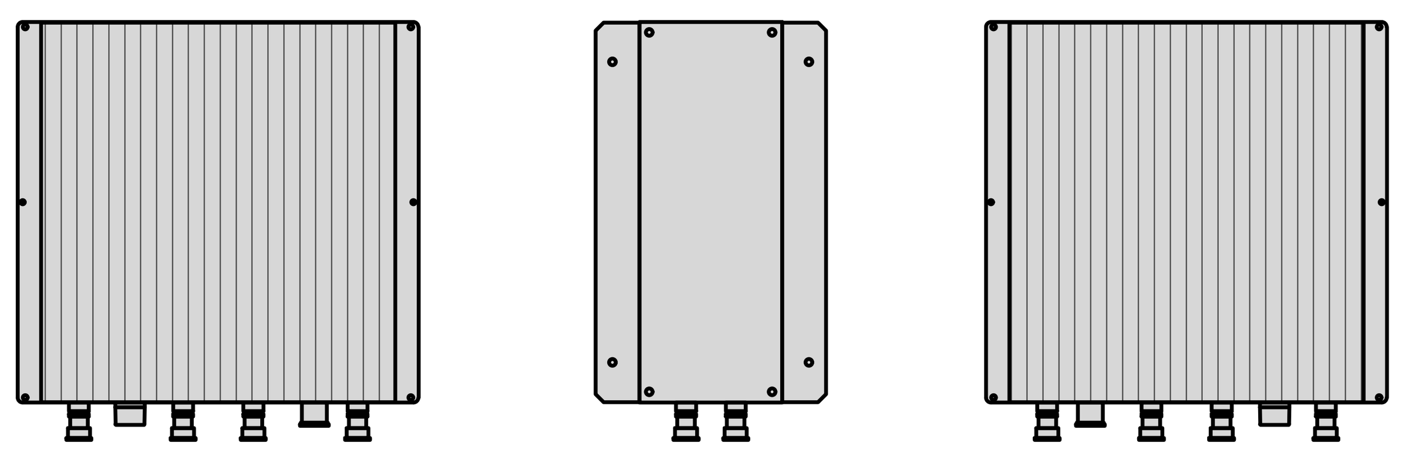
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

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



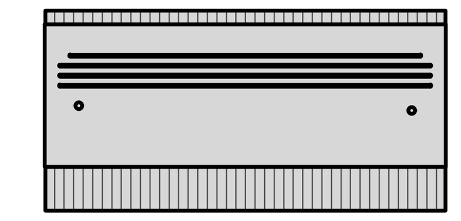
PLAN



BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

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



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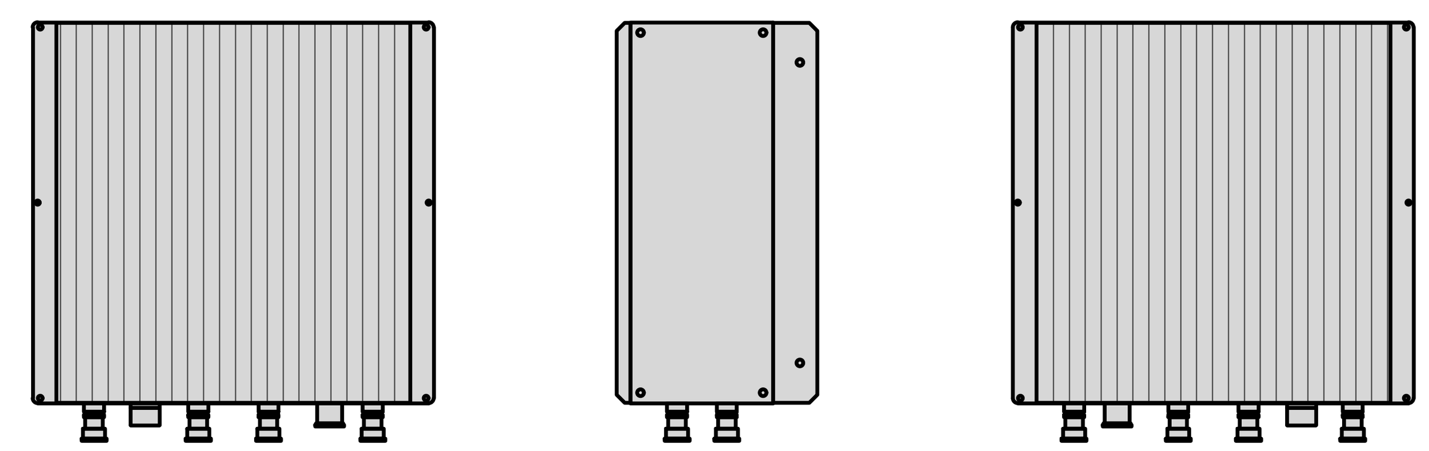
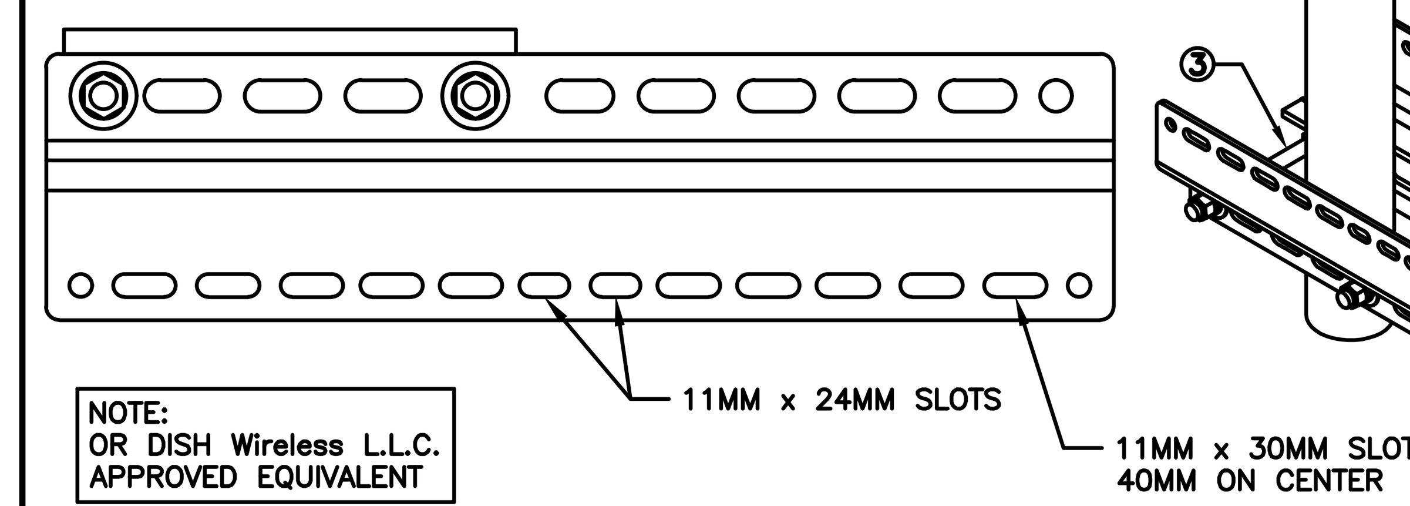


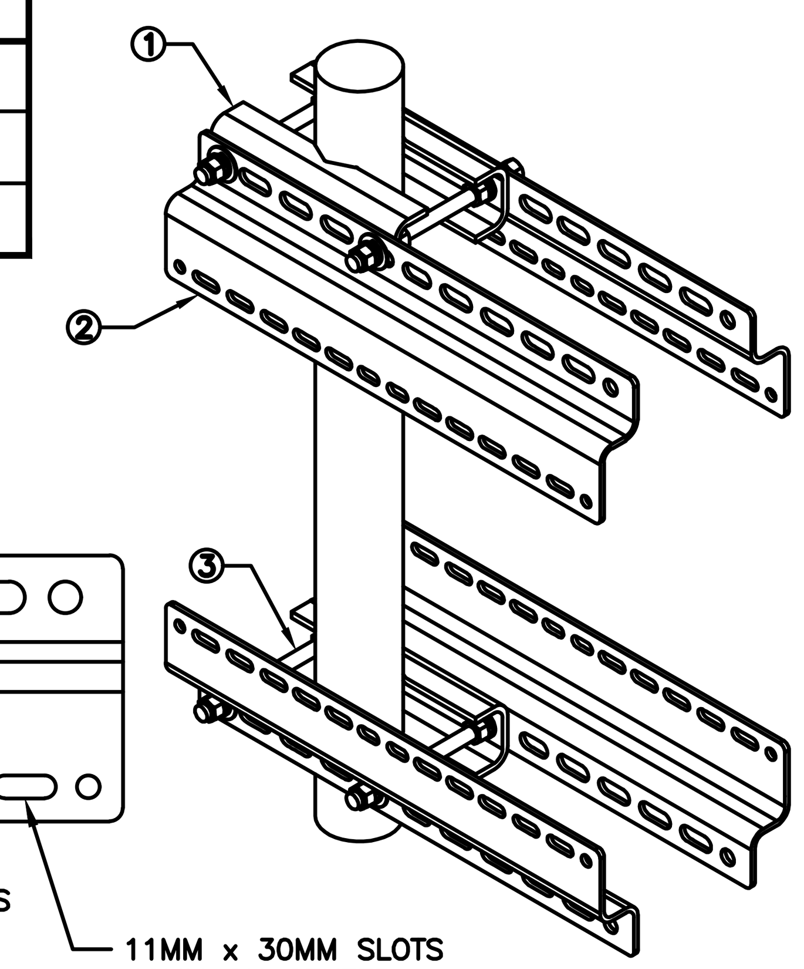
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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

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



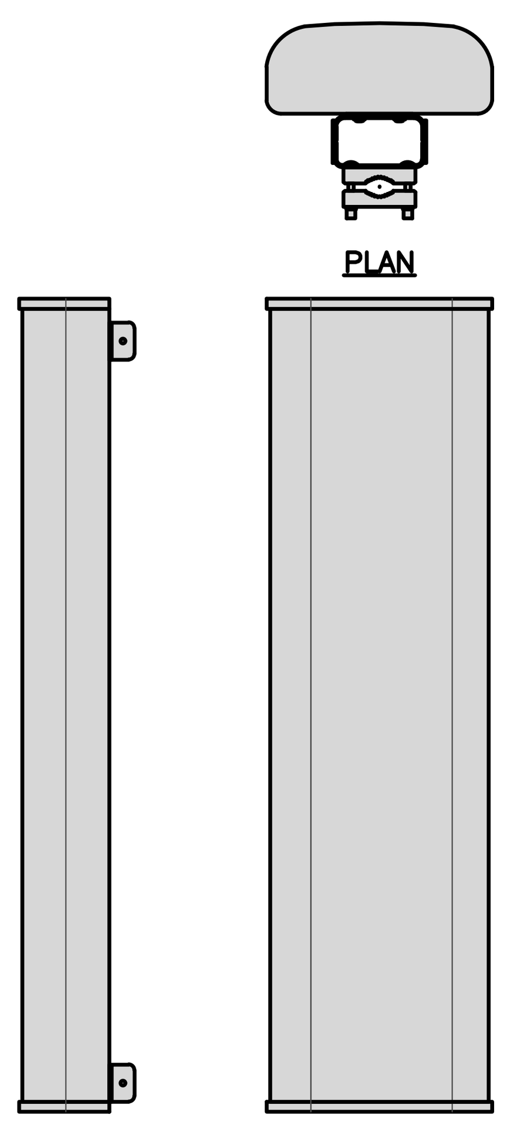


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20"x8"
ANTENNA WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs

NOTE: ANTENNAS SHALL BE PAINTED TO MATCH EXISTING WATER TANK.

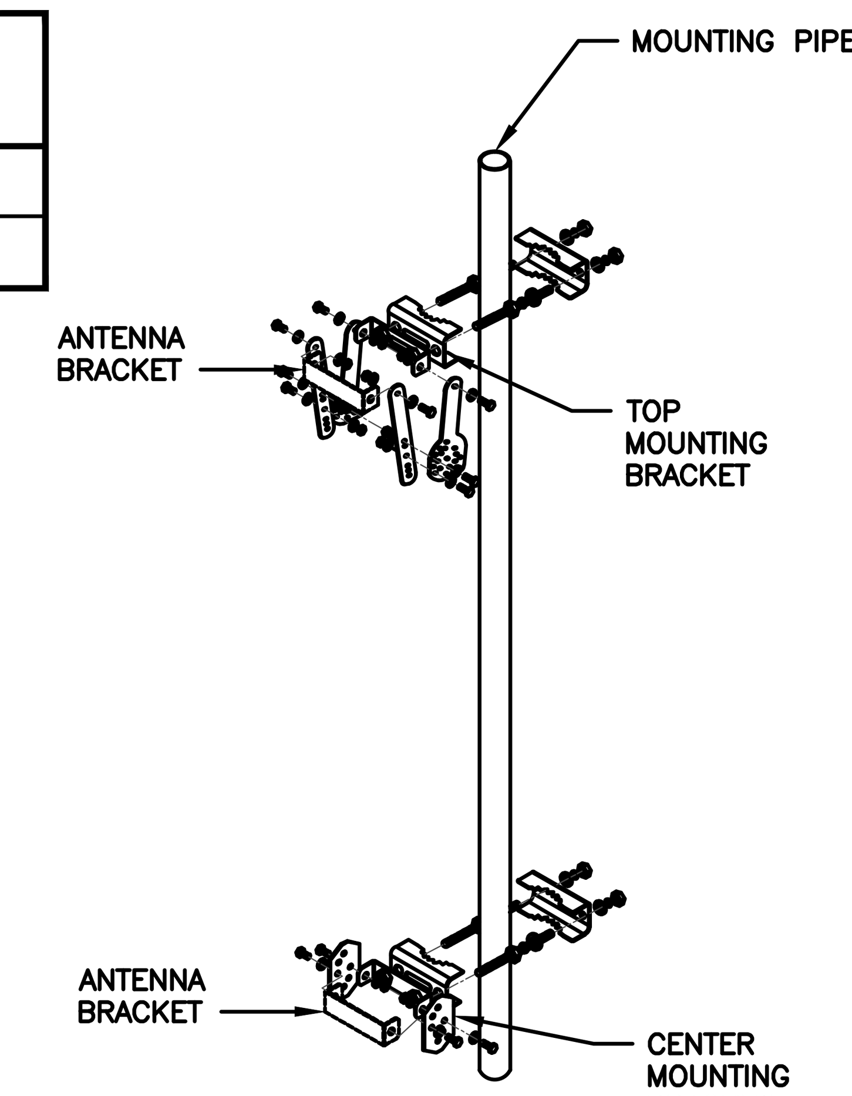


PLAN SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

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

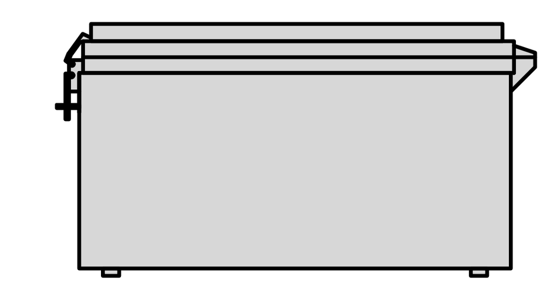
NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS
ANTENNA BRACKET NOT PART OF KIT



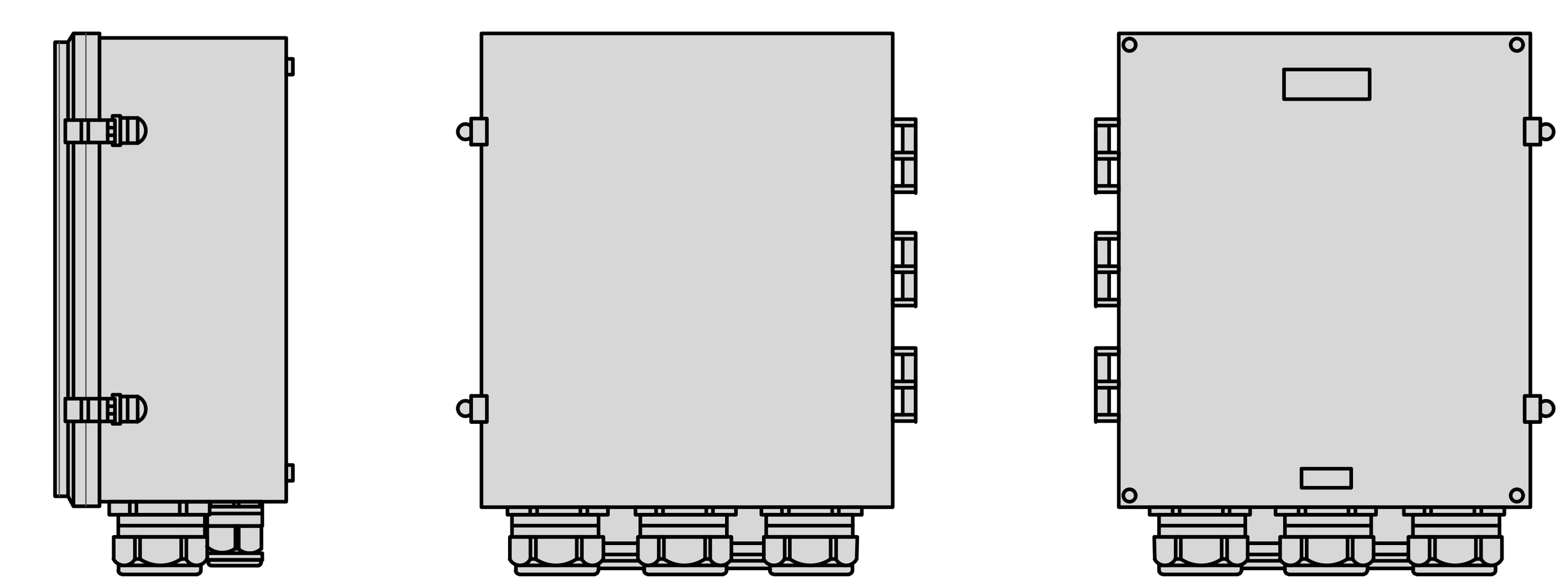
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 5

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

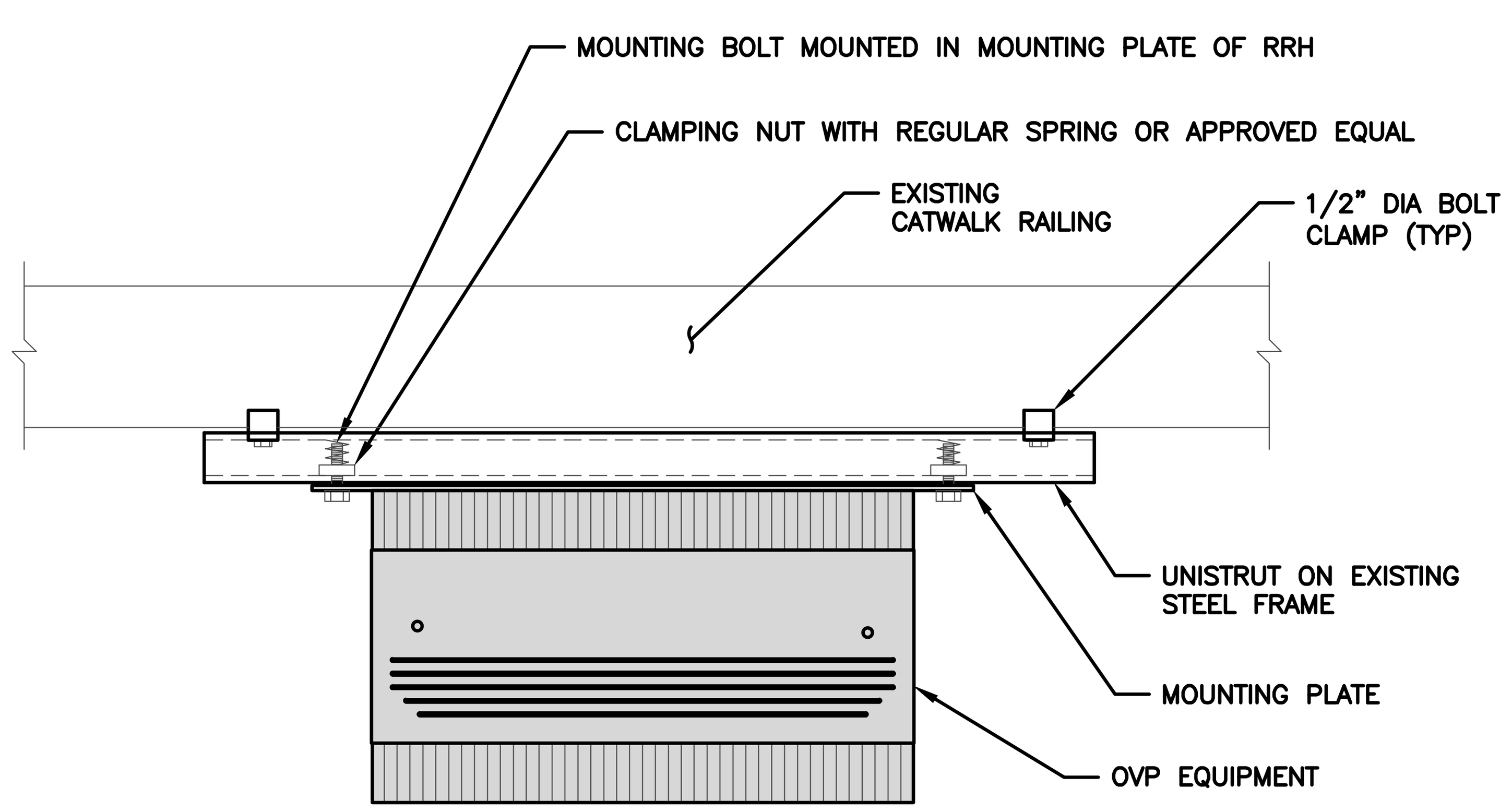


PLAN



SIDE BACK FRONT

SURGE SUPPRESSION DETAIL | NO SCALE | 6



NOTE:
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APPROVED EQUIVALENT

OVP UNISTRUT RAILING MOUNT DETAIL | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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SHEET NUMBER
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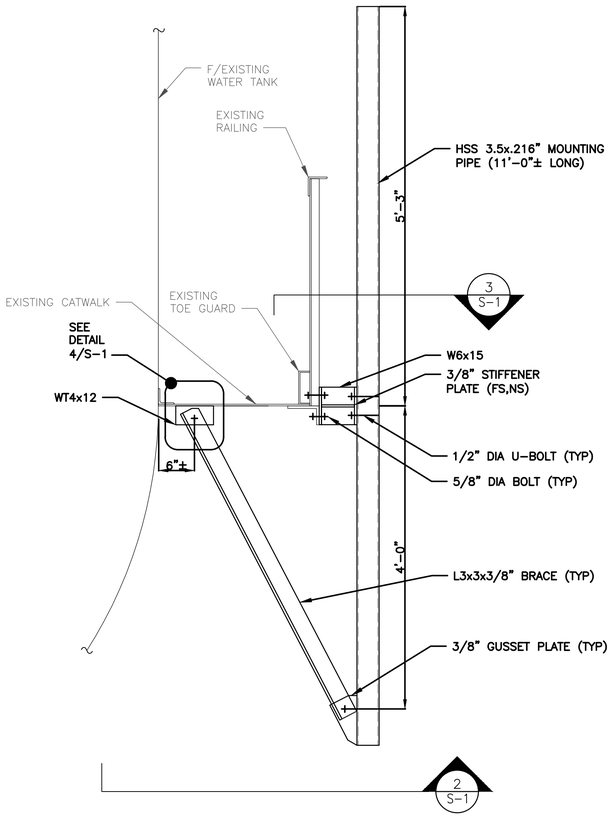
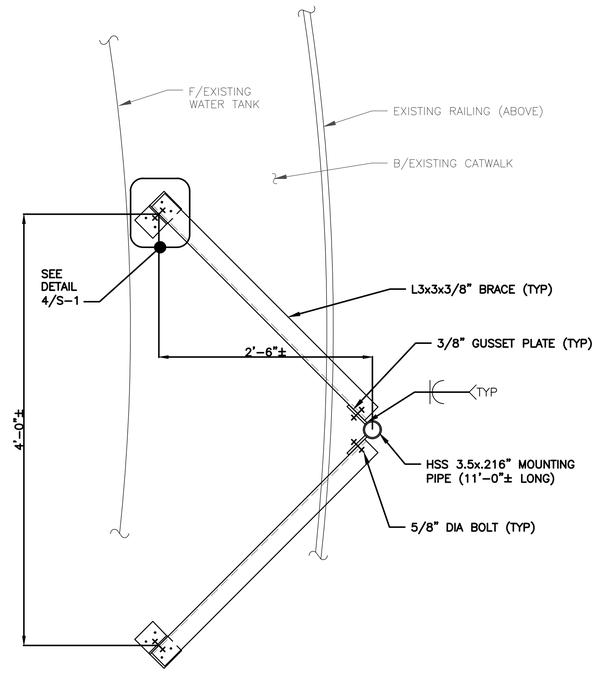


ANTENNA MOUNT ELEVATION

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

1



ANTENNA MOUNT PLAN

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

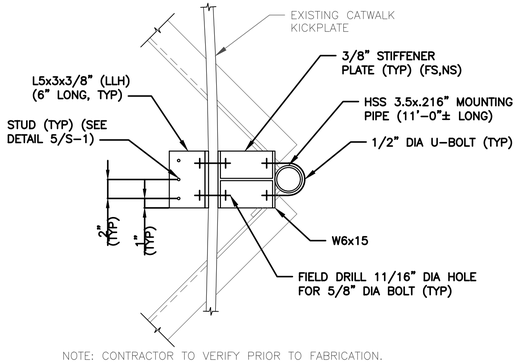
2

NOTES

1. REFER TO THE STRUCTURAL ANALYSIS REPORT BY TECTONIC ENGINEERING DATED JANUARY 16, 2023.

BILL OF MATERIALS

PART	LENGTH	# OF ITEM
HSS 3.5x0.216" PIPE	11'	3
L3x3x3/8" BRACE	4'-6"±	6
WT4x12	4"	6
W6x15	6"	3
L5x3x3/8" CLIP ANGLE	6"	6
W6x15 STIFFENER PLATE	3x5.25x3/8"	6
LOWER PIPE GUSSET PLATE	8x4.5x3/8"	6
1/2" DIA U-BOLT	–	6
5/8" DIA A325 BOLT	AS REQUIRED	24
1/4" STEEL STUD	AS REQUIRED	33

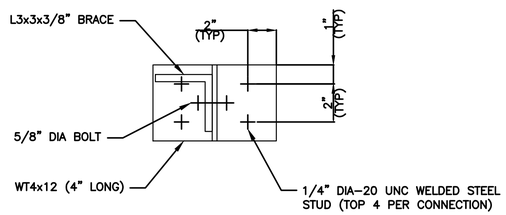


NOTE: CONTRACTOR TO VERIFY PRIOR TO FABRICATION.

CONNECTION DETAIL

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

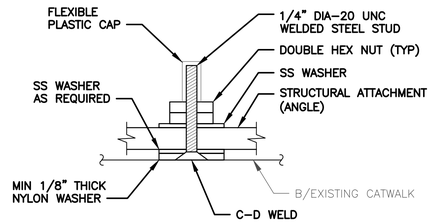
3



CONNECTION DETAIL

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

4



STUD WELD DETAIL

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

5

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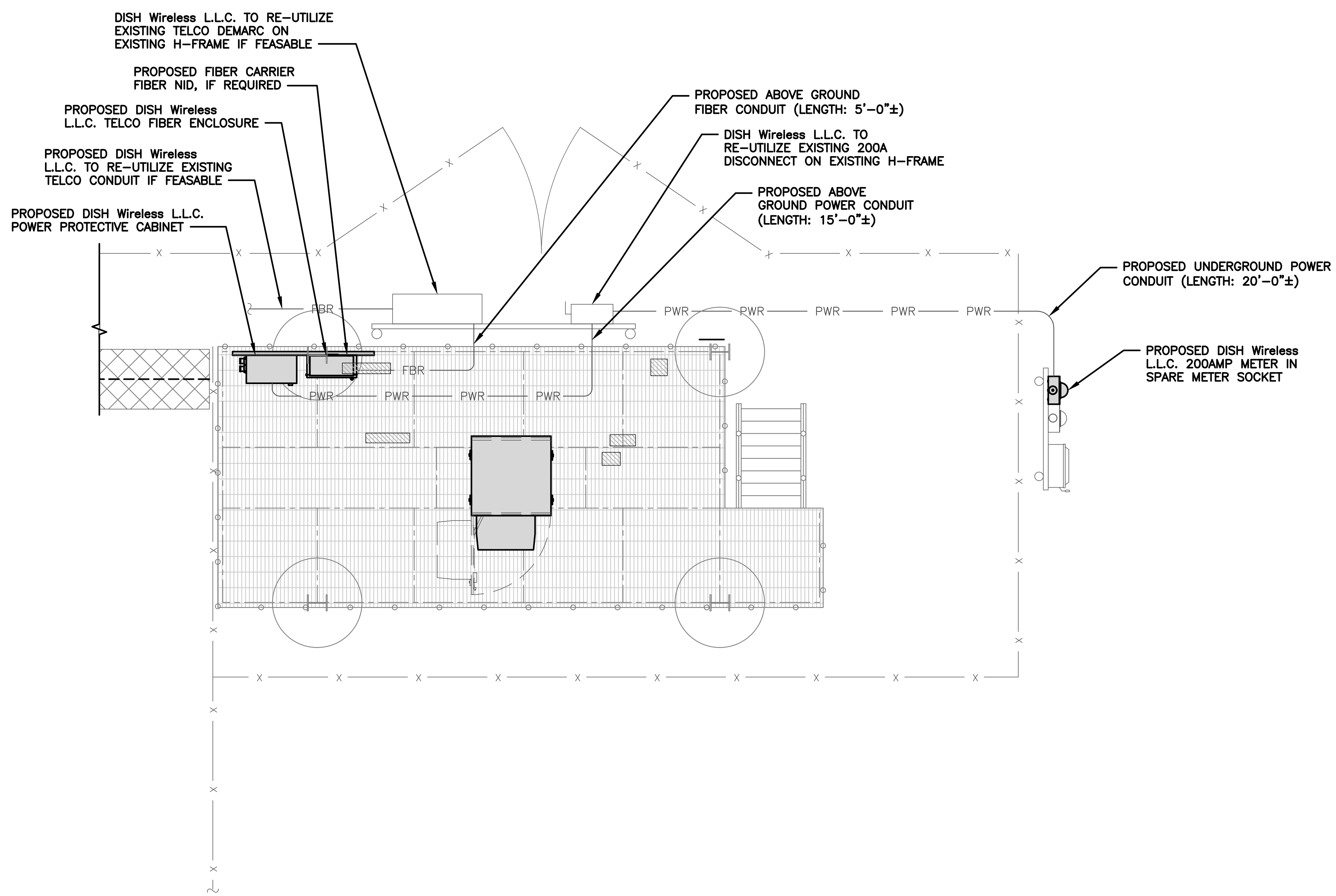
STRUCTURAL DETAILS

SHEET NUMBER

S-1

NOTES

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



N

UTILITY ROUTE PLAN — 12" 6" 0 1' 2' 3' 4' 5' 6' 7' — 3/8"=1'-0" — 1

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

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

ELECTRICAL NOTES — NO SCALE — 2

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Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
(800) 829-6531
www.tectonicengineering.com

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

STATE OF CONNECTICUT — EDWARD N. JAMIESON — LICENSED PROFESSIONAL ENGINEER

DRAWN BY:	CHECKED BY:	APPROVED BY:
BWY	JQ/EI	EI

RFDS REV #: 3

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	01/18/2023	ISSUED FOR CONSTRUCTION
1	02/15/2023	REVISED PER COMMENTS

A&E PROJECT NUMBER
BOBOS00067A

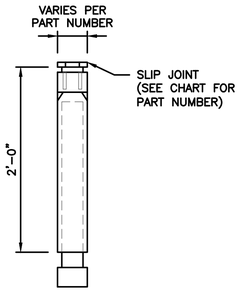
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

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"



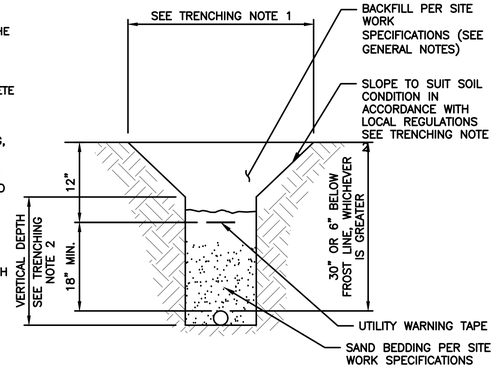
NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL

NO SCALE | 1

TRENCHING NOTES

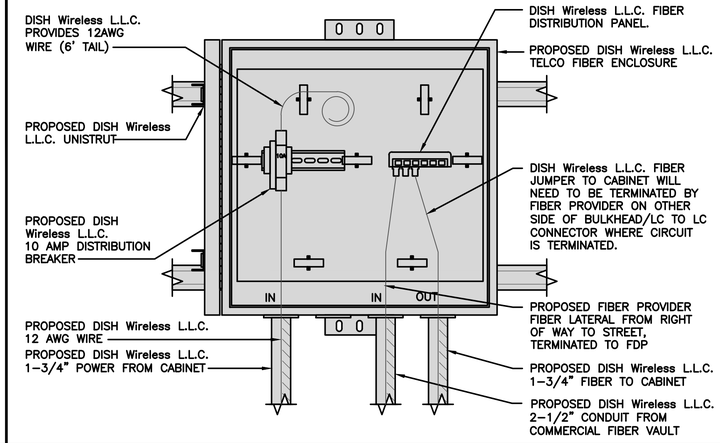
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



IMPORTANT: UNDERGROUND WARNING/MARKING TAPE SHALL BE BURIED AT A DEPTH OF 12 IN (30 CM) OR LESS BELOW GRADE. THE MINIMUM DISTANCE FROM THE TOP OF THE PIPELINE SHOULD BE 12 IN (30 CM). REQUIRED DEPTH OF PIPELINE SHALL BE 30" BELOW GRADE OR 6" BELOW FROSTLINE, WHICHEVER IS GREATER. EACH RUN OF UNDERGROUND WARNING/MARKING TAPE MUST BE OVERLAPPED BY A MINIMUM OF 20 FT (6 M) OR MUST BE JOINED.

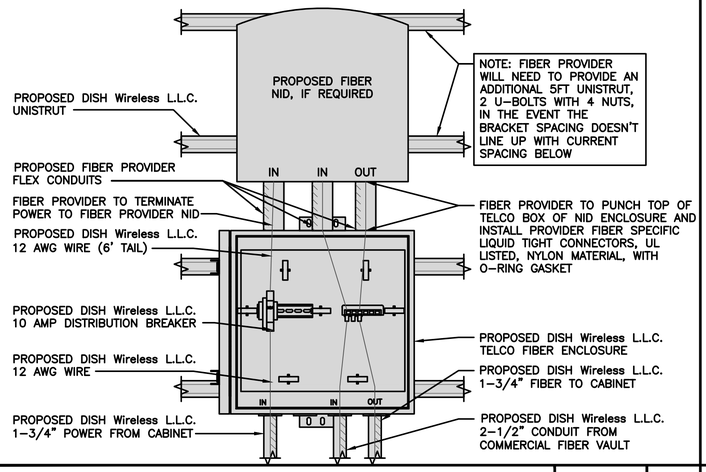
TYPICAL UNDERGROUND TRENCH DETAIL

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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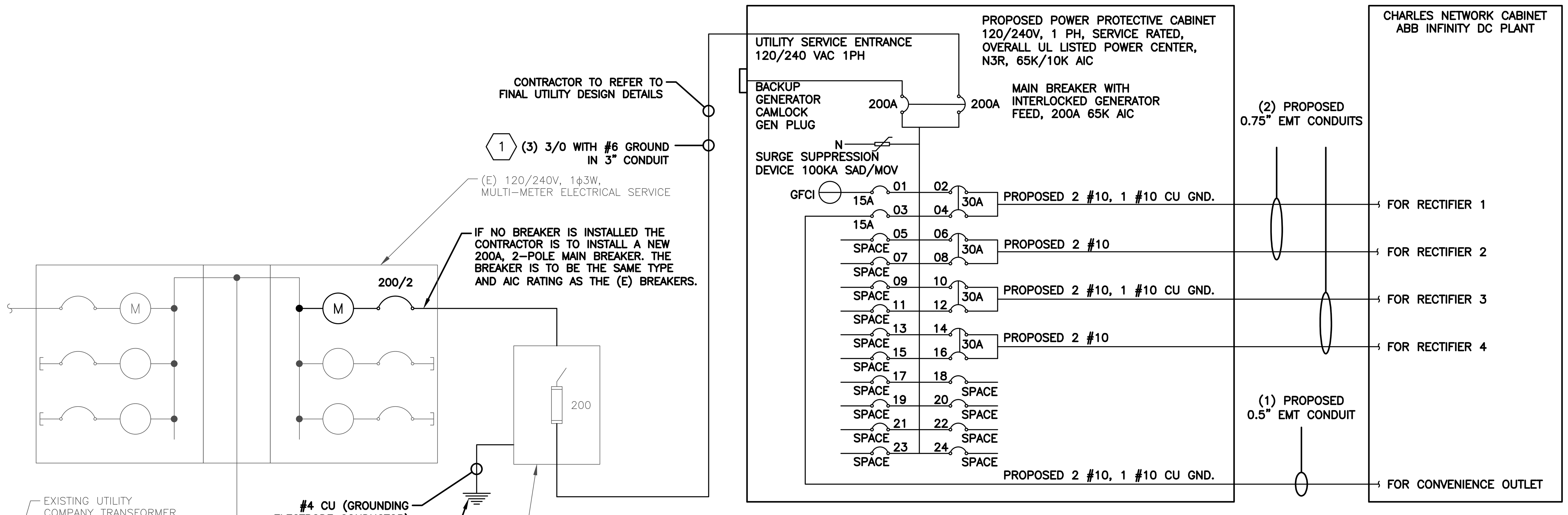
MYSTIC, CT 06355

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



SERVICE/FEEDER CONDUCTOR LENGTH TABLE (BASED ON INDUSTRY STANDARD 3% VOLTAGE DROP AND 5% NEC ALLOWABLE LIMIT)						
	CONDUCTOR SIZES					
DESIGN LOADS	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (160A) (NEC ARTICLE 220 & 230 5% VOLTAGE DROP)	220'	260'	240'	300'	360'	425'

NOTES:
1. 250 MCM/KCMIL AL + #2 AL GRD MAY BE USED AS A REPLACEMENT FOR 3/0 CU + #6 CU GRD SERVICE CONDUCTOR FROM THE DISH Wireless L.L.C. FIRST MEANS OF DISCONNECT/UTILITY COMPANY MEET-ME POINT. REFER TO VALUES ABOVE TO LIMIT VOLTAGE DROP TO 3%.
2. ALUMINUM/COPPER CONDUCTORS MUST BE RATED 75°C.
3. ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS
4. PPC MAIN DISCONNECT CIRCUIT BREAKERS ACCEPT #4 – 300KCMIL AL OR CU CONDUCTORS.
5. VOLTAGE DROP FOR SINGLE METER ENCLOSURE FED FROM TRANSFORMER WITH MULTIPLE CUSTOMERS IS CALCULATED FROM THE TRANSFORMER TO PPC. (SERVICE AND FEEDER CONDUCTOR LENGTH)
6. VOLTAGE DROP FOR MULTI-METER ENCLOSURE IS CALCULATED FROM THE METER TO PPC. (FEEDER CONDUCTOR LENGTH)
7. VOLTAGE DROP CALCULATIONS ARE BASED ON A POWER FACTOR OF 1, A LINE TO GROUND VOLTAGE PER CONDUCTOR OF 120V, NO CORRECTION FACTOR FOR AMBIENT TEMPERATURE OR ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A SINGLE CONDUCT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

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

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

NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

250kcmil AL – 0.3970 SQ. IN X 3 = 1.191 SQ. IN
#4 AL – 0.0824 SQ. IN X 1 = 0.0824 SQ.IN <GROUND
TOTAL = 1.2734 SQ. IN

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

PPC ONE-LINE DIAGRAM NO SCALE 1

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

PANEL SCHEDULE NO SCALE 2

SHORT CIRCUIT CALCULATIONS NO SCALE 3

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LITTLETON, CO 80120

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NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

STATE OF CONNECTICUT
LICENSED PROFESSIONAL ENGINEER

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:
BWY	JQ/EI	EI

RFDS REV #: 3

PRELIMINARY DOCUMENTS

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REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER
BOBOS00067A

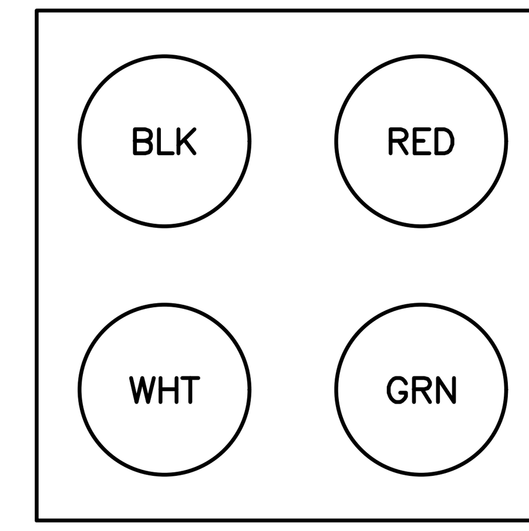
DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

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

SHEET NUMBER
E-3

NOTES:

1. HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.
2. 100 OR 200 AMP, 240 VOLTS, SINGLE PHASE ALTERNATING CURRENT CIRCUIT ONLY
3. GENERATOR SHORT CIRCUIT RATING: 10,000 / 20,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
4. UTILITY SHORT CIRCUIT RATING: 65,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
5. SUITABLE FOR USE AS SERVICE EQUIPMENT
6. SUITABLE FOR USE IN ACCORDANCE WITH ARTICLE 702 OF THE NATIONAL ELECTRIC CODE ANSI/NFPA 70
7. BONDED NEUTRAL WHEN INSTALLED AS SHOWN IN WIRING DIAGRAM
8. RAIN PROOF TYPE 3R
9. USE CU–AL WIRE 60–75 °C
10. EQUIPPED WITH SLIDE BAR MECHANICAL INTERLOCK
11. INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
12. EQUIPPED WITH SQUARE D BREAKERS OR ALTERNATIVE MANUFACTURER EQUIVALENT
13. WHEN REPLACE LOAD CENTER BREAKERS, USE ONLY SQUARE D (QO TYPE) OF THE SAME RATING OR EQUIVALENT
14. WHEN RESETTING BREAKERS TURN TO OFF POSITION, THEN TO ON POSITION
15. WARNING: MAKE CONTINUITY CHECK WITH OHM METER TO VERIFY CORRECT PHASING AND GROUNDING CONNECTIONS BEFORE POWER UP
16. VERIFY PIN OUT CONFIGURATION OF GENERATOR PRIOR TO USE.
17. RISK OF ELECTRIC SHOCK, BOTH ENDS OF DISCONNECTING MEANS MAY BE ENERGIZED. TEST BEFORE SERVICING
18. THIS SWITCH BOARD MAY CONTAIN A TAP ON THE SERVICE SIDE OF THE MAIN POWER DISCONNECT FOR REMOTE MONITORING OF UTILITY/STANDBY POWER
19. THE NORMAL AC POWER MONITORING CIRCUIT MUST UTILIZE A DISCONNECTING MEANS WITH A SHORT CIRCUIT RATING GREATER THAN THE AVAILABLE INTERRUPTING CURRENT
20. A RED PUSH–TO–TRIP BUTTON PROVIDES A MEANS TO MECHANICALLY TRIP THE CIRCUIT BREAKER. THIS ACTION EXERCISES THE TRIPPING PORTION OF THE MECHANISM AND ALLOWS MAINTENANCE CHECK ON THE BREAKER



L1 (BLACK)
L2 (RED)
N (WHITE)
GND (GREEN)

CAM–LOCK GENERATOR RECEPTACLE

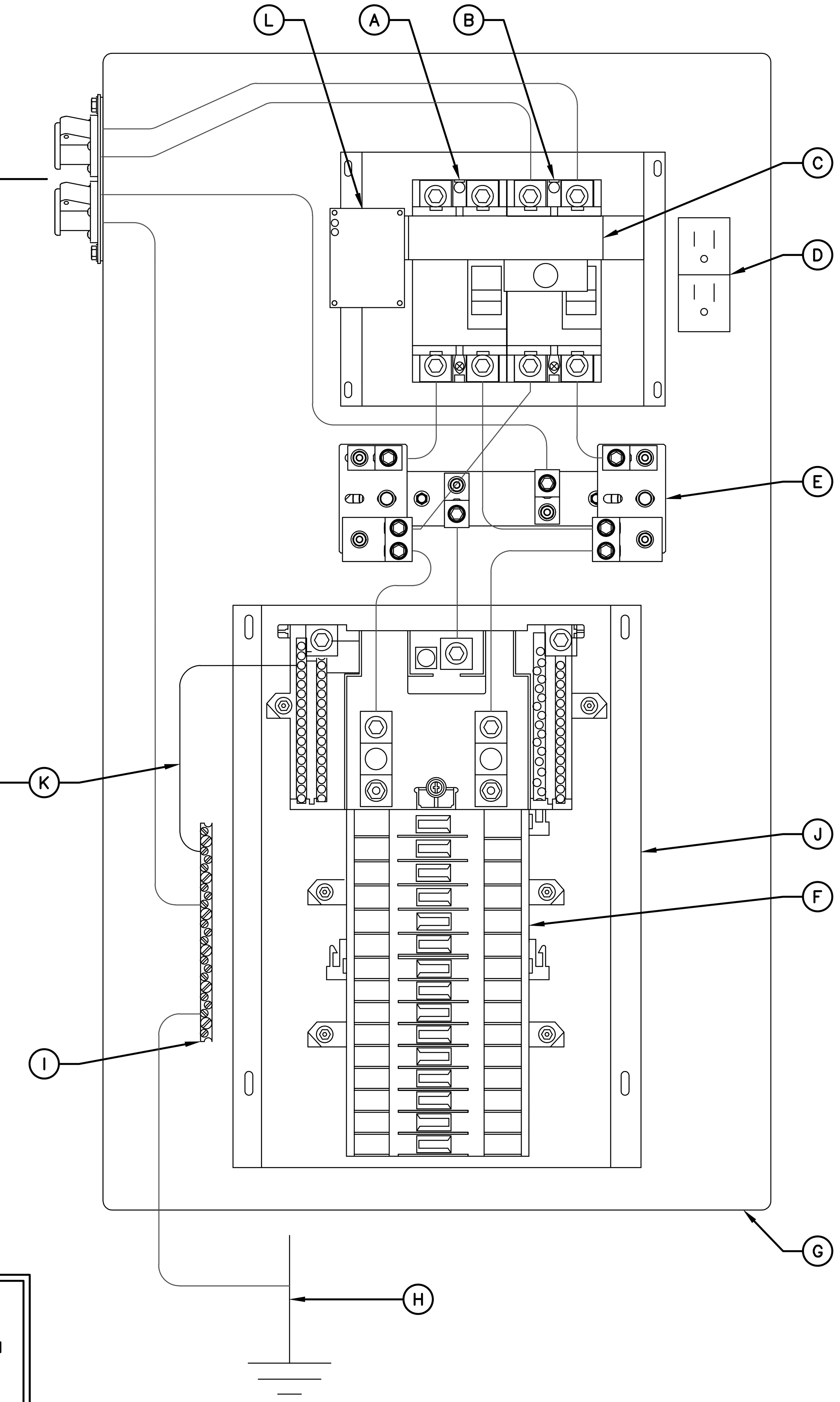
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:

HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.

RAYCAP CUSTOMER SERVICE
(800) 890–2569



SUITABLE FOR USE AS SERVICE EQUIPMENT

ELECTRICAL RATING 120/240 VOLTS SINGLE PHASE 60 Hz	
NORMAL AC POWER	GENERATOR POWER
100A☐	100A☐
200A☐	200A☐

CAUTION:

- THE OPERATING HANDLE ASSUMES A CENTER POSITION WHEN THE CIRCUIT BREAKER IS TRIPPED
- THE BREAKER CAN BE RESET BY OPERATING THE HANDLE TO THE EXTREME OFF POSITION AND THEN TO ON
- SLIDE BAR MECHANICAL INTERLOCK TRANSFERS NORMAL AC POWER TO GENERATOR POWER. THE SLIDE BAR MECHANICAL INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
- TO TRANSFER FROM ON POWER SOURCE TO THE OTHER POWER SOURCE, SWITCH ON BREAKER TO THE OFF POSITION, MOVE THE SLIDE BAR TO THE OTHER SIDE AND THE SWITCH THE OTHER BREAKER TO THE ON POSITION

THIS SWITCHBOARD UTILITY MAN BREAKER IS SUITABLE FOR USE ON CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 65,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

200A UTILITY FEED

LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ–D	QO	1 2	15–100A	SQ–D	QGL	200A	65,000A	240V	2

THIS SWITCHBOARD GENERATOR POWER CIRCUIT IS SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 10,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

200A GENERATOR FEED

LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ–D	QO	1 2	15–100A	SQ–D	QGL	200A	65,000A	240V	2

MAXIMUM CONTINUOUS LOADS NOT TO EXCEED 80% OF THE OVER–CURRENT PROTECTIVE DEVICE (CIRCUIT BREAKER AND FUSES) RATINGS EMPLOYED IN OTHER THAN MOTOR CIRCUITS, EXCEPT FOR THOSE CIRCUITS EMPLOYING CIRCUIT BREAKERS MARKED AS SUITABLE FOR CONTINUOUS OPERATION AT 100% OF THEIR RATINGS. CONDUCTORS ARE NOT TO ENTER OR LEAVE THE ENCLOSURE DIRECTLY OPPOSITE THE WIRING TERMINAL

NEUTRAL–TO–GROUND NOTES:

- WHEN THE PPC IS USED AS THE SERVICE ENTRANCE DEVICE, THE NEUTRAL TO GROUND BOND NEEDS TO BE ESTABLISHED IN THE PPC.
- WHEN THE SERVICE ENTRY DEVICE IS A MULTI–METER CENTER OR A PRE–PPC DISCONNECT IS USED AND HAS "NEUTRAL TO GROUND" ACCOMMODATIONS, THE NEUTRAL TO GROUND WIRE IN THE PPC IS NOT REQUIRED.
- THE GREEN #6 WIRE IS PROVIDED WITH THE PPC CABINET AS A SEPARATE UNINSTALLED PART TO BE INSTALLED BY CONTRACTOR IF NEEDED.

NEUTRAL–TO–GROUND CONDING JUMPER

INSTALLTION INSTRUCTIONS:

- IF REQUIRED, THE N–G BONDING KIT SHOULD BE INSTALLED BY QUALIFIED PERSONNEL
- ENSURE THE MAIN BREAKERS ARE OFF
- USE THE GREEN #6 WIRE PROVIDED WITH THE PPC
- INSTALL THE JUMPER AS SHOWN IN THE WIRING DIAGRAM
- TIGHTEN TERMINALS TO TORQUE VALUE SHOWN IN TORQUE TABLE
- PLACE THE PROVIDED "SERVICE" LABEL IN THE SPACE BELOW THE WORDS "AC POWER" LOCATED ABODE THE MAIN CIRCUIT BREAKER IN THE UPPER PORTION OF THE DEAD FRONT

LEGEND:

A. UTILITY DISCONNECT (SERVICE RATED)
B. GENERATOR DISCONNECT
C. MAIN DISCONNECT CIRCUIT BREAKERS W/ MECHANICAL INTERLOCK
D. GFCI RECEPTACLE 15A
E. SPD STRIKESORB KELVIN CONNECTION (TYP OF 2)
F. BREAKER PANEL – 24 POSITION (CONTRACTOR TO ADD APPROPRIATE BREAKER PER ONE–LINE DIAGRAM PANEL SCHEDULE)
G. POWER PROTECTION CABINET (PPC) (FULLY ASSEMBLED FROM MANUFACTURER)
H. CONTRACTOR TO ATTACH TO UNDERGROUND GROUNDING HALO OR INSTALL GROUND ROD WHEN REQUIRED BY CODE
I. GROUND BAR
J. SQUARE D Q SERIES LOAD CENTER
K. NETURAL–TO–GROUND (N–G) BONDING JUMPER (CONTRACTOR INSTALLED IF REQUIRED)
L. OPTIONAL SPD STATUS INDICATORS

RAYCAP POWER PROTECTION CABINET – RDIAC–2465–P–240–MTS (NEUTRAL–TO–GROUND)

NO SCALE | 1

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

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Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567–6656
(800) 829–6531
www.tectonicengineering.com

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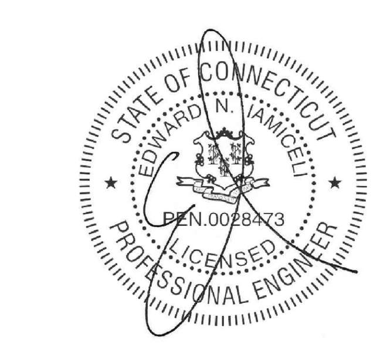

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RFDS REV #: 3

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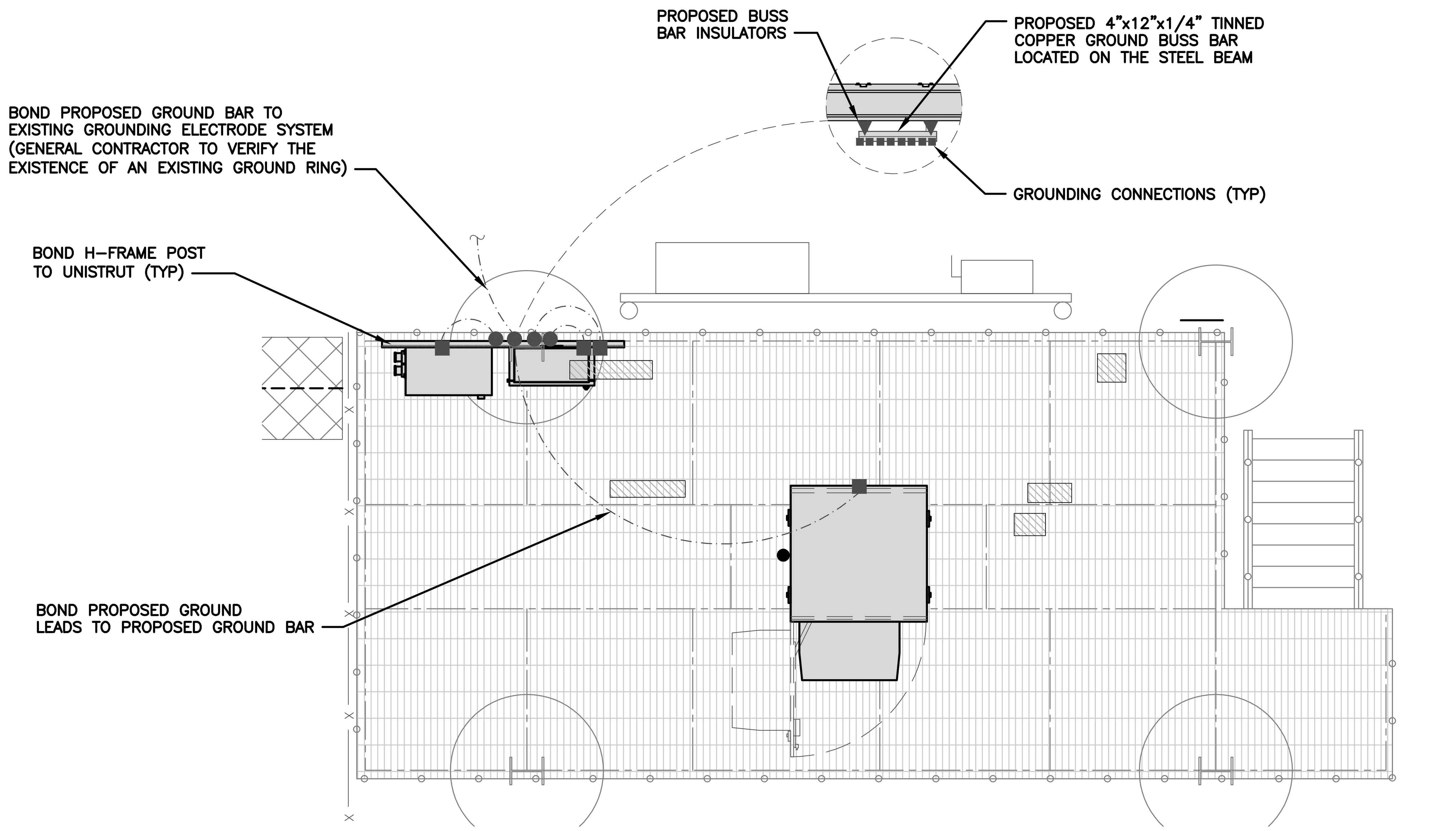
A&E PROJECT NUMBER
BOBOS00067A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE
PPC NEUTRAL–TO–GROUND SCHEMATIC

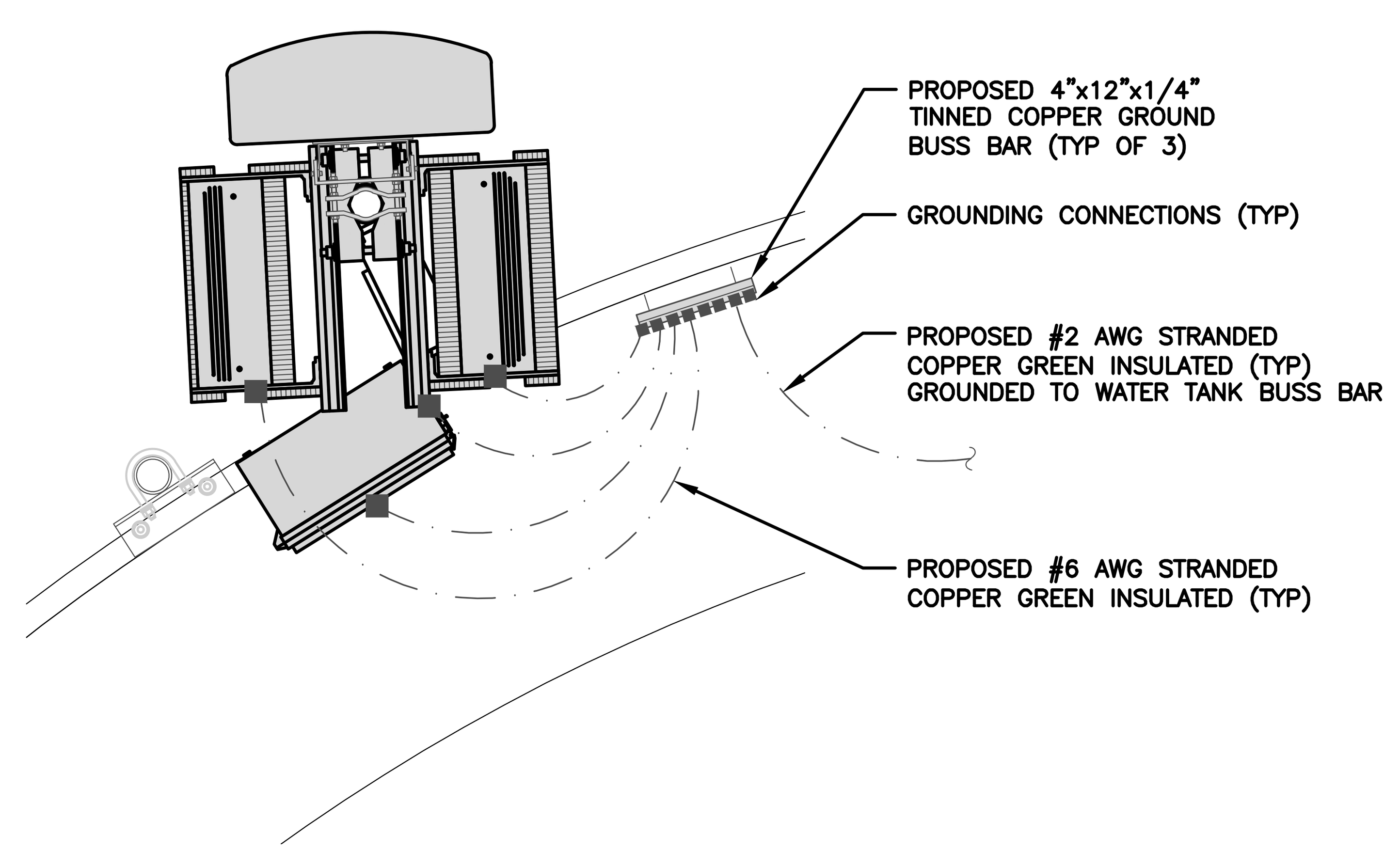
SHEET NUMBER
E-4



NOTES

- EXISTING STEEL PLATFORM AND EQUIPMENT IS ALREADY GROUNDED. PROPOSED EQUIPMENT SHALL TIE INTO EXISTING.
- THIS LAYOUT IS FOR REFERENCE PURPOSES ONLY

TYPICAL EQUIPMENT GROUNDING PLAN — NO SCALE — 1



NOTES

- ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE PURPOSES ONLY
- UPPER TANK BUSSBAR SHALL BE INSTALLED WITHOUT INSULATORS

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
- #2 AWG STRANDED & INSULATED
- ▲ BUSS BAR INSULATOR

GROUNDING LEGEND

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

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

GROUNDING KEY NOTES — NO SCALE — 3

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STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER

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7 BROADWAY AVENUE
MYSTIC, CT 06355

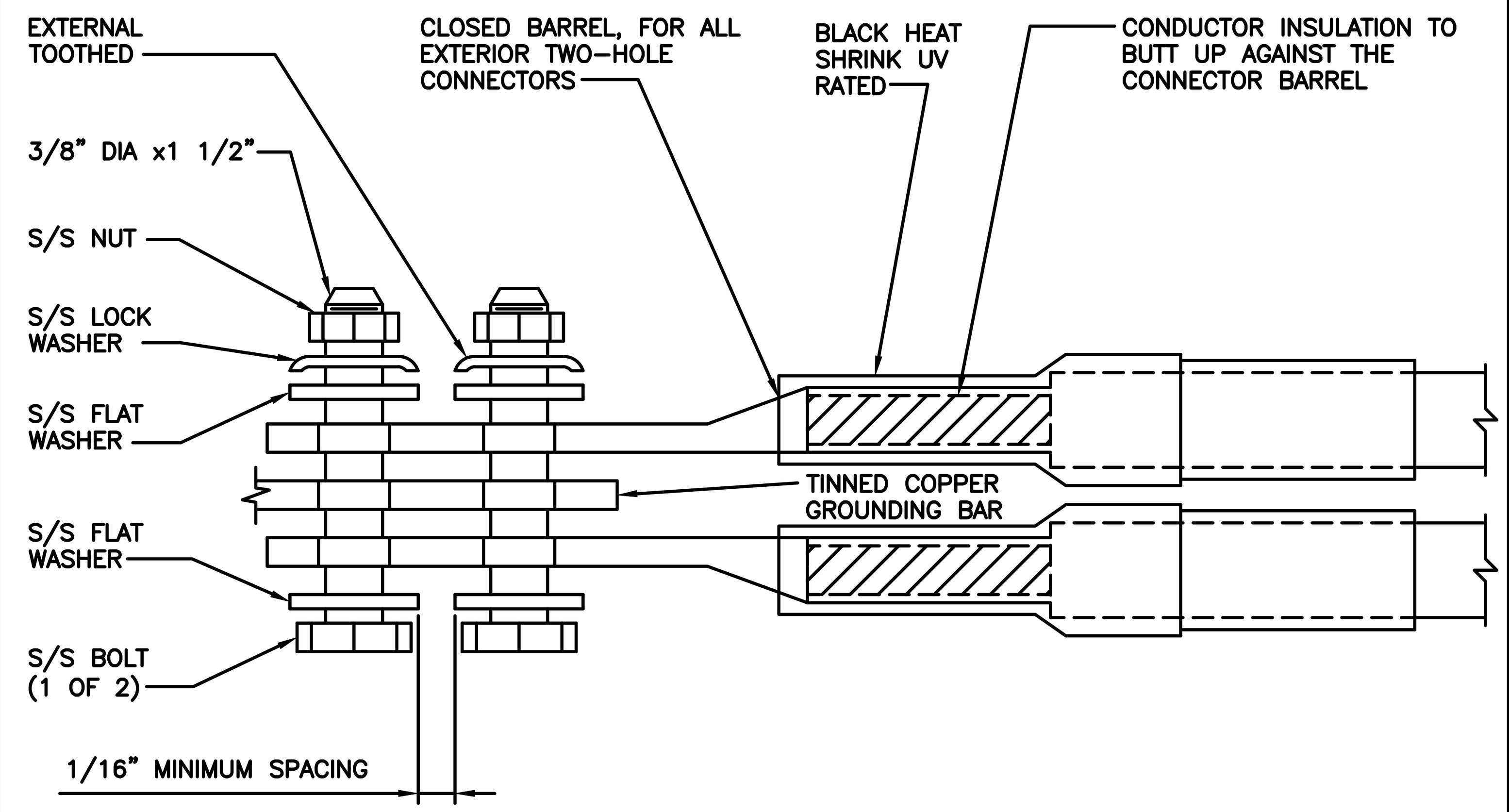
SHEET TITLE
GROUNDING PLANS AND NOTES

SHEET NUMBER
G-1

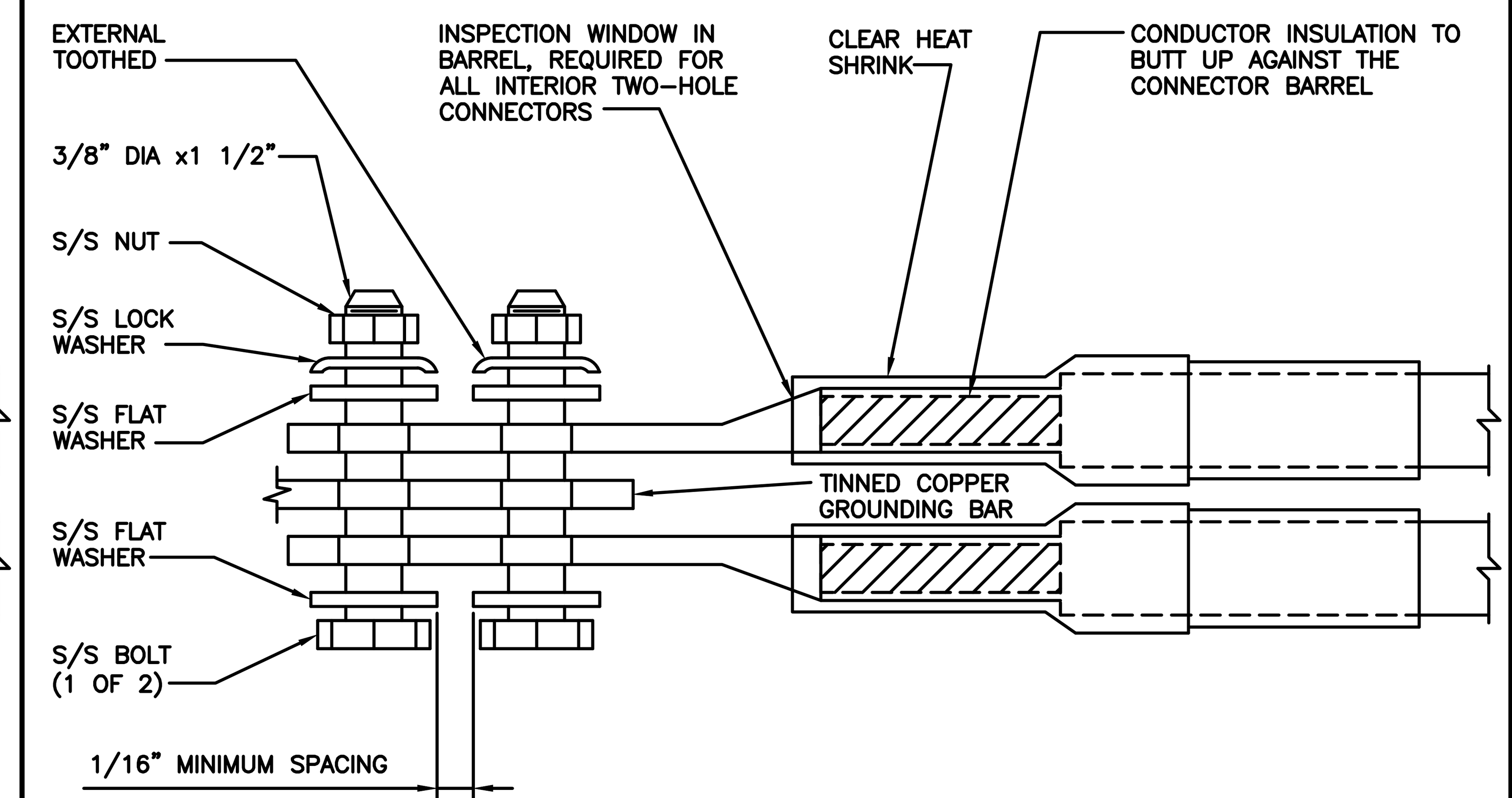
TYPICAL GROUNDING NOTES

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

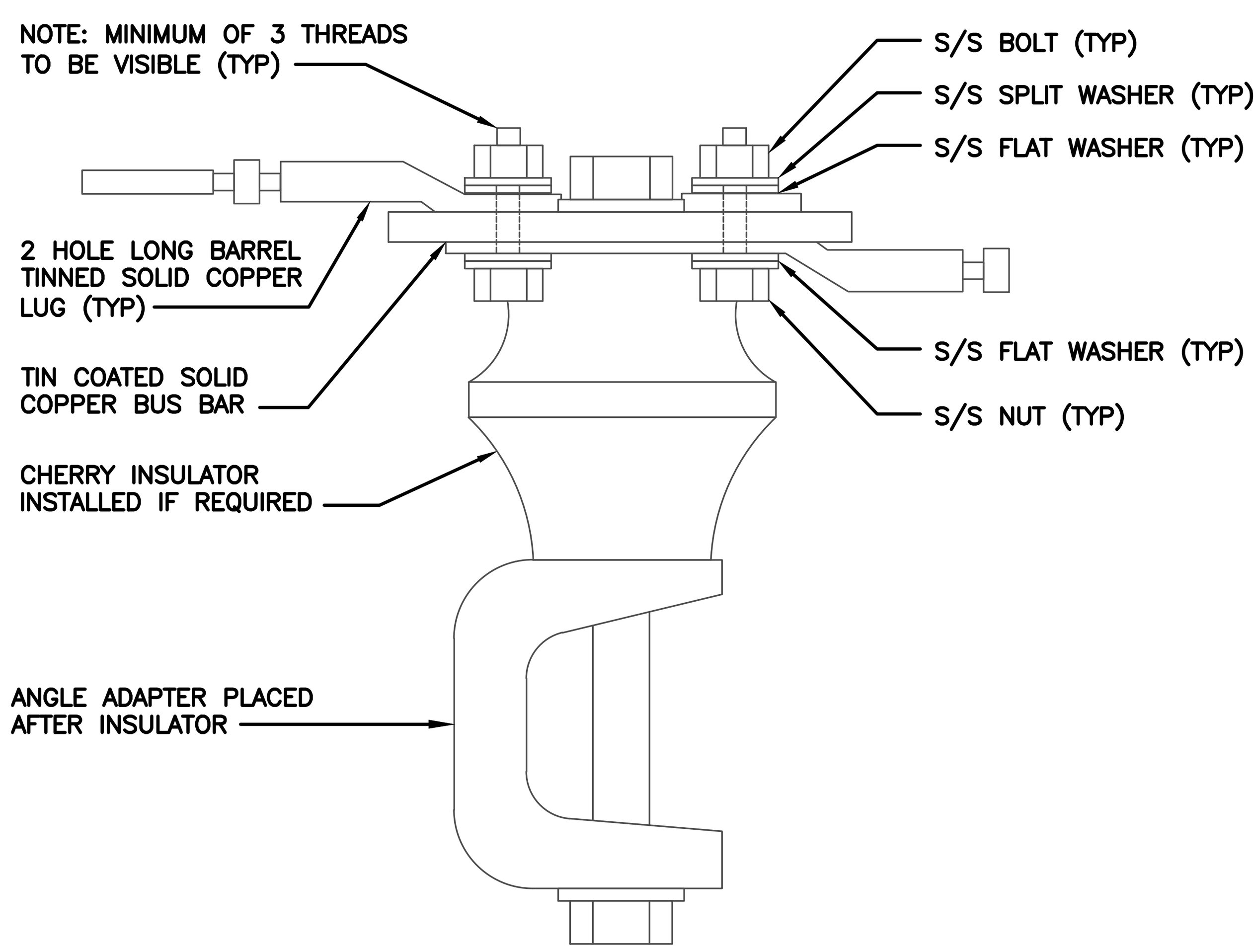
TYPICAL GROUNDING NOTES | NO SCALE | 1



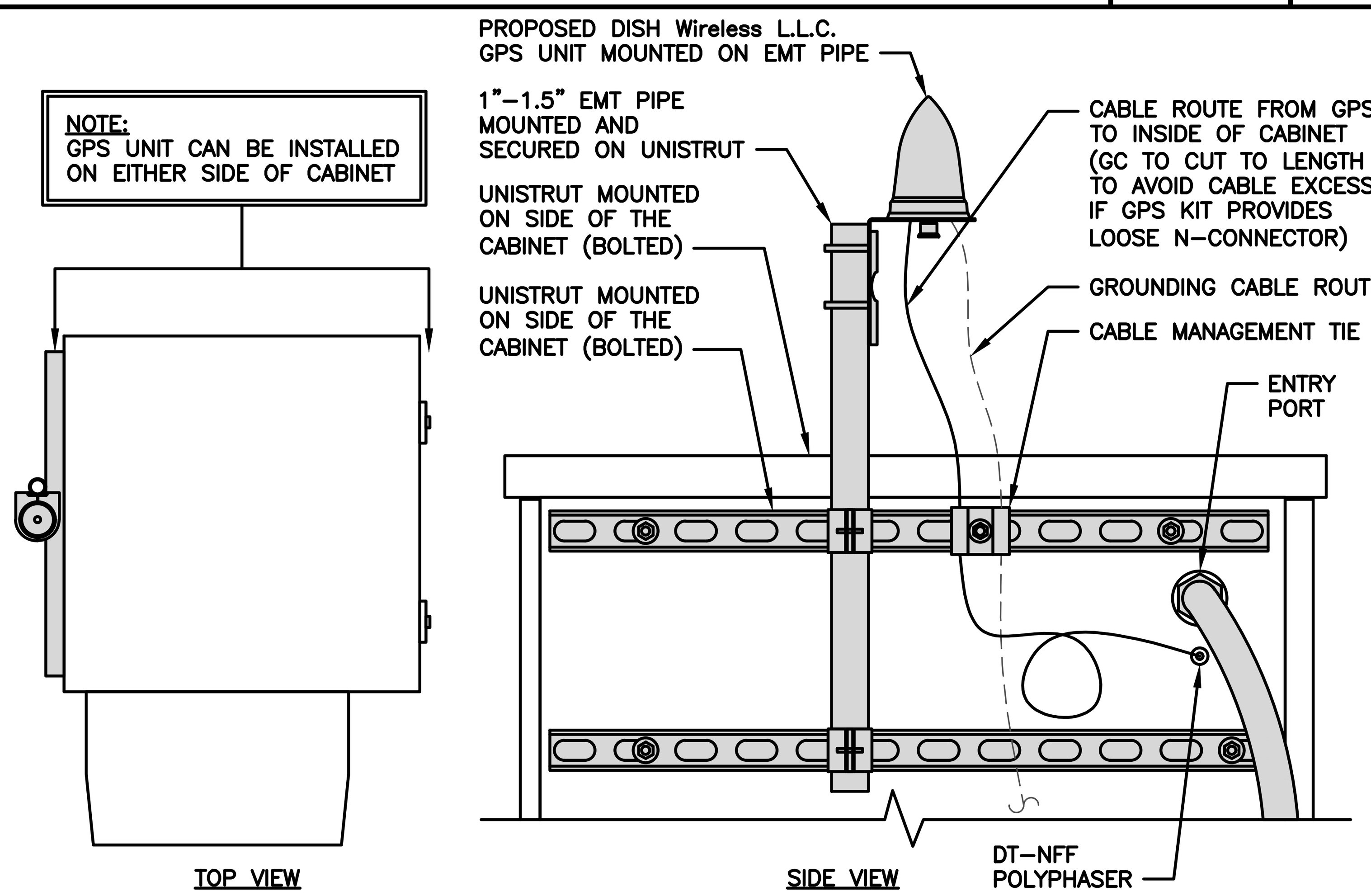
TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



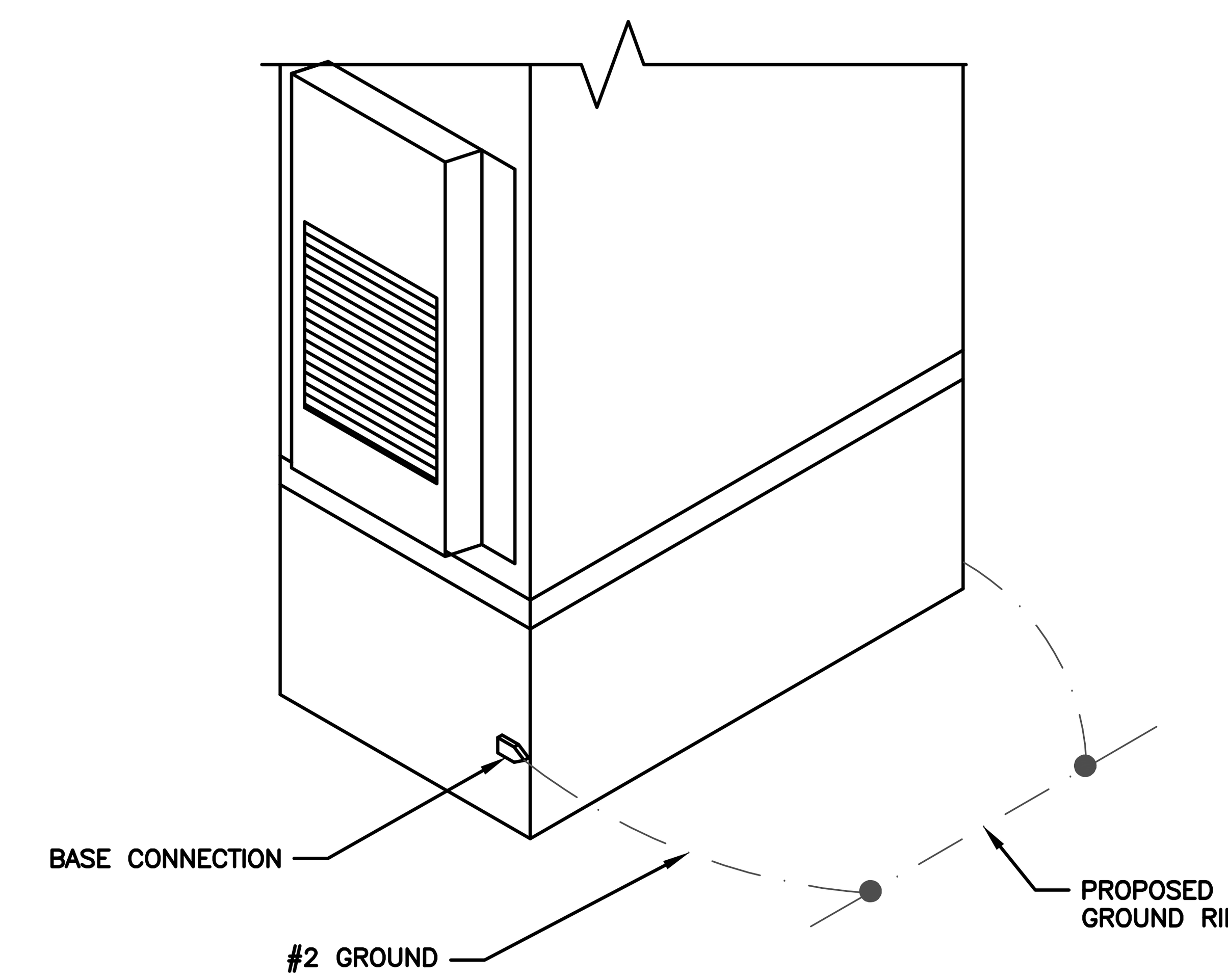
TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4



TYPICAL PCTEL GPS UNIT GROUNDING | NO SCALE | 5



OUTDOOR CABINET GROUNDING | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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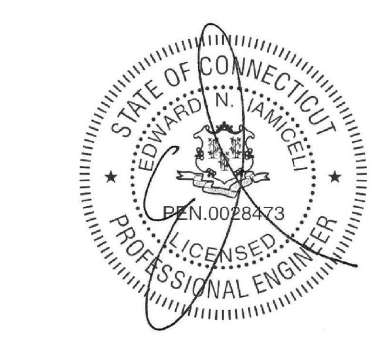

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7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE
GROUNDING DETAILS

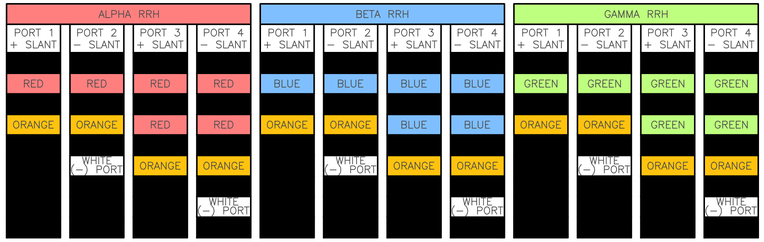
SHEET NUMBER
G-2

HYBRID/DISCREET CABLES

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

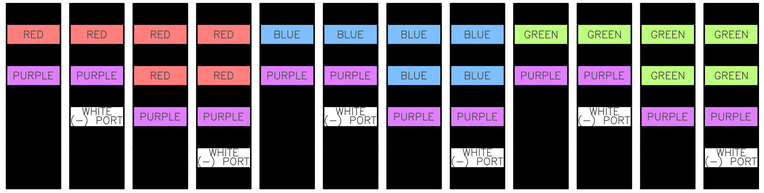
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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



MID–BAND RRH
(AWS BANDS N66+N70)

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



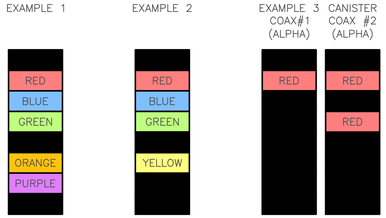
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

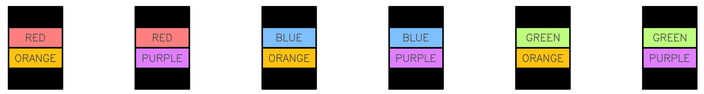
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



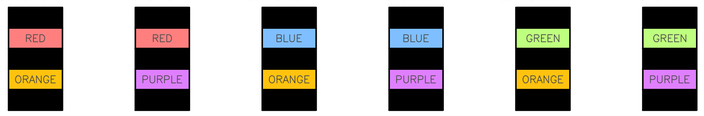
FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

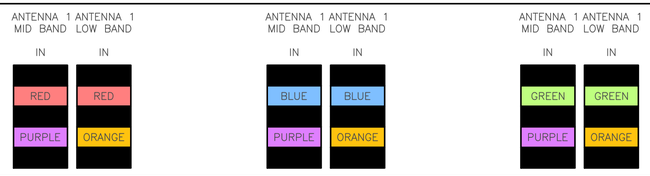
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

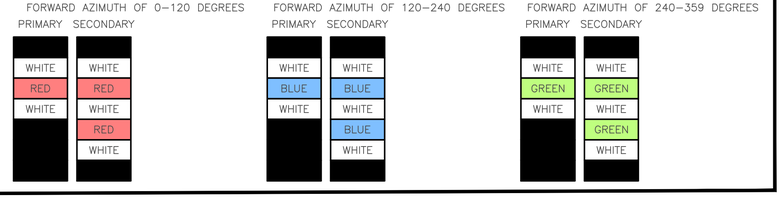
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

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

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



RF CABLE COLOR CODES | NO SCALE | 1

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

AWS (N66+N70+H–BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8

SMOKE DETECTION (DC)

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE

UNDERGROUND POWER

UNDERGROUND TELCO

OVERHEAD POWER

OVERHEAD TELCO

UNDERGROUND TELCO/POWER

ABOVE GROUND POWER

ABOVE GROUND TELCO

ABOVE GROUND TELCO/POWER

WORKPOINT

SECTION REFERENCE

DETAIL REFERENCE

ABBREVIATIONS

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

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567–6656
(800) 829–6531
www.tectonicengineering.com

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

DRAWN BY:	CHECKED BY:	APPROVED BY:
BWY	JQ/EI	EI

RFDS REV #: 3

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	01/18/2023	ISSUED FOR CONSTRUCTION
1	02/15/2023	REVISED PER COMMENTS

A&E PROJECT NUMBER

BOBOS00067A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SIGN TYPES		
TYPE	COLOR	COLOR CODE PURPOSE
INFORMATION	GREEN	**"INFORMATIONAL SIGN"** TO NOTIFY OTHERS OF SITE OWNERSHIP & CONTACT NUMBER AND POTENTIAL RF EXPOSURE.
NOTICE	BLUE	**"NOTICE BEYOND THIS POINT"** RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)
CAUTION	YELLOW	**"CAUTION BEYOND THIS POINT"** RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)
WARNING	ORANGE/RED	**"WARNING BEYOND THIS POINT"** RF FIELDS AT THIS SITE EXCEED FCC RULES FOR HUMAN EXPOSURE. FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS COULD RESULT IN SERIOUS INJURY. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)

SIGN PLACEMENT:

- RF SIGNAGE PLACEMENT SHALL FOLLOW THE RECOMMENDATIONS OF AN EXISTING EME REPORT, CREATED BY A THIRD PARTY PREVIOUSLY AUTHORIZED BY DISH Wireless L.L.C.
- INFORMATION SIGN (GREEN) SHALL BE LOCATED ON EXISTING DISH Wireless L.L.C EQUIPMENT.
  A) IF THE INFORMATION SIGN IS A STICKER, IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C EQUIPMENT CABINET.
  B) IF THE INFORMATION SIGH IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H-FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE NAME AND NUMBER AS PER DISH Wireless L.L.C. CONSTRUCTION MANAGER RECOMMENDATIONS.
4. CABINET/SHELTER MOUNTING APPLICATION REQUIRES ANOTHER PLATE APPLIED TO THE FACE OF THE CABINET WITH WATER PROOF POLYURETHANE ADHESIVE
5. ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL ZIP TIES OR STAINLESS STEEL TECH SCREWS
6. ALL SIGNS TO BE 8.5"x11" AND MADE WITH 0.04" OF ALUMINUM MATERIAL

INFORMATION

This is an access point to an area with transmitting antennas.

Obey all signs and barriers beyond this point.
Call the DISH Wireless L.L.C. NOC at 1-866-624-6874

Site ID: _____

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY *EXCEED* the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____

dish

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

CAUTION

Transmitting Antenna(s)

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dish

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dish

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RF SIGNAGE

dish wireless.
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DISH Wireless L.L.C.
PROJECT INFORMATION
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MYSTIC, CT 06355

SHEET TITLE
RF SIGNAGE

SHEET NUMBER
GN-2

SITE ACTIVITY REQUIREMENTS:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

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

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

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

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

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

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

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

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

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

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

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

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

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

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GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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LITTLETON, CO 80120

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
(800) 829-6531
www.tectonicengineering.com

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BWY	JQ/EI	EI

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A&E PROJECT NUMBER

BOBOS00067A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4

GROUNDING NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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LITTLETON, CO 80120

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MYSTIC, CT 06355

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

STRUCTURAL NOTES:

1. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN".
2. STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992, "STEEL FOR STRUCTURAL SHAPES FOR USE IN BUILDING FRAMING", GRADE 50, UNLESS OTHERWISE INDICATED. IF THE MEMBER SIZES INDICATED ARE NOT AVAILABLE IN THIS GRADE, ASTM A572 "HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STRUCTURAL STEEL", GRADE 50, MAY BE SUBSTITUTED.
3. HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING IN ROUNDS AND SHAPES", GRADE C. SUBSTITUTION WITH ASTM A53 PIPE IS NOT ACCEPTABLE.
4. FIELD WELDING IS NOT PERMITTED, UNLESS SPECIFICALLY INDICATED OTHERWISE ON THESE DRAWINGS.
5. ALL FILLET WELDS SHALL BE MADE USING THE SHIELDED METAL ARC WELDING (SMAW) PROCESS WITH E70XX ELECTRODES UNLESS OTHERWISE NOTED.
6. MISCELLANEOUS STEEL, INCLUDING THREADED RODS, CHANNELS, ANGLES, PLATES, AND BARS SHALL. CONFORM TO ASTM A36 "CARBON STRUCTURAL STEEL", UNLESS OTHERWISE INDICATED.
7. U-BOLTS SHALL CONFORM TO ASTM A36 OR A307 "CARBON STEEL BOLTS, STUDS, AND THREADED ROD 60000 PSI TENSILE STRENGTH". ALL U-BOLTS SHALL BE 1/2" DIAMETER IN 9/16" HOLES, UNLESS OTHERWISE NOTED. INSTALL DOUBLE NUTS ON ALL CONNECTIONS.
8. ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 "ANCHOR BOLTS, STEEL, 36, 55, AND 105-KSI YIELD STRENGTH", GRADE 36.
9. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 "STRUCTURAL BOLTS, STEEL, HEAT TREATED, 120/105 KSI MINIMUM TENSILE STRENGTH". BOLTS SHALL BE 3/4 INCH DIAMETER, TYPE X, UNLESS OTHERWISE NOTED.
10. MATCHING NUTS SHALL BE HEAVY HEX TYPE, CONFORMING TO ASTM A563 "CARBON AND ALLOY STEEL NUTS". WASHERS, WHERE REQUIRED, SHALL CONFORM TO ASTM F436 "HARDENED STEEL WASHERS".
11. FIELD CONNECTIONS SHALL BE BOLTED UNLESS OTHERWISE INDICATED. ALL BOLTED CONNECTIONS SHALL BE MADE WITH NOT LESS THAN TWO (2) HIGH STRENGTH BOLTS, OR EQUIVALENT WELD.
12. ALL STEEL SUPPORTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
13. STRUCTURAL CONNECTIONS SHALL BE SNUG TIGHT IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", UNLESS OTHERWISE NOTED.
14. BOLTS IN SLIP-CRITICAL CONNECTIONS SHALL BE FULLY PRETENSIONED BY THE TURN-OF-NUT METHOD IN ACCORDANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
15. ANCHOR BOLTS SHALL BE TENSIONED BY THE TURN-OF-NUT METHOD AFTER GROUTING OF BASE PLATES.
16. ALL HOLES FOR BOLTS SHALL BE 1/16 INCH LARGER THAN THE BOLT DIAMETER WITH AN EDGE DISTANCE OF AT LEAST 1 1/2 TIMES THE BOLT DIAMETER AND A SPACING OF AT LEAST 3 TIMES THE BOLT DIAMETER. ALL BOLTS SHALL BE PROVIDED WITH PALNUTS OR LOCK NUTS
17. CONTRACTOR SHALL COMPLY WITH AWS D1.1 "STRUCTURAL WELDING CODE – STEEL" FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES".
18. METAL DECK SHALL BE FORMED STEEL DECK AS MANUFACTURED BY VULCRAFT, INC. OR APPROVED EQUAL. DECK SHALL BE FABRICATED FROM GALVANIZED STEEL CONFORMING TO ASTM A653, "STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS", STRUCTURAL QUALITY. COATING SHALL CONFORM TO CLASSIFICATION G60.
19. ALL OPENINGS REQUIRED IN THE DECK WHICH ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE CUT IN THE FIELD ONLY AS APPROVED BY THE ENGINEER.
20. GRATING SHALL BE TYPE "GW" GALVANIZED WELDED STEEL BAR GRATING AS MANUFACTURED BY MCNICHOLS, OR APPROVED EQUAL. BEARING BARS SHALL BE AS FOLLOWS:

EXTERIOR GRATING	1" X 3/16"	SERRATED
INTERIOR GRATING	1" X 3/16"	PLAIN
ALUMINUM	1 1/4"X3/16"	GAL SERIES

BAND ALL EDGES, AND ATTACH TO SUPPORTING MEMBERS AT 18" ON CENTER WITH MODEL GG GALVANIZED G-CLIPS AS MANUFACTURED BY GRATING FASTENERS INC.

21. EXPANSION ANCHORS SHALL BE HILTI KWIK BOLT TZ2 OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM EMBEDMENT SHALL BE 4-3/4" UNLESS OTHERWISE NOTED.
22. ADHESIVE ANCHOR ASSEMBLIES SHALL BE AS MANUFACTURED BY HILTI OR ENGINEER APPROVED EQUAL, AS FOLLOWS:

BASE MATERIAL	ANCHOR SYSTEM
HOLLOW CMU OR BRICK	HIT HY-270
CONCRETE	HIT HY-200

INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

23. HAMMER DRILLS ARE NOT TO BE USED WHEN DRILLING HOLES FOR SLEEVE OR EXPANSION BOLTS INSTALLED IN MASONRY BLOCKS/BRICKS.
24. ALL INTERIOR STRUCTURAL STEEL SHALL BE SHOP PRIME COATED WITH A RUST-INHIBITIVE PRIMER EXCEPT AREAS TO BE FIREPROOFED NEED NOT BE PAINTED. SURFACE PREPARATION SHALL BE IN ACCORDANCE WITH THE PAINT MANUFACTURER'S RECOMMENDATIONS. AREAS WHICH MAY BE INACCESSIBLE AFTER INSTALLATION SHALL RECEIVE TWO (2) COATS OF PRIMER. FINISH PAINT AS DIRECTED BY OWNER/CARRIER.
25. FIELD CONNECTIONS AND DAMAGED OR ABRADED AREAS OF SHOP PRIME COAT SHALL BE TOUCH-UP PAINTED WITH COMPATIBLE FIELD PRIMER.
26. ALL EXTERIOR STEEL SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
27. ALL EXTERIOR BOLTS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
28. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780 "REPAIR OF DAMAGED AND UNCOATED AREAS OF HOT-DIP GALVANIZED COATINGS", USING GALVANIZING COMPOUND AS MANUFACTURED BY ZINGA-USA OR ZINC KOTE, OR ENGINEER APPROVED EQUAL, WITH A MINIMUM METALLIC ZINC CONTENT OF 95% BY WEIGHT IN DRY FILM. DRY FINISHED COATING THICKNESS SHALL BE 3 MILS MINIMUM. DAMAGED AREAS OF STEEL SHALL BE REPAINTED TO MATCH ANY EXISTING FINISH (IF APPLICABLE).
29. STEEL WORK SHALL BE SUBJECT TO SPECIAL INSPECTIONS DURING CONSTRUCTION AS REQUIRED BY THE CODE.
30. CONTRACTOR TO REMOVE MASTIC ON THE EXISTING WALL/PARAPET AT EVERY STEEL SUPPORT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BED OF SILICONE SHALL BE APPLIED ALL AROUND THE STEEL SUPPORT ATTACHMENT TO MAKE IT WEATHERPROOF.
31. ALL HOLES TO BE ADDED IN THE FIELD SHALL BE PUNCHED OR DRILLED. NO HOLE BURNING SHALL BE ALLOWED. REPAIR GALVANIZING IN ACCORDANCE WITH ASTM A780.
32. THE NOTES CONTAINED HEREIN ARE NOT PROJECT SPECIFIC. THE CONTRACTOR SHALL UTILIZE ALL NOTES WHICH SOLELY PERTAIN TO THE WORK DEPICTED ON THESE DRAWINGS.

HILTI TESTING NOTES:

IF REQUIRED PER HILTI SPECIFICATIONS. CONTRACTOR SHALL RETAIN HILTI TO TEST AND CERTIFY THE ADHESIVE ANCHORS SPECIFIED IN THE CONSTRUCTION DRAWINGS TO BE INSTALLED IN MASONRY. A MINIMUM OF ONE (1) ANCHOR PER CONNECTION SHALL BE TESTED. FOR ANTENNA MOUNTS, A MINIMUM OF 25% OF ANCHORS PER SECTOR SHALL BE TESTED. THE LOAD TO THE ANCHORS SHALL BE APPLIED USING A STEEL TEST FRAME THAT IS ADEQUATE TO CARRY THE PULL TEST LOADS. APPLY A TENSILE LOAD SPECIFIED AND RECOMMENDED BY THE ANCHOR MANUFACTURER ONTO THE ANCHOR TO BE TESTED. MAINTAIN THE LOAD FOR AT LEAST TWO MINUTES AFTER SPECIFIED LOAD IS REACHED. IF ANY TESTED ANCHOR IN A CONNECTION FAILS TO REACH THE SPECIFIED LOAD CAPACITY, ALL ANCHORS WITHIN THAT CONNECTION SHALL BE TESTED. ENGINEER OF RECORD OR A SPECIAL INSPECTOR SHALL BE PRESENT ON SITE DURING THE ANCHOR TESTS. TEST RESULTS SHALL BE DOCUMENTED BY HILTI AND FURNISHED TO ENGINEER OF RECORD UPON COMPLETION. ANCHORS WILL BE VISUALLY INSPECTED ALONG WITH THE SURROUNDINGS AFTER TESTING.

MASONRY NOTES:

1. DESIGN AND CONSTRUCTION OF ALL MASONRY WORK SHALL CONFORM TO ACI 530 AND 530.1 STANDARDS "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", AND "SPECIFICATIONS FOR MASONRY STRUCTURES".
2. CONCRETE MASONRY UNITS SHALL BE NORMAL WEIGHT HOLLOW LOAD BEARING UNITS CONFORMING TO ASTM C90 "LOADBEARING CONCRETE MASONRY UNITS", TYPE I (MOISTURE-CONTROLLED), GRADE N. COMPRESSIVE STRENGTH OF MASONRY (f'm) SHALL NOT BE LESS THAN 2,000 PSI. COLOR AND FINISH AS INDICATED, SUBJECT TO APPROVAL BY OWNER.
3. MORTAR SHALL CONFORM TO ACTM C270 "MORTAR FOR UNIT MASONRY" TYPE M OR S.
4. GROUT SHALL CONFORM TO ASTM C476 "GROUT FOR REINFORCED AND NON-REINFORCED MASONRY". ALL CELLS SHALL BE FILLED SOLID WITH GROUT AT REINFORCING.
5. ALL MASONRY SHALL BE CONSTRUCTED IN RUNNING BOND.
6. HORIZONTAL JOINT REINFORCING SHALL BE STANDARD WEIGHT LADDER TYPE (2-NO. 9 GAGE SIDE RODS) SPACED VERTICALLY AS INDICATED.
7. INJECT GROUT INTO WEAK MORTAR WHERE THERE IS SEPARATION BETWEEN JOINTS.

MASONRY REPAIR NOTES:

1. REPAIR ALL EXISTING BULKHEAD/PARAPET WALL CRACKS WITHIN 3 FEET RADIUS OF THE MOUNT ATTACHMENT POINTS.
2. CONTRACTOR IS RESPONSIBLE TO REPAIR ANY BRICK FRACTURE OR MORTAR CRACKS THAT MAY DEVELOP DURING CONSTRUCTION OF ANTENNA MOUNTS AND EQUIPMENT FRAME.
3. DO NOT HAMMER DRILL INTO EXISTING BULKHEAD/PARAPET.
4. CONTRACTOR TO REMOVE TAR/MASTIC ON THE EXISTING BULKHEAD/PARAPET AT EVERY MOUNT ATTACHMENT AND REPOINT MASONRY AS REQUIRED. A BEAD OF SILICONE SHALL BE APPLIED BEHIND AND ALL AROUND THE MOUNT ATTACHMENT TO MAKE IT WEATHERPROOF.
5. REPAIR WORK FOR BULKHEAD/PARAPET TO BE PREFORMED/COMPLETED IN TWO STAGES, AS FOLLOWS:

STAGE 1: OUTSIDE FACE

- REPAIR WORK TO BE DONE IN SECTIONS NOT TO EXCEED 4 FEET IN BULKHEAD/PARAPET LENGTH.
- RE-POINT ALL AREAS AND REPLACE ALL CRACKED/DAMAGED BRICK AS REQUIRED.
- REPLACE PARGING TO MATCH EXISTING BUILDING AND PAINT TO MATCH.
- RESEAL ALL ANCHOR HOLES WEATHER-TIGHT.

STAGE 2: INSIDE FACE/BELOW ROOF LINE

- REPAIR WORK TO BE DONE IN SECTIONS NOT TO EXCEED 4 FEET IN BULKHEAD/PARAPET LENGTH.
- REMOVE LOOSE BULKHEAD/PARAPET MEMBRANE A MAXIMUM OF 3 FEET FROM EDGE OF ATTACHMENT.
- RE-POINT ENTIRE AREA AS REQUIRED.
- RESEAL AND REPLACE BULKHEAD/PARAPET MEMBRANE AND FLASHING TO MATCH EXISTING.

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-6

GENERAL:

1. WELDING STUDS SHALL BE TYPE TFTC FLANGED THREADED LOW CARBON COPPER COATED STEEL STUDS, GRADE 1010 THROUGH 1020, CONFORMING TO ASTM A108 "STEEL BAR, CARBON AND ALLOY, COLD FINISHED" AS MANUFACTURED BY NELSON STUD WELDING, INC. OR APPROVED EQUAL. ALL STUDS SHALL BE 1/4" DIAMETER BY 2 1/8" LONG, UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
2. STUDS MUST BE WELDED BY THE CAPACITOR DISCHARGE METHOD, USING THE NELSON NCD 100 OR 150 SYSTEM, AS MANUFACTURED AND MARKETED BY NELSON STUD WELDING, ELYRIA OHIO, (800) 635-9353 OR (440) 329-0400, OR APPROVED EQUAL. FILLET WELDS ARE NOT ACCEPTABLE.
3. CONTRACTOR SHALL RECEIVE IN WRITING THE OWNER'S REQUIREMENTS FOR TANK INSPECTIONS PRIOR TO COMMENCING WITH THE WORK ON THE TANK. UPON THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A WRITTEN RELEASE FROM THE OWNER STATING THAT ALL WORK WAS PERFORMED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE OWNERS WRITTEN REQUIREMENTS, AND RELEASES ALL LIABILITY TO THE CONTRACTOR, THE ENGINEER, THE APPLICANT, AND THE STUD MANUFACTURER.
4. CONTRACTOR SHALL COMPLY WITH AWS D1.1 "STRUCTURAL WELDING CODE-STEEL" AND AWS C5.4 "RECOMMENDED PRACTICES FOR STUD WELDING" FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". CONTRACTOR SHALL ADHERE TO AWS RECOMMENDED "SAFE PRACTICES FOR WELDING".
5. WELDING PARAMETERS, MACHINE POWER AND DWELL TIME SHALL BE QUALIFIED FOR THE WELDING POSITION, MATERIAL THICKNESS AND STUD SIZE TO BE USED. IF CHANGES IN THE SET-UP OCCUR AS DEFINED IN AWS D1.1, THE PROCEDURE MUST BE REQUALIFIED.
6. CONTRACTOR SHALL SUBMIT CERTIFICATION OF WELDERS FOR STUD WELDING TO THE ENGINEER AND OWNER PRIOR TO COMMENCEMENT OF THE WORK.
7. THE INSTALLATION OF WELDED STUDS SHALL BE PERFORMED ONLY DURING PERIODS OF CLEAR WEATHER.
8. ALL NUTS, WASHERS, AND OTHER HARDWARE INSTALLED ON WELDED STUDS SHALL BE STAINLESS STEEL OR NYLON, AS SHOWN. GALVANIZED OR PLATED CARBON STEEL HARDWARE IS NOT ACCEPTABLE. RUBBER OR PLASTIC WASHERS SHALL NOT BE USED.

SURFACE PREPARATION:

1. CLEANING PROCEDURES SHALL BE VERIFIED AS MEETING THE MINIMUM REQUIREMENTS PER THE AWS WELDING HANDBOOK, VOLUME 2-PART 1: WELDING PROCESSES, "QUALITY CONTROL AND INSPECTION" FOR STUD WELDING. IF THE EXISTING COATING SYSTEM CONTAINS LEAD OR OTHER POTENTIALLY HAZARDOUS MATERIALS, SPECIAL PROCEDURES FOR REMOVAL AND DISPOSAL WILL BE REQUIRED.
2. PREPARE SURFACE TO BE WELDED BY SPOT REMOVING PAINT TO BARE METAL IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL SSPC-SP11 "POWER TOOL CLEANING TO BARE METAL". USE A 3M CLEAN STRIP XT DISC, ROTARY BURR, OR ROTARY FILE. THE USE OF A SOLID GRINDING STONE, FLAP WHEEL, OR WIRE WHEEL IS NOT ACCEPTABLE.
3. FOLLOW POWER TOOL CLEANING WITH A NON-FLAMMABLE SOLVENT CLEANING TO REMOVE ANY OILS, CONTAMINANTS, RUST, OR DIRT IN ACCORDANCE WITH SSPC-SP1 "SOLVENT CLEANING" PRIOR TO STUD WELDING.

STUD QUALIFICATION TESTING AND SAMPLING:

1. 1THE QUALIFICATION OF STUD APPLICATION AND PRE-PRODUCTION TESTING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 "STUD WELDING" OF AWS D1.1. INITIAL QUALIFICATION TESTING SHALL BE PERFORMED UNDER INSPECTION BY THE ENGINEER.
2. STUD APPLICATION SHALL BE QUALIFIED BY STUD WELDING TEN (10) SPECIMENS CONSECUTIVELY TO ASTM A36 STEEL BASE MATERIALS USING RECOMMENDED PROCEDURES AND SETTINGS FOR EACH DIAMETER, POSITION, AND SURFACE GEOMETRY. ALL TEN SPECIMENS SHALL BE TORQUE TESTED TO FAILURE. STUD APPLICATION SHALL BE CONSIDERED QUALIFIED IF ALL TEST SPECIMENS ARE TORQUED TO DESTRUCTION WITHOUT FAILURE IN THE WELD. IN ADDITION, PRIOR TO PRODUCTION, CONTRACTOR SHALL PREPARE SIX (6) STUD WELDED SAMPLES USING A36 STEEL PLATES WITH THICKNESS EQUAL TO EACH OF THE PLATE THICKNESSES OF THE WATER TANK TO BE WELDED. THE SIDE OPPOSITE THE STUD WELD SHALL HAVE A SIMILAR COATING (MINIMUM DFT=6 MIL) TO THE EXISTING INTERIOR COATING OF THE WATER TANK. SAMPLES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
3. BEFORE PRODUCTION, AT THE START OF EVERY SHIFT AND FOR EACH PARTICULAR SETUP, TESTING SHALL BE PERFORMED ON THE FIRST TWO (2) STUDS THAT ARE WELDED. IN PLACE OF THE ACTUAL PRODUCTION STUD, TESTING MAY BE PERFORMED ON A MATERIAL SIMILAR TO THE PRODUCTION MEMBER IN THICKNESS AND PROPERTIES. TESTING SHALL INCLUDE A VISUAL EXAMINATION OF THE STUD WELD FOR A FULL 360 DEGREE FLASH. IN ADDITION, THE TEST SHALL INCLUDE TORQUE TESTING THE STUDS IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

STUD SIZE	TESTING TORQUE
1/4" (1/4-20 UNC)	5.9 FT-LB

4. IF FAILURE OCCURS, THE PROCEDURE SHALL BE CORRECTED AND TWO (2) MORE STUDS SHALL BE WELDED AND TESTED.
5. PRIOR TO PRODUCTION, CONTRACTOR SHALL PERFORM THREE (3) TEST WELDS ON THE WATER TANK IN A LOCATION SPECIFIED BY THE TANK OWNER TO VERIFY THAT NO DAMAGE WILL OCCUR TO THE COATING SYSTEM ON THE INTERIOR OF THE TANK. ANY AND ALL DAMAGE TO THE INTERIOR COATING SHALL BE REPAIRED TO THE OWNER'S SATISFACTION. IF DAMAGE DOES OCCUR, THE PROCEDURE SHALL BE REEVALUATED BY THE ENGINEER, CONSTRUCTION MANAGER, AND OWNER'S AUTHORIZED REPRESENTATIVE BEFORE COMMENCING WITH THE WORK.

PROTECTIVE COATING:

1. IMMEDIATELY AFTER WELDED STUDS HAVE COOLED TO AMBIENT TEMPERATURE, AND PRIOR TO INSTALLATION OF ATTACHMENTS, NUTS, OR HARDWARE, APPLY LIQUID COLD GALVANIZING COMPOUND (OR OTHER COATING MATERIAL APPROVED BY THE TANK OWNER) TO THE THREADED PORTION OF EACH STUD TO PREVENT CORRISION PRIOR TO APPLICATION OF FINISH PAINT.

REPAINTING:

1. ALL SURFACE PREPARATION AND RECOATING OF STEEL SURFACES SHALL BE PERFORMED BY A PAINTING CONTRACTOR THAT HAS BEEN PRE-QUALIFIED BY THE TANK OWNER.
2. ALL PAINTED SURFACES AFFECTED BY WELDING OPERATIONS SHALL BE REPAINTED TO MATCH ADJACENT EXISTING SURFACES. PAINTING SHALL INCLUDE COATING OF THE STUDS AND HARDWARE.
3. PRIOR TO REPAINTING, SURFACES SHALL BE SOLVENT CLEANED TO REMOVE ANY OILS, CONTAMINANTS, RUST, OR DIRT IN ACCORDANCE WITH THE STEEL STRUCTURES PAINTING COUNCIL SSPC-SP1 "SOLVENT CLEANING" PRIOR TO REPAINTING.
4. PAINT USED TO REPAIR INTERIOR COATING SHALL MATCH THE EXISTING COATING SYSTEM OF THE TANK OR SHALL BE A SIMILAR SYSTEM COMPATIBLE WITH THE EXISTING SYSTEM AND ACCEPTABLE TO THE OWNER. VERIFY EXISTING COATING SYSTEM WITH THE TANK OWNER.
5. UNLESS OTHERWISE APPROVED BY THE TANK OWNER, EXTERIOR STEEL SHALL BE PAINTED WITH 1 COAT EPOXY PRIMER (DFT=5-7 MIL) AND 2 COATS POLYURETHANE FINISH (DFT=4-6 MIL EACH) WITH COLOR TO MATCH EXISTING SURFACE. PAINT SHALL BE AS MANUFACTURED BY SHERWIN WILLIAMS, CLEVELAND, OHIO, (800) 321-8194 OR EQUAL COATING TO MATCH EXISTING. CONTRACTOR SHALL VERIFY OWNER'S PAINT REQUIREMENTS PRIOR TO COMMENCEMENT OF THE WORK.
6. CONTRACTOR SHALL VERIFY THAT COATING SYSTEMS ARE COMPATIBLE WITH THE EXISTING SYSTEMS BY ADHESION TESTING PER ASTM D3359 "MEASURING ADHESION BY TAPE TEST".
7. CONTRACTOR SHALL VERIFY THAT CANS OF THE PRODUCT ARE NOT BEYOND THE MANUFACTURER'S RECOMMENDED SHELF LIFE. ASSURE THOROUGH MIXING OF PREMEASURED TWO COMPONENT COATING SYSTEMS.
8. SURFACE CLEANING SHALL BE FOLLOWED WITH PRIMER COAT ON THE SAME DAY.
9. PAINT MUST BE APPLIED AT SURFACE AND AMBIENT TEMPERATURES BETWEEN 50 DEGREES AND 120 DEGREES FAHRENHEIT. NO PAINTING SHALL BE DONE IF RELATIVE HUMIDITY IS ABOVE 80%%%. THE AMBIENT TEMPERATURE BEFORE THE START OF COATING APPLICATION MUST AT BE LEAST 5 DEGREES FAHRENHEIT ABOVE THE DEW POINT AS DETERMINED BY CONVENTIONAL ACCEPTED STANDARDS.
10. PAINT SHALL BE APPLIED USING A NATURAL BRISTLE BRUSH FOR A SMOOTH BRUSH FINISH.
11. PAINT SHALL BE FEATHERED OUT AT TIE-IN AREAS OF EXISTING COATING. PAINT SHALL BE WORKED IN AND AROUND IRREGULARITIES IN THE SURFACE.
12. PAINTING WORK SHALL BE SUBJECT TO INSPECTION ON COMPLETION, AND SHALL BE TOUCHED UP OR RECOATED TO THE SATISFACTION OF THE OWNER.

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

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PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C., Inc.
Project Contact Info
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
(800) 829-6531
www.tectonicengineering.com

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

DRAWN BY:	CHECKED BY:	APPROVED BY:
BWY	JQ/EI	EI

RFDS REV #: 3

PRELIMINARY DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	01/18/2023	ISSUED FOR CONSTRUCTION
1	02/15/2023	REVISED PER COMMENTS

A&E PROJECT NUMBER

BOBOS00067A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00067A
7 BROADWAY AVENUE
MYSTIC, CT 06355

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-7

Exhibit D

Structural Analysis Report

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Date: **December 28, 2022**

Structural Analysis Report – Revision 1

Project Information:

Carrier:	Dish Wireless
Client:	Northeast Site Solutions
Scope of Work:	"New Site Build"
Site Name:	BOBOS00067A
Site Data:	7 Broadway Avenue, Mystic, CT 06355 Latitude *41° 20' 58.5"*, Longitude *-71° 57' 49.5"*

Tectonic Project Number: 11839.BOBOS00067A

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. Inc. is pleased to submit this **"Structural Analysis Report – Revision 1"** to determine the structural integrity of the above-mentioned mount.

The purpose of the analysis is to determine acceptability of the stress level of the existing and proposed antenna mounts, equipment platform, connections, and supporting water tank structure. Based on our analysis we have determined the stress level at each sector to be as follows:

Proposed Antenna Mounts:	**Sufficient – 50%**
Existing Platform:	**Sufficient – 29%**
Water Tank:	**Sufficient – 80%**

This analysis has been performed in accordance with the ASCE 7-16 and the 2022 Connecticut State Building Code, and the ANSI/TIA-222-H Standard based upon an ultimate 3-second gust wind of 140 mph per section 1609.3 and Appendix P. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category III were used in this analysis.

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

Structural analysis prepared by/reviewed by: Jose Rosales / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. Inc.,

Edward N. Iamiceli, P.E.
Managing Director – Structural

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

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TABLE OF CONTENTS

1) INTRODUCTION/PURPOSE

Analysis of the existing and proposed antenna mounts, equipment platform, connections, and supporting structure due to the loading of the proposed antennas, equipment cabinet, and related appurtenances.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
ASCE Revision:	7-16
AWWA Standard:	D100-11
Risk Category:	III
Wind Speed:	140 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Antenna Loading Information

Mounting Level (ft)	Carrier Designation	Quantity	Manufacturer	Model	Feedlines	Note
140'-0"	Dish Wireless	3	JMA	MX08FRO665-21	(3) Power (3) DC	1
		3	Fujitsu	TA08025-B605		
		3	Fujitsu	TA08025-B604		
		3	Raycap	RDIDC-9181-PF-48		
		3	-	Pipe Mounts w/ Kickers		

Note:
1) To be mounted on proposed mounts on water tank.

Table 2 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Quantity	Manufacturer	Model	Proposed Mount Type	Note
6'-6"	Dish Wireless	1	Charles	PM639155N4	Platform	1
		1	Raycap	RDIAC-2465-P240-MTS		
		1	Square D	D224NRB		
		1	Charles	CFIT-PF2020DSH1		

Note:
1) To be mounted on existing platform.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Prepared By	Dated
Prelim. Construction Drawings	Tectonic Engineering	12/16/22
Field Notes and Photos	Tectonic Engineering	12/09/22
Mount Mapping Report	Nexius	03/18/22
Prev. Structural Analysis	Hudson Design Group/AT&T	9/21/22
RFDS	Dish Wireless	11/01/21
Prev. Structural Analysis	All-Points Technology Corporation/T-Mobile	8/3/21

Document	Prepared By	Dated
Prev. Structural Analysis	All-Points Technology Corporation/ Verizon	10/26/16
Prev. Construction Drawings	Clough, Harbour & Associates LLP	2/20/98

3.1) Analysis Method

A tool internally developed, using Microsoft Excel, was used to calculate wind loading on all appurtenances and mount members. This information was then used in conjunction with another program, RISA-3D, which is a commercially available analysis software package, used to check the antenna mounting system and calculate member stresses for various loading cases. The selected output from the analysis is included in Appendix C and D. A comparison of the existing equipment platform to the original design can be found in Appendix E. Finally, a comparative analysis of the supporting water tank structure can be found in Appendix F.

3.2) Assumptions

1) The configuration of equipment and other appurtenances are as specified in Table 1 and 2.
2) The antenna and equipment mounting system will be properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows, unless noted otherwise:

Wide Flange	ASTM A36 (GR36)
Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 4 – Stresses/Adequacy

Notes	Component	Mounting Level (ft)	Maximum % Capacity	Pass / Fail
1	Pipe Mounts	140'-0"	50	Pass
	Connections		15	Pass
2	Platform	6'-6"	Sufficient	Pass
3	Water Tank Anchors	0'	80	Pass

Structure Rating (max from all sectors) =	80%

Note:
1) See additional documentation below in Appendices C and D for software analysis output calculations supporting the % capacity utilized.
2) See additional documentation below in Appendix E for software analysis output calculations supporting the % capacity utilized.
3) See additional documentation below in Appendix F for software analysis output calculations supporting the % capacity utilized.

4.1) Results/Conclusions

The proposed antenna mounts, connections, and supporting water tank structure will be adequate to support the proposed antenna installation. Additionally, the existing equipment platform, connections, and supporting piers will be adequate to support the proposed cabinet installation as detailed in the following report.

Contractor shall field verify existing conditions and recommendations as noted on the construction drawings and notify the design engineer of any discrepancies prior to construction. Any further changes to the antenna, equipment and/or appurtenance configuration should be reviewed with respect to their effect on structural loads prior to implementation.

APPENDIX A – PROPOSED ANTENNA MOUNTS SOFTWARE INPUT CALCULATIONS

Job No.:	11839.BOBOS00067A			
Sheet No.:	1	of	4	
Calculated By:	JJR	Date :	01/13/23	
Checked By:	IM	Date :	01/13/23	

WIND AND ICE LOADS PER TIA-222-H

W.O.	11839.BOBOS00067A
Project Name	BOBOS00067A
Location	7 Broadway Avenue, Mystic, CT 06355
County	New London

Tower Type	WT	Water Tank
Structure Height	156.0	ft
Supporting Str Height	0.0	ft Or ground mounted
Risk Category	III	Substanial risk
Exposure Category	C	Open terrain
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft
Mean elevation (z_s)	2.0	ft

Basic Wind Speed (3-sec gust):			
Without ice	140	mph	PER CTBC
With ice	50	mph	
Service Wind	60	mph	
Ice thickness	1.00	in	

Importance Factor	
Ice thickness	1.15
Earthquake	1.25
Supporting Data:	
K_s	1.00
K_e	1.00
K_c	1.00
K_t	N/A
f	N/A
z_g	900
α	9.5
$K_{z,min}$	0.85
K_d	0.95
G_h	1.00

Height	z (ft)	140.00
	Kh	N/A
	Kzt	1.00
	Kz	1.36
	Kiz	1.16
Wind Pressure, qz (psf)	No Ice	64.75
	With Ice	8.26
	Service	11.89
(tiz)	Ice Thk	1.44
Appurtenances (qzGh)	No Ice	64.75
	With Ice	8.26
	Service	11.89

Job No.	11839.BOBOS00067A		
Sheet No.	2	of	4
Calculated By	JJR	Date :	01/13/23
Checked By	IM	Date :	01/13/23

Equipment Information

Shielding factor, Ka: 1 — Section 16.6

WIND WITHOUT ICE

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(Aa)_T$ (ft^2)	Wind ward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
MX08FR0665-2□	P	1	140	6.00	20.00	8.00	Flat	1.25	1.47	10.00	12.49	4.00	5.87	809	380	82.5	82.5
TA08025-B605	P	1	140	1.31	14.96	9.06	Flat	1.20	1.20	1.64	1.96	0.99	1.19	127	77	92.8	92.8
TA08025-B604	P	1	140	1.31	14.96	7.87	Flat	1.20	1.20	1.64	1.96	0.86	1.03	127	67	81.8	81.8
RDIDC-9181-PF-48	P	1	140	1.58	16.20	9.64	Flat	1.20	1.20	2.13	2.56	1.27	1.52	166	99	21.0	21.0
										$\sum(CaAA)_N$	18.98	$\sum(CaAA)_T$	9.61				278

WIND WITH ICE Ice Thk = 1.44 in

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_N$	Antenna $(Ca)_T$	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft^2)	Ice Weight Alone (lbs)
MX08FR0665-21	P	1.00	140.00	6.24	22.89	10.89	Flat	1.23	1.39	11.90	14.69	5.66	7.90	121	65	28.0	188.7
TA08025-B605	P	1.00	140.00	1.55	17.85	11.95	Flat	1.20	1.20	2.31	2.77	1.55	1.86	23	15	5.3	35.4
TA08025-B604	P	1.00	140.00	1.55	17.85	10.76	Flat	1.20	1.20	2.31	2.77	1.39	1.67	23	14	5.0	33.7
RDIDC-9181-PF-48	P	1.00	140.00	1.82	19.09	12.53	Flat	1.20	1.20	2.90	3.48	1.90	2.28	29	19	6.8	45.9
										$\sum(CaAA)_N$	23.71	$\sum(CaAA)_T$	13.71				304

Job No.	11839.BOBOS00067A			
Sheet No.	3	of	4	
Calculated By	JJR	Date :	01/13/23	
Checked By	IM	Date :	01/13/23	

Seismic Check

Tower Information

Tower Type:	WT	
Structure Height	156.0	ft
Supporting Structure Height	0.0	ft
Mount Height	140.00	ft

Geographic Information

City:	Mystic		
State:	Connecticut		
County:	New London		
Latitude:	41.349529	Longitude:	-73.988462

Seismic Information

Risk Category	III		
Importance Factor	1.25		
Site Soil Classificaiton	D		Table 2-10
S_s	0.185		https://asce7hazardtool.online/
S_1	0.052		
F_a	1.6		(Table 2-11, interpolation allowed)
F_V	2.4		(Table 2-12, interpolation allowed)
S_{DS}	0.197		Section 2.7.5
S_{D1}	0.083		
R	3.00		Section 16.7
As	3.00		Section 16.7 & 2.7.8
Cs	0.09	>	0.03

Equivalent Lateral Force Procedure

Equipment (Discrete Appurtenances)

Antenna Configuration	(E) or (P)	Qty per Sector	z (ft)	Antenna Weight (lb)	Shear Vs= Cs*W (lbs)	Vert. Seismic load (Ev, lbs)	Seismic load (Eh, lbs)
MX08FR0665-21	P	1	140	83	7	3	7
TA08025-B605	P	1	140	93	8	3.7	8
TA08025-B604	P	1	140	82	7	3.2	7
RDIDC-9181-PF-48	P	1	140	21	2	0.8	2

Mounting System (Discrete Appurtenances)

Ev =0.2S_{DS} * D	0.0394 x D	"D" is the dead weight of the mount members.
Eh= rho * Q_E	0.09 x W	"W" total weight of structure above ground

Notes:

1. Wind loads govern over Seismic loads

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Job No.	11839.BOBOS00067A		
Sheet No.	4	of	4
Calculated By	JJR	Date :	01/13/23
Checked By	IM	Date :	01/13/23

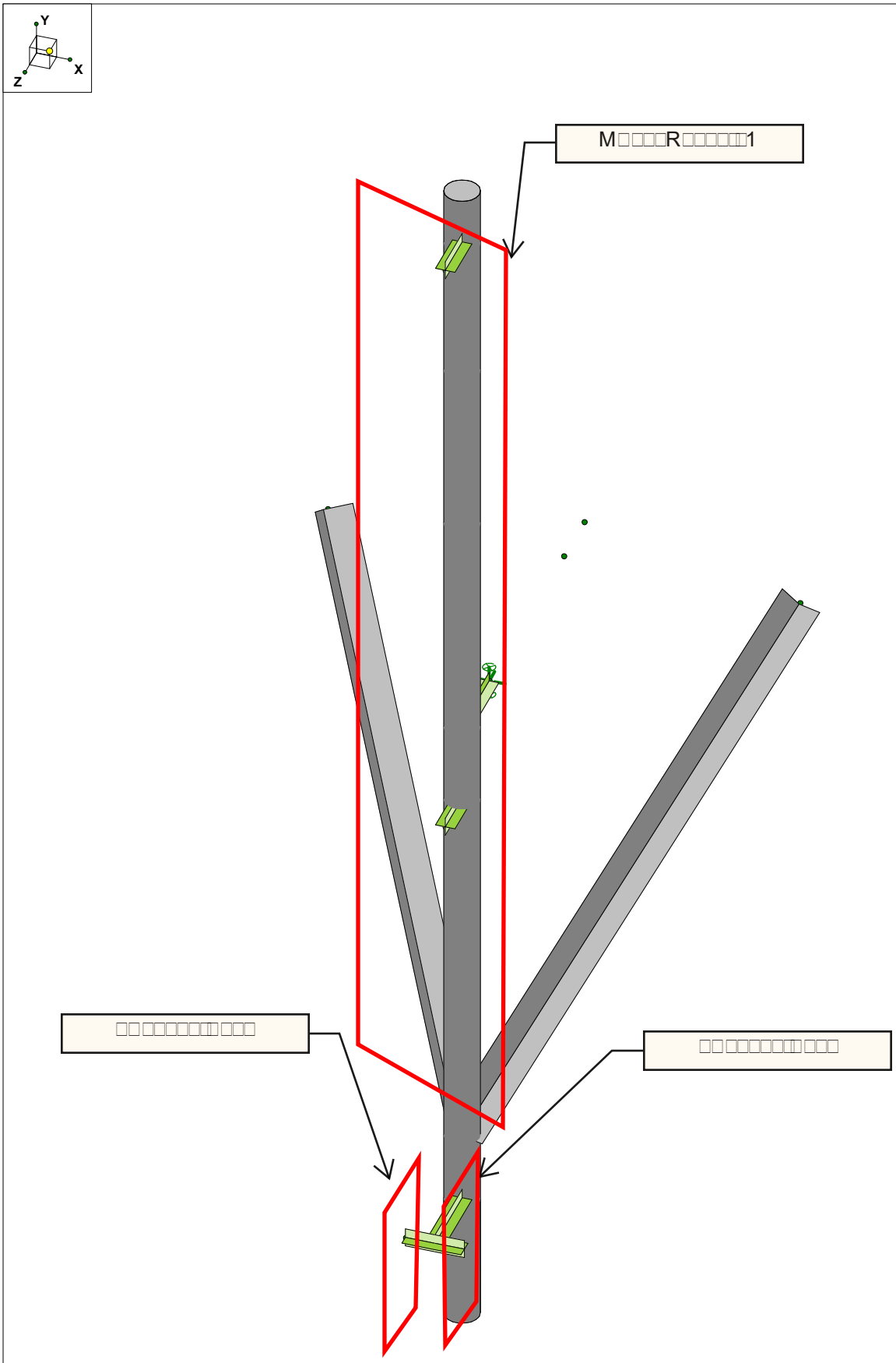
Mounting System Information

Mount Center Line:	140 ft

Reduction Factor = 1 Section 16.6

Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical?	Force Coefficient	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Maintenance Wind Force (lbs/ft)
3" STD Pipe	1	1.00	3.5	3.5	Cylindrical	1.2	0.35	22.7	0.92	6.2	0.64	5.3	4.2
L3x3x1/4"	1	1.00	3	3	Flat	2	0.50	32.4	1.00	6.7	0.98	8.1	5.9
Slider Bracket	1	1.00	2.50	11.60	Flat	2	0.42	27.0	2.35	15.8	0.90	7.4	5.0

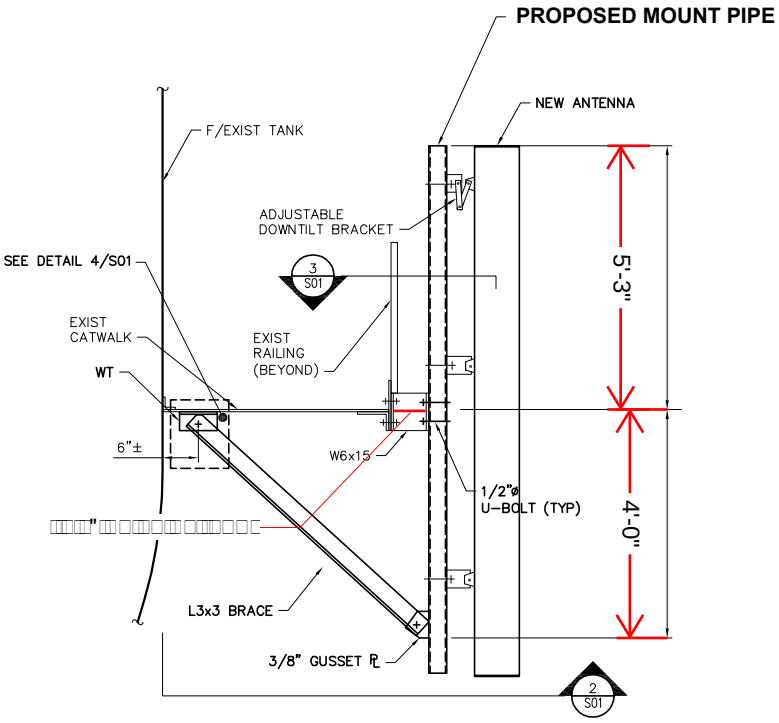
APPENDIX B– PROPOSED ANTENNA MOUNTS
WIRE FRAME AND RENDERED MODEL WITH PROPOSED DETAILS



OVP to be mounted seperately on water tank railing.

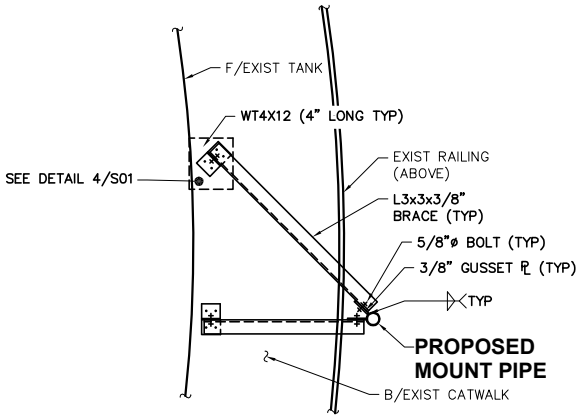
Envelope Only Solution

Proposed Mount Diagram

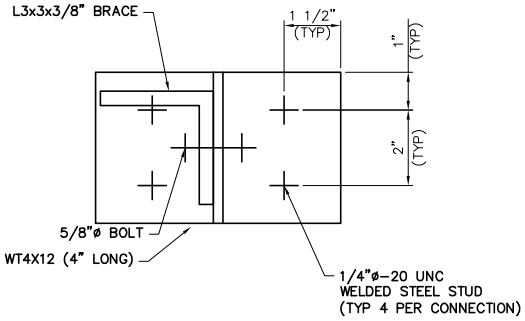


NOTE:
CONTRACTOR TO REMOVE ANY EXISTING ANTENNA MOUNTS PRIOR TO INSTALLING NEW MOUNT.

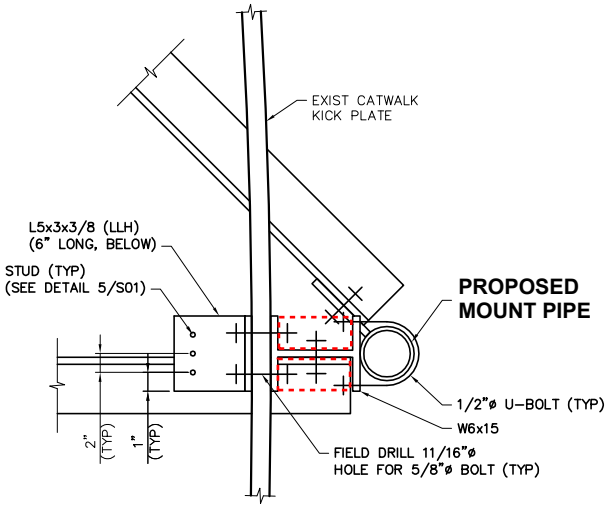
1 S01 STRUCTURAL DETAIL
SCALE: **NTS**



2 S01 STRUCTURAL DETAIL
SCALE:

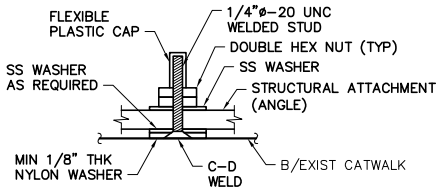


4 S01 STRUCTURAL DETAIL
SCALE: **NTS**



NOTE:
CONTRACTOR TO VERIFY PRIOR TO FABRICATION.

3 S01 STRUCTURAL DETAIL
SCALE: **NTS**



5 S01 STRUCTURAL DETAIL
SCALE: **NTS**

APPENDIX E
EQUIPMENT PLATFORM

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Job No.	11839.BOBOS00067A		
Sheet No.	1	of	1
Calculated By	JJR	Date :	12/28/22
Checked By	IM	Date :	12/28/22

Equipment Loads

1 - Proposed Dish Wireless Equipment Cabinet Dead Load

Cabinet Type		Weight lb	Total Weight	
1	Hex Cube-PM639155N4	1015	1015	lbs
1	RDIAC-2465-P-240-MTS	80	80	lbs
1	Square D D224NRB	54	54	lbs
1	CFIT-PF2020DSH1	20	20	lbs
			1168	**lbs**

2 - Original Sprint Equipment Cabinet Load.

Cabinet Type		Weight lb	Total Weight	
4	Equipment Cabinets	1000	4000	lbs
1	PPC	80	80	lbs
		Assumed	**4080**	**lbs**

The existing equipment platform was designed to support four (4) Sprint equipment cabinets and a PPC enclosure per drawings by Clough. Harbour & Associates LLP dated February 1998. The proposed Dish equipment installation of one (1) cabinet and three (3) enclosures will be a significant decrease in weight compared to the design purpose of the supporting platform. Therefore, we can safely conclude that the existing supporting platform, connections, and supporting piers will have sufficient reserve capacity to support the proposed Dish Wireless installation.

APPENDIX F
WATER TANK CALCULATIONS

COMPARATIVE ANALYSIS OF THE EXISTING WATER TANK

AWWA STANDARD - Antenna Mount Loads

Wind Velocity, V:	**121**	[per AWWA D100-11]	Exposure Category:	**C**	(AWWA Sec 3.1.4.2)
Force Coefficient, Cf (Flat Surface) :	1		Gust Effect Factor, G:	1.00	(AWWA Sec 3.1.4)
Force Coefficient, Cf (Cylindrical Surface):	0.6		Importance Factor, I:	1.15	(AWWA Sec 3.1.4)
Force Coefficient, Cf (Double Curved):	0.5				

Antenna Loads

Antennas	Quantity	Length or Diameter (in)	Width (in)	Depth (in)	Shape	Weight (ea, lb)	Total Weight (total, lb)	Elevation (ft)	Kz (Per Table 3)	qz (psf)	Wind Pressure (psf)	Projected Area (ea, ft^2)	Net Wind Load (ea, lb)	Total Wind Load (total, lb)	Moment (kip-ft)
Proposed Dish															
MX08FR0665-21	3	72.00	20.00	8.00	F	82.50	248	140	1.358	58.53	58.53	10.00	585	1177	165
TA08025-B605	3	15.72	14.96	9.06	F	92.80	278	140	1.358	58.53	58.53	1.63	96	192	27
TA08025-B604	3	15.72	14.96	7.87	F	81.80	245	140	1.358	58.53	58.53	1.63	96	192	27
RDIDC-9181-PF-48	3	18.97	16.20	9.64	F	21.00	63	140	1.358	58.53	58.53	2.13	125	251	35
Existing AT&T															
7770 Antennas	3	55.00	11.00	5.00	F	35.00	105	140	1.358	58.53	58.53	4.20	246	494	69
QS46512-2 Antennas	3	52.00	12.00	10.80	F	75.00	225	140	1.358	58.53	58.53	4.33	254	510	71
DMP65R-BU4DA Antennas	3	48.00	20.70	7.70	F	68.00	204	140	1.358	58.53	58.53	6.90	404	812	114
RRUS-32 B2 RRH's	3	27.20	12.10	7.00	F	60.00	180	140	1.358	58.53	58.53	2.29	134	269	38
LGP21401 TMA's	6	14.40	9.00	2.70	F	19.00	114	140	1.358	58.53	58.53	0.90	53	212	30
DBC0061F1V51-2 Diplexers	6	8.00	6.20	6.50	F	26.00	156	140	1.358	58.53	58.53	0.34	20	81	11
DC6-48-60-18F Surge Arrestors	3	20.10	18.20	6.40	F	44.00	132	140	1.358	58.53	58.53	2.54	149	299	42
DC2-48-60-0-9E Surge Arrestors	3	11.80	10.00	6.50	F	16.00	48	140	1.358	58.53	58.53	0.82	48	96	13
FMB	3	18.00	18.00	8.00	F	50.00	150	140	1.358	58.53	58.53	2.25	132	265	37
B5/B12 4449 RRH's	3	17.90	13.20	9.40	F	73.00	219	140	1.358	58.53	58.53	1.64	96	193	27
Radio 4426 B66 RRH's	3	14.90	13.20	9.40	F	49.00	147	140	1.358	58.53	58.53	1.37	80	161	22
Radio 4415 B30 RRH's	3	16.50	13.40	5.90	F	46.00	138	140	1.358	58.53	58.53	1.54	90	181	25
Existing T-Mobile															
AIR6449 B41	3	33.10	20.50	8.30	F	103.00	309	117	1.307	56.35	56.35	4.71	266	797	93
APXVAAL24_43-U-NA20	3	95.90	24.00	8.70	F	128.00	384	117	1.307	56.35	56.35	15.98	901	2702	316
APX16DWV-S-E-A20	3	55.90	13.00	3.15	F	40.70	122	117	1.307	56.35	56.35	5.05	284	853	100
RADIO 4449 B71-B85	3	14.90	13.20	9.30	F	74.00	222	117	1.307	56.35	56.35	1.37	77	231	27
RADIO 4424 B25	3	16.50	13.50	9.60	F	88.00	264	117	1.307	56.35	56.35	1.55	87	262	31
RADIO 4415 B66A	3	16.50	13.40	5.90	F	46.00	138	117	1.307	56.35	56.35	1.54	87	260	30
Existing Verizon															
SBNHH-1D65A	6	55.60	11.90	7.10	F	46.50	279	93	1.245	53.65	53.65	4.59	247	1479	138
BXA-80080/4	3	48.20	11.20	5.90	F	14.30	43	93	1.245	53.65	53.65	3.75	201	603	56
LNX-6514DS	3	80.63	11.85	7.11	F	45.19	136	93	1.245	53.65	53.65	6.64	356	1068	99
B13 RRH4X30-4R	3	21.60	12.00	9.00	F	57.20	172	93	1.245	53.65	53.65	1.80	97	290	27
B25 RRH4X30	3	21.20	12.00	7.20	F	53.00	159	93	1.245	53.65	53.65	1.77	95	284	26
B66A RRH4X45	3	25.20	11.40	6.30	F	56.80	170	93	1.245	53.65	53.65	2.00	107	321	30
OVP	1	28.92	15.73	10.31	F	32.00	32	93	1.245	53.65	53.65	3.16	170	170	16
Unknown															
4' Dish Antenna	1	48	48.00	36.00	F	150.00	150	140	1.358	58.53	58.53	16.00	937	627	88
							5232					**Total**		**15331**	**1831**
												DISH Only		**1812**	**254**

Cable Loads

Cables	Quantity	Quantity in Wind	Cable Diameter (in)	Shape	Cable Length (ft)	CL Elevation (ft)	Projected Area (ft^2)	Weight (ea, lb/ft)	Kz (Per Table 3)	qz (psf)	Wind Pressure (psf)	Total Weight (ea, lbs)	Wind Load (total, lbs)	Moment (kip-ft)
Proposed Dish														
Power	3	3	0.938	C	140	70	10.94	0.58	1.162	50.09	30.05	244.44	986.59	69.06
Fiber	3	3	0.33	C	140	70	3.85	0.15	1.162	50.09	30.05	63.00	347.09	24.30
Existing AT&T														
1 5/8" Coax	12	6	1.98	C	140	70	23.10	0.82	1.162	50.09	30.05	1377.60	4165.14	291.56
2 1/2" Innerduct	1	1	2.5	C	140	70	29.17	5.80	1.162	50.09	30.05	812.00	876.50	61.36
Existing T-Mobile														
1 5/8" Coax	6	3	1.98	C	117	58.5	19.31	0.82	1.121	48.30	28.98	575.64	1678.42	98.19
1 1/4" Coax	6	3	1.55	C	117	58.5	15.11	0.63	1.121	48.30	28.98	442.26	1313.92	76.86
1" Fiber	3	3	1	C	117	58.5	9.75	1.00	1.121	48.30	28.98	351.00	847.69	49.59
Existing Verizon														
1-5/8" Coax	9	3	1.98	C	93	46.5	15.35	0.82	1.090	46.98	28.19	686.34	1297.70	60.34
1 1/2" Hybrid	3	3	1.51	C	93	46.5	11.70	1.30	1.090	46.98	28.19	362.70	989.66	46.02
										Total		**4915**	**12503**	**777**
										Dish Only		**307**	**1334**	**93**

AWWA STANDARD - Antenna Mount Loads

Wind Velocity, V:	**121**	[per AWWA D100-11]	Exposure Category:	**C**	(AWWA Sec 3.1.4.2)
Force Coefficient, Cf (Flat Surface) :	1		Gust Effect Factor, G:	1.00	(AWWA Sec 3.1.4)
Force Coefficient, Cf (Cylindrical Surface):	0.6		Importance Factor, I:	1.15	(AWWA Sec 3.1.4)
Force Coefficient, Cf (Double Curved):	0.5				

Mount Elements	Quantity	Length or Diameter (in)	Width (in)	Depth (in)	Shape	Weight (ea, lb)	Total Weight (total, lb)	Elevation (ft)	Kz (Per Table 3)	qz (psf)	Wind Pressure (psf)	Projected Area (ea, ft^2)	Net Wind Load (ea, lb)	Total Wind Load (total, lb)	Moment (kip-ft)
Proposed Dish Mounts															
Mount pipes - 3" STD. Pipe	3	132.0	3.5	3.5	C	63.80	191	140	1.358	58.53	35.12	3.21	113	226	32
Connection - Slider Bracket	6	10.5	2.5	11.625	F	26.00	156	140	1.358	58.53	58.53	0.18	11	43	6
Kickbacks - L3x3x3/8"	6	58.0	3	3	F	34.80	209	140	1.358	58.53	58.53	1.21	71	284	40
Misc (Add 10%)														55	8
AT&T Mount															
2" STD Pipe	9	96.0	2.375	2.375	C	29.28	264	140	1.358	58.53	35.12	1.58	56	335	47
2.5" STD Pipe	9	72.0	2.875	2.875	C	34.80	313	140	1.358	58.53	35.12	1.44	50	304	43
L3x3x3/8"	9	48.0	3	3	F	28.80	259	140	1.358	58.53	58.53	1.00	59	353	49
L3x3x3/8" Rail Reinforcement	18	48.0	3	3	F	28.80	518	140	1.358	58.53	58.53	1.00	59	706	99
Misc (Add 10%)														170	24
T-Mobile Mount															
2.5" STD Pipe	3	96.0	2.875	2.875	C	46.40	139	117	1.307	56.35	33.81	1.92	65	194	23
2.5" STD Pipe	6	72.0	2.875	2.875	C	34.80	209	117	1.307	56.35	33.81	1.44	49	292	34
Misc (Add 10%)														49	6
Verizon Mount															
2.5" STD Pipe	12	96.0	2.875	2.875	C	46.40	557	93	1.245	53.65	32.19	1.92	62	740	69
3" STD. Pipe Raycap mount	3	36.0	3.5	3.5	C	22.74	68	93	1.245	53.65	32.19	0.88	28	85	8
Misc (Add 10%)														82.5	7.7
Unknown															
Mast Pipe - Pipe 2.0	1	24.0	2.375	2.375	C	87.84	88	140	1.358	58.53	35.12	0.40	14	9	1
Tieback - 1.5" STD	1	36.0	1.9	1.9	C	8.16	8	140	1.358	58.53	35.12	0.48	17	11	2
Misc (Add 10%)														2	0.3
							2980						**Total**	3942	497
													Dish Only	609	85

Weight of the Tank

Tank Bowl Calculation

Element	Shape	Length (ft)	Width (ft)	Surface Area (ft^2)	Thickness (in)	Volume (ft^3)	Density (lbs/ft^3)	Weight (lbs)
Top	Hemisphere	7	31.75	1043.6	0.250	21.74	490	10653
Bottom	Hemisphere	7	31.75	1043.6	0.250	21.74	490	10653
Middle	Cylinder	16	31.75	1595.9	0.250	33.25	490	16292

Catwalk/Railing Calculation

Element	Shape	Length (ft)	Width (ft)	Surface Area (ft^2)	Thickness (in)	Volume (ft^3)	Density (lbs/ft^3)	Weight (lbs)
Catwalk	PL 1/4"	106	2	102.9	0.250	2.14	490	1050
Catwalk	L6x4x3/8"	106	-	-	0.375	-	490	1304
Catwalk	L6x4x3/8"	100	-	-	0.375	-	490	1227
Railing	L2x2x1/4"	106	-	-	0.250	-	490	338
(12) Verticals	L2x2x1/4"	3.5	-	-	0.250	-	490	134
(20) Bracing	L2x2x1/4"	10	-	-	0.250	-	490	638

Leg Calculation

Element	Shape	Length (ft)	Width (ft)	Surface Area (ft^2)	Thickness (in)	Volume (ft^3)	Density (lbs/ft^3)	Weight (lbs)
Legs	Cylinder	138	1.5	650.3	0.250	13.55	490	6639
Legs	Cylinder	138	1.5	650.3	0.250	13.55	490	6639
Legs	Cylinder	138	1.5	650.3	0.250	13.55	490	6639
Legs	Cylinder	138	1.5	650.3	0.250	13.55	490	6639
Standpipe	Cylinder	130	3	1225.2	0.250	25.53	490	12507

Girt Calculation

Element	Shape	# of Girts	Length (ft)	Weight (lb/ft)	Height (ft)	Weight (lbs)
Top Girts	W10X68	4	31.942	68	35	8688
Top Girts	W10X68	4	28.4638	68	65	7742
Top Girts	W8X35	4	25.33	35	92	3546
Top Girts	W8X35	4	22.4348	35	117	3141

Diagonals Calculation

Element	Shape	# of Diagonals	Height of Section(ft)	Width of Section (ft)	Length (ft)	Weight (lb/ft)	Weight (lbs)
Diagonals	SR 1-1/4"	8	35	34.0	48.8	4	1629
Diagonals	SR 1-1/4"	8	30	30.2	42.6	4	1422
Diagonals	SR 1-1/4"	8	27	26.9	38.1	4	1273
Diagonals	SR 1"	8	25	23.9	34.6	3	739
Diagonals	SR 1"	8	21	21.2	29.9	3	638

Total:	**110170.28**	**lbs**
	110.17	**kips**
Add 5% for Misc:	**5.51**	**kips**
Total:	**115.68**	**kips**

Notes:
1. Tank is assumed to be empty for this analysis (worse case loading when combined with wind).

AWWA STANDARD

Tank Loads

Wind Velocity, V:	**121**	[per AWWA D100-11]	**Exposure Category:**	**C** (AWWA Sec 3.1.4.2)
Force Coefficient, Cf (Flat Surface) :	1		**Gust Effect Factor, G:**	1 (AWWA Sec 3.1.4)
Force Coefficient, Cf (Cylindrical Surface):	0.6		**Importance Factor, I:**	1.15 (AWWA Sec 3.1.4)
Force Coefficient, Cf (Double Curved):	0.5			

Tank Loads

Tank Elements	Length	Width (ft)	Depth (ft)	Shape	Area (ft^2)	C/L Elevation (ft)	Velocity Exposure Coeff, Kz	qz (psf)	Wind Pressure (psf)	Net Wind Load (total, lb)	Moment (kip-ft)
Tank Top	7.00	15.88	15.88	DC	111.13	152.50	1.38	59.65	29.83	3315	505
Tank Middle	16.00	31.75	31.75	C	508.00	138.00	1.35	58.34	35.01	17783	2454
Tank Bottom	7.00	15.88	15.88	DC	111.13	133.50	1.34	57.92	28.96	3218	430
Legs (Section 5 - Top)	21.00	1.50	1.50	C	31.50	127.50	1.33	57.35	34.41	1084	138
Diagonals (Section 5 - Top)	29.85	0.08	0.08	C	2.49	127.50	1.33	57.35	34.41	86	11
Standpipe (Section 5 - Top)	21.00	3.00	3.00	C	63.00	127.50	1.33	57.35	34.41	2168	276
Girts (Section 4)	22.4348	0.67	-	F	14.96	117.00	1.31	56.35	56.35	843	99
Legs (Section 4)	25.00	1.50	1.50	C	37.50	104.50	1.28	55.17	33.10	1241	130
Diagonals (Section 4)	34.57	0.08	0.08	C	2.88	104.50	1.28	55.17	33.10	95	10
Standpipe (Section 4)	25.00	3.00	3.00	C	75.00	104.50	1.28	55.17	33.10	2483	259
Girts (Section 3)	25.3300	0.67	-	F	16.89	92.00	1.24	53.50	53.50	903	83
Legs (Section 3)	27.00	1.50	1.50	C	40.50	78.50	1.19	51.40	30.84	1249	98
Diagonals (Section 3)	38.11	0.10	0.10	C	3.97	78.50	1.19	51.40	30.84	122	10
Standpipe (Section 3)	27.00	3.00	3.00	C	81.00	78.50	1.19	51.40	30.84	2498	196
Girts (Section 2)	28.4638	0.83	-	F	23.72	65.00	1.14	49.31	49.31	1170	76
Legs (Section 2)	30.00	1.50	1.50	C	45.00	50.00	1.09	46.98	28.19	1269	63
Diagonals (Section 2)	42.57	0.10	0.10	C	4.43	50.00	1.09	46.98	28.19	125	6
Standpipe (Section 2)	30.00	3.00	3.00	C	90.00	50.00	1.09	46.98	28.19	2537	127
Girts (Section 1 - Bottom)	31.9420	0.83	-	F	26.62	35.00	1.09	46.98	46.98	1251	44
Legs (Section 1 - Bottom)	35.00	1.50	1.50	C	52.50	17.50	1.09	46.98	28.19	1480	26
Diagonals (Section 1 - Bottom)	48.78	0.10	0.10	C	5.08	17.50	1.09	46.98	28.19	143	3
Standpipe (Section 1 - Bottom)	35.00	3.00	3.00	C	105.00	17.50	1.09	46.98	28.19	2960	52
5% Misc. (vent, over flow pipe, etc)										2401	255
										50424	**5351**

	Total Existing & Proposed	Dish Only
Estimated Lateral Load	31776 lbs	3755 lbs
Estimated Base Moment	3105 k-ft	432 k-ft
Therefore,		
% Increase in the lateral Force on the Tank	63.0 %	7.4 %
% Increase in the Moment of the Tank	58.0 %	8.1 %

Total Moment:	**8456**	K-ft
Total Shear:	**82**	Kips
Total Weight:	**129**	Kips
Resist. Moment:	**2318**	K-ft

Weight assumes tank empty condition.

The Resisting moment of the tank due to its self weight (2319 k-ft) is less than the Overturning moment (8446 k-ft). Therefore, anchor bolts must be checked.

This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

Search Information

Coordinates: 41.349529, -71.963809

Elevation: 8 ft

Timestamp: 2022-12-28T19:53:56.455Z

Hazard Type: Wind

ASCE 7-16

MRI 10-Year	76 mph
MRI 25-Year	87 mph
MRI 50-Year	99 mph
MRI 100-Year	105 mph
Risk Category I	119 mph
Risk Category II	128 mph
Risk Category III	⚠ 137 mph

If the structure under consideration is a healthcare facility and you are also within 1 mile of the coastal mean high water line, you are in a wind-borne debris region. If other occupancy, use the Risk Category II basic wind speed contours to determine if you are in a wind-borne debris region.

Risk Category IV	⚠ 141 mph

You are in a wind-borne debris region.

ASCE 7-10

MRI 10-Year	80 mph
MRI 25-Year	90 mph
MRI 50-Year	100 mph
MRI 100-Year	110 mph
Risk Category I	125 mph
Risk Category II	⚠ 136 mph

You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

Risk Category III-IV	⚠ 146 mph

If the structure under consideration is a healthcare facility and you are also within 1 mile of the coastal mean high water line, you are in a wind-borne debris region. If other occupancy, use the Risk Category II basic wind speed contours to determine if you are in a wind-borne debris region.

ASCE 7-05

ASCE 7-05 Wind Speed	⚠ 121 mph

You are in a wind-borne debris region.

□□r□□ □ □□D1□□11

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

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

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competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the report provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the report.

Exhibit E

Power Density/RF Emissions Report

Radio Frequency - Electromagnetic Energy (RF-EME) Report

Site No. BOBOS00067A

7 Broadway Avenue Extension
Mystic, Connecticut 06355
41° 20' 58.50" N, -71° 57' 49.50" W NAD83

EBI Project No. 6222006105
October 18, 2022

Prepared for:

Dish Wireless

Summary: MPE Passes at 10.39%

Prepared by:

EBI Consulting
environmental | engineering | due diligence

TABLE OF CONTENTS

APPENDICES

REFERENCE DOCUMENTS (NOT ATTACHED)
CDs: BOBOS00067A_PRELIMCD_20210806104028_RF REVIEWED_20210810082522
RFDS: RFDS-BOBOS00067A-PRELIMINARY-20211101-V.3_202111101152856

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Dish Wireless to conduct radio frequency electromagnetic (RF-EME) modeling for Dish Wireless Site BOBOS00067A located at 7 Broadway Avenue Extension in Mystic, Connecticut to determine RF-EME exposure levels from proposed Dish Wireless communications equipment at this site. As described in greater detail in Appendix C of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for the general public and for occupational activities. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site.

At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the DISH antennas is approximately **2.86** percent of the FCC's general public limit (**0.57** percent of the FCC's occupational limit).

The composite exposure level from all carriers on this site is approximately **10.39** percent of the FCC's general public limit (**2.08** percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only DISH has the ability to lockout/tagout the facility, or to authorize others to do so.

1.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per second (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 5000 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size or health.

2.0 SITE DESCRIPTION

This project site includes the following proposed wireless telecommunication antennas on a water tank located at 7 Broadway Avenue Extension in Mystic, Connecticut.

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Total Power Input (Watts)	Gain (dBd)*	Total ERP (Watts)	Total EIRP (Watts)
1	Dish	JMA	MX08FRO665-21 02DT 600	600	0	0	62	6.0	120	11.35	1459.42	2393.45
1	Dish	JMA	MX08FRO665-21 02DT 1900	1900	0	0	61	6.0	160	15.75	5359.45	8789.49
1	Dish	JMA	MX08FRO665-21 02DT 2100	2100	0	0	65	6.0	160	16.75	6747.14	11065.32
2	Dish	JMA	MX08FRO665-21 02DT 600	600	120	0	62	6.0	120	11.35	1459.42	2393.45
2	Dish	JMA	MX08FRO665-21 02DT 1900	1900	120	0	61	6.0	160	15.75	5359.45	8789.49
2	Dish	JMA	MX08FRO665-21 02DT 2100	2100	120	0	65	6.0	160	16.75	6747.14	11065.32
3	Dish	JMA	MX08FRO665-21 02DT 600	600	240	0	62	6.0	120	11.35	1459.42	2393.45
3	Dish	JMA	MX08FRO665-21 02DT 1900	1900	240	0	61	6.0	160	15.75	5359.45	8789.49
3	Dish	JMA	MX08FRO665-21 02DT 2100	2100	240	0	65	6.0	160	16.75	6747.14	11065.32
4	Unknown	GENERIC	PANEL 4FT 00DT 850	850	0	0	61	4.0	100	11.52	1419.06	2327.25
5	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	0	0	65	4.0	100	14.65	2917.43	4784.58
6	Unknown	GENERIC	PANEL 4FT 00DT 850	850	0	0	61	4.0	100	11.52	1419.06	2327.25
7	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	0	0	65	4.0	100	14.65	2917.43	4784.58
8	Unknown	GENERIC	PANEL 4FT 00DT 850	850	90	0	61	4.0	100	11.52	1419.06	2327.25
9	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	90	0	65	4.0	100	14.65	2917.43	4784.58
10	Unknown	GENERIC	PANEL 4FT 00DT 850	850	90	0	61	4.0	100	11.52	1419.06	2327.25
11	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	90	0	65	4.0	100	14.65	2917.43	4784.58

Ant #	Operator	Antenna Make	Antenna Model	Frequency (MHz)	Azimuth (deg.)	Mechanical Downtilt (deg.)	Horizontal Beamwidth (Degrees)	Aperture (feet)	Total Power Input (Watts)	Gain (dBd)*	Total ERP (Watts)	Total EIRP (Watts)
12	Unknown	GENERIC	PANEL 4FT 00DT 850	850	270	0	61	4.0	100	11.52	1419.06	2327.25
13	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	270	0	65	4.0	100	14.65	2917.43	4784.58
14	Unknown	GENERIC	PANEL 4FT 00DT 850	850	270	0	61	4.0	100	11.52	1419.06	2327.25
15	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	270	0	65	4.0	100	14.65	2917.43	4784.58
16	Unknown	GENERIC	PANEL 4FT 00DT 850	850	0	0	61	4.0	100	11.52	1419.06	2327.25
17	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	0	0	65	4.0	100	14.65	2917.43	4784.58
18	Unknown	GENERIC	PANEL 4FT 00DT 850	850	0	0	61	4.0	100	11.52	1419.06	2327.25
19	Unknown	GENERIC	PANEL 4FT 00DT 850	850	90	0	61	4.0	100	11.52	1419.06	2327.25
20	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	90	0	65	4.0	100	14.65	2917.43	4784.58
21	Unknown	GENERIC	PANEL 4FT 00DT 850	850	90	0	61	4.0	100	11.52	1419.06	2327.25
22	Unknown	GENERIC	PANEL 4FT 00DT 850	850	270	0	61	4.0	100	11.52	1419.06	2327.25
23	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	270	0	65	4.0	100	14.65	2917.43	4784.58
24	Unknown	GENERIC	PANEL 4FT 00DT 850	850	270	0	61	4.0	100	11.52	1419.06	2327.25
25	Unknown	GENERIC	PANEL 4FT 00DT 850	850	0	0	61	4.0	100	11.52	1419.06	2327.25
26	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	0	0	65	4.0	100	14.65	2917.43	4784.58
27	Unknown	GENERIC	PANEL 4FT 00DT 850	850	0	0	61	4.0	100	11.52	1419.06	2327.25
28	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	0	0	65	4.0	100	14.65	2917.43	4784.58
29	Unknown	GENERIC	PANEL 4FT 00DT 850	850	90	0	61	4.0	100	11.52	1419.06	2327.25
30	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	90	0	65	4.0	100	14.65	2917.43	4784.58
31	Unknown	GENERIC	PANEL 4FT 00DT 850	850	90	0	61	4.0	100	11.52	1419.06	2327.25
32	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	90	0	65	4.0	100	14.65	2917.43	4784.58
33	Unknown	GENERIC	PANEL 4FT 00DT 850	850	270	0	61	4.0	100	11.52	1419.06	2327.25
34	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	270	0	65	4.0	100	14.65	2917.43	4784.58
35	Unknown	GENERIC	PANEL 4FT 00DT 850	850	270	0	61	4.0	100	11.52	1419.06	2327.25
36	Unknown	GENERIC	PANEL 4FT 00DT 1900	1900	270	0	65	4.0	100	14.65	2917.43	4784.58

• Note there is 1 Dish Wireless antenna per sector at this site. For clarity, the different frequencies for each antenna are entered on separate lines.

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Top of Water Tank	Z-Height Catwalk	Z-Height Adjacent Building	Z-Height Ground
1	Dish	13.9	31.4	140.0	-27.0	-7.0	108.0	128.0
2	Dish	31.4	42.9	140.0	-27.0	-7.0	108.0	128.0
3	Dish	37.5	10.1	140.0	-27.0	-7.0	108.0	128.0
4	Unknown	15.4	17.0	138.0	-17.0	3.0	118.0	138.0
5	Unknown	13.7	20.3	138.0	-17.0	3.0	118.0	138.0
6	Unknown	13.1	23.8	138.0	-17.0	3.0	118.0	138.0
7	Unknown	13.5	26.9	138.0	-17.0	3.0	118.0	138.0
8	Unknown	37.3	41.0	138.0	-17.0	3.0	118.0	138.0
9	Unknown	40.2	39.4	138.0	-17.0	3.0	118.0	138.0
10	Unknown	42.5	37.5	138.0	-17.0	3.0	118.0	138.0
11	Unknown	44.5	35.1	138.0	-17.0	3.0	118.0	138.0

Ant #	NAME	X	Y	Antenna Radiation Centerline	Z-Height Top of Water Tank	Z-Height Catwalk	Z-Height Adjacent Building	Z-Height Ground
12	Unknown	41.0	12.1	138.0	-17.0	3.0	118.0	138.0
13	Unknown	33.4	9.2	138.0	-17.0	3.0	118.0	138.0
14	Unknown	27.7	8.8	138.0	-17.0	3.0	118.0	138.0
15	Unknown	43.7	14.2	138.0	-17.0	3.0	118.0	138.0
16	Unknown	17.2	18.1	117.0	-38.0	-18.0	97.0	117.0
17	Unknown	17.2	24.8	117.0	-38.0	-18.0	97.0	117.0
18	Unknown	18.1	32.4	117.0	-38.0	-18.0	97.0	117.0
19	Unknown	22.6	37.7	117.0	-38.0	-18.0	97.0	117.0
20	Unknown	31.0	38.8	117.0	-38.0	-18.0	97.0	117.0
21	Unknown	38.8	38.0	117.0	-38.0	-18.0	97.0	117.0
22	Unknown	38.8	13.1	117.0	-38.0	-18.0	97.0	117.0
23	Unknown	30.4	12.5	117.0	-38.0	-18.0	97.0	117.0
24	Unknown	23.2	12.9	117.0	-38.0	-18.0	97.0	117.0
25	Unknown	17.6	16.8	93.0	-62.0	-42.0	73.0	93.0
26	Unknown	17.2	22.4	93.0	-62.0	-42.0	73.0	93.0
27	Unknown	17.0	27.1	93.0	-62.0	-42.0	73.0	93.0
28	Unknown	18.3	32.8	93.0	-62.0	-42.0	73.0	93.0
29	Unknown	22.6	37.9	93.0	-62.0	-42.0	73.0	93.0
30	Unknown	28.5	38.6	93.0	-62.0	-42.0	73.0	93.0
31	Unknown	33.6	38.6	93.0	-62.0	-42.0	73.0	93.0
32	Unknown	38.4	37.7	93.0	-62.0	-42.0	73.0	93.0
33	Unknown	39.6	13.9	93.0	-62.0	-42.0	73.0	93.0
34	Unknown	33.2	12.7	93.0	-62.0	-42.0	73.0	93.0
35	Unknown	28.9	12.5	93.0	-62.0	-42.0	73.0	93.0
36	Unknown	23.4	13.1	93.0	-62.0	-42.0	73.0	93.0

• Note the Z-Height represents the distance from the antenna centerline in feet.

The above tables contain an inventory of proposed Dish Wireless antennas and other carrier antennas if sufficient information was available to model them. Note that EBI uses an assumed set of antenna specifications and powers for unknown and other carrier antennas for modeling purposes. The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered uncontrolled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Appendix C. Appendix B presents a site safety plan that provides a plan view of the water tank with antenna locations.

3.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical MPE modeling using RoofMaster™ software to estimate the worst-case power density at the site's nearby broadcast levels resulting from operation of the antennas. RoofMaster™ is a widely-used predictive modeling program that has been developed by Waterford Consultants to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications Commission (FCC) Office of Engineering & Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human

Exposure to Radiofrequency Electromagnetic Fields" (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

For this report, EBI utilized antenna and power data provided by Dish Wireless and compared the resultant worst-case MPE levels to the FCC's occupational/controlled exposure limits outlined in OET Bulletin 65. The assumptions used in the modeling are based upon information provided by Dish Wireless and information gathered from other sources. Elevations of walking/working surfaces were estimated based on elevations provided and available aerial imagery. Sector orientation assignments were made assuming coverage is directed to areas of site. Changes to antenna mount heights or placement will impact site compliance. The parameters used for modeling are summarized in the Site Description antenna inventory table in Section 2.0.

Unknown carriers also have antennas on the water tank. Information about these antennas was included in the modeling analysis.

Based on worst-case predictive modeling, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed Dish Wireless antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the Dish Wireless antennas, the maximum power density generated by the Dish Wireless antennas is approximately 2.86 percent of the FCC's general public limit (0.57 percent of the FCC's occupational limit). The composite exposure level from all carriers on this site is approximately 10.39 percent of the FCC's general public limit (2.08 percent of the FCC's occupational limit) at the nearest walking/working surface to each antenna.

The Site Safety Plan also presents areas where Dish Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

There were also worst-case predicted exposures above the general public MPE in front of the other Carrier antennas. However, modeling indicates that the Dish Wireless's contribution to these areas is less than 5% of the general public MPE and as such, under FCC regulations, Dish Wireless is not responsible for these predicted exceedances.

The inputs used in the modeling are summarized in the Site Description antenna inventory table in Section 2.0. A graphical representation of the RoofMaster™ modeling results is presented in Appendix B. Microwave dish antennas are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage. The maximum power density generated by all carrier antennas, including microwaves and panel antennas, is included in the modeling results presented within this report.

4.0 MITIGATION/SITE CONTROL OPTIONS

EBI's modeling indicates that there are no areas in front of the Dish Wireless antennas that exceed the FCC standards for occupational or general public exposure. All exposures above the FCC's safe limits

require that individuals be elevated above the rooftop and/or ground. In order to alert people accessing the water tank, a yellow Caution sign and an NOC Information sign are recommended for installation at 10' AGL at the base of the water tank.

Barriers are recommended for installation when possible to block access to the areas in front of the antennas that exceed the FCC general public and/or occupational limits. Barriers may consist of rope, chain, or fencing. Painted stripes should only be used as a last resort. There are no barriers recommended at this site. Barriers are not recommended for installation because there are no exceedances on any walking/working surface.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the water tank should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage, and signify their understanding of the Site Safety Plan.

To reduce the risk of exposure, EBI recommends that access to areas associated with the active antenna installation be restricted and secured where possible.

Implementation of the signage recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

5.0 SUMMARY AND CONCLUSIONS

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Dish Wireless Site Number BOBOS00067A located at 7 Broadway Avenue Extension in Mystic, Connecticut to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, there are no modeled areas on any accessible rooftop or ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site.

Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 4.0 and within the Site Safety Plan (attached); Dish Wireless should also provide procedures to shut down and lockout/tagout this wireless equipment in accordance with their own standard operating protocol. Non-telecom workers who will be working in areas of exceedance are required to contact Dish Wireless since only Dish Wireless has the ability to lockout/tagout the facility, or to authorize others to do so.

6.0 LIMITATIONS

This report was prepared for the use of Dish Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

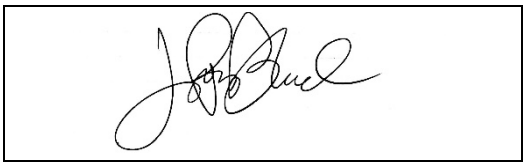
Appendix A

Certifications

Preparer Certification

I, John-Pierre Blanchard, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.



Reviewed and Approved by:

sealed 18oct2022 mike@h2dc.com
H2DC PLLC CT CoA#: PEC.0001714

Michael McGuire
Electrical Engineer
mike@h2dc.com

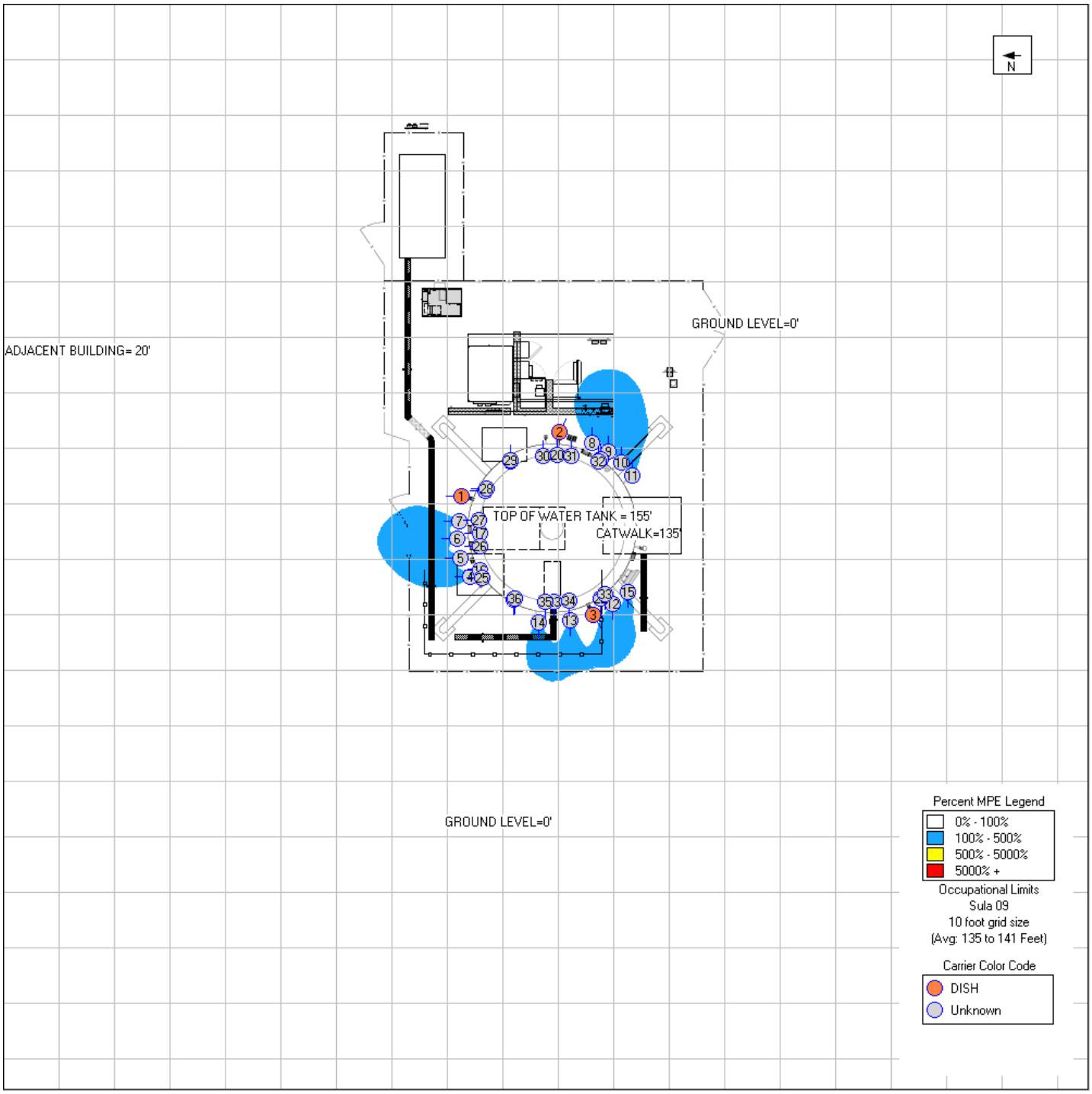
Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the building and related structures, as well as the impact of the antennas and broadcast equipment on the structural integrity of the building, are specifically excluded from EBI's scope of work.

Appendix B

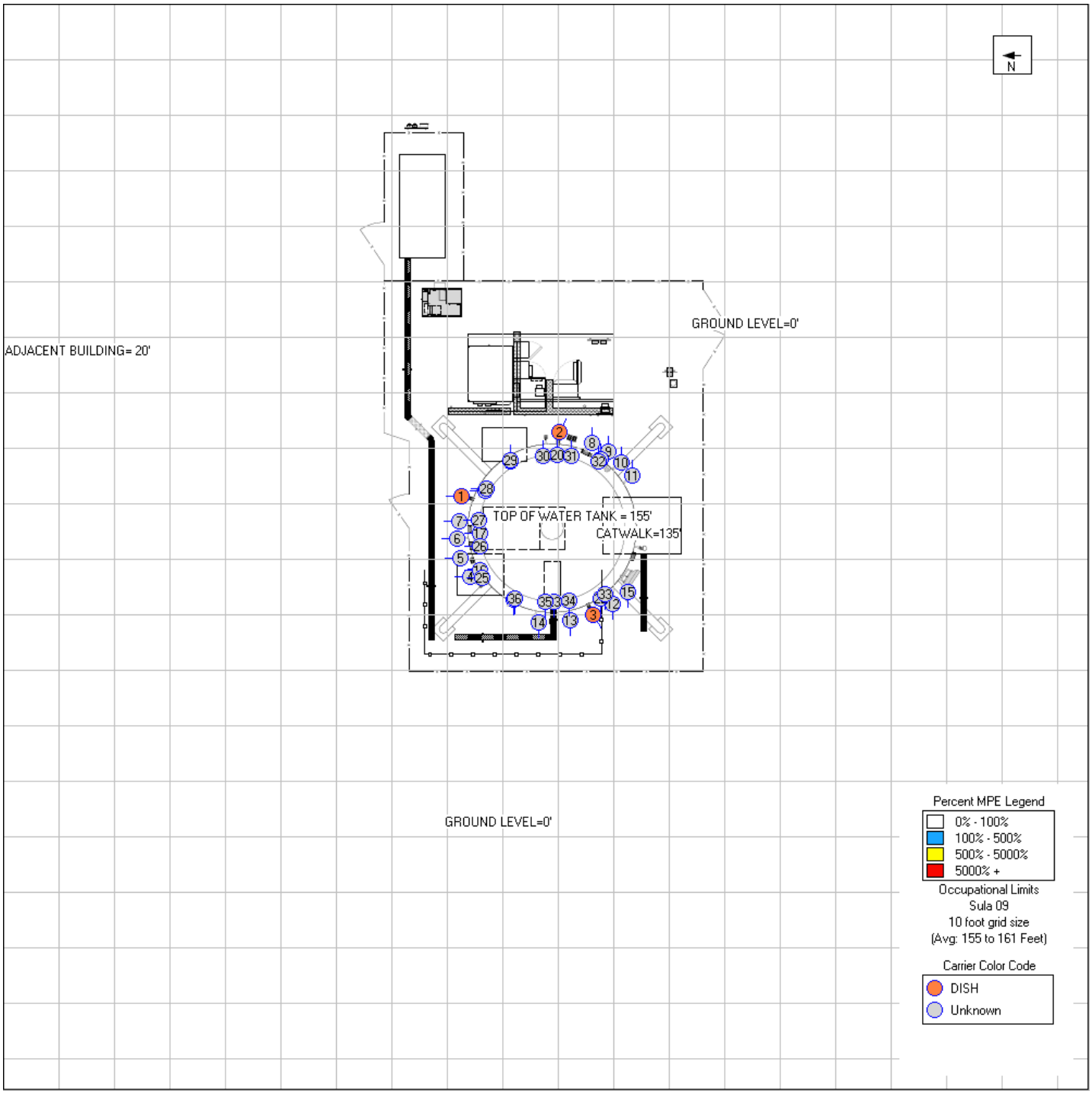
Radio Frequency Electromagnetic Energy

Safety Information and Signage Plans

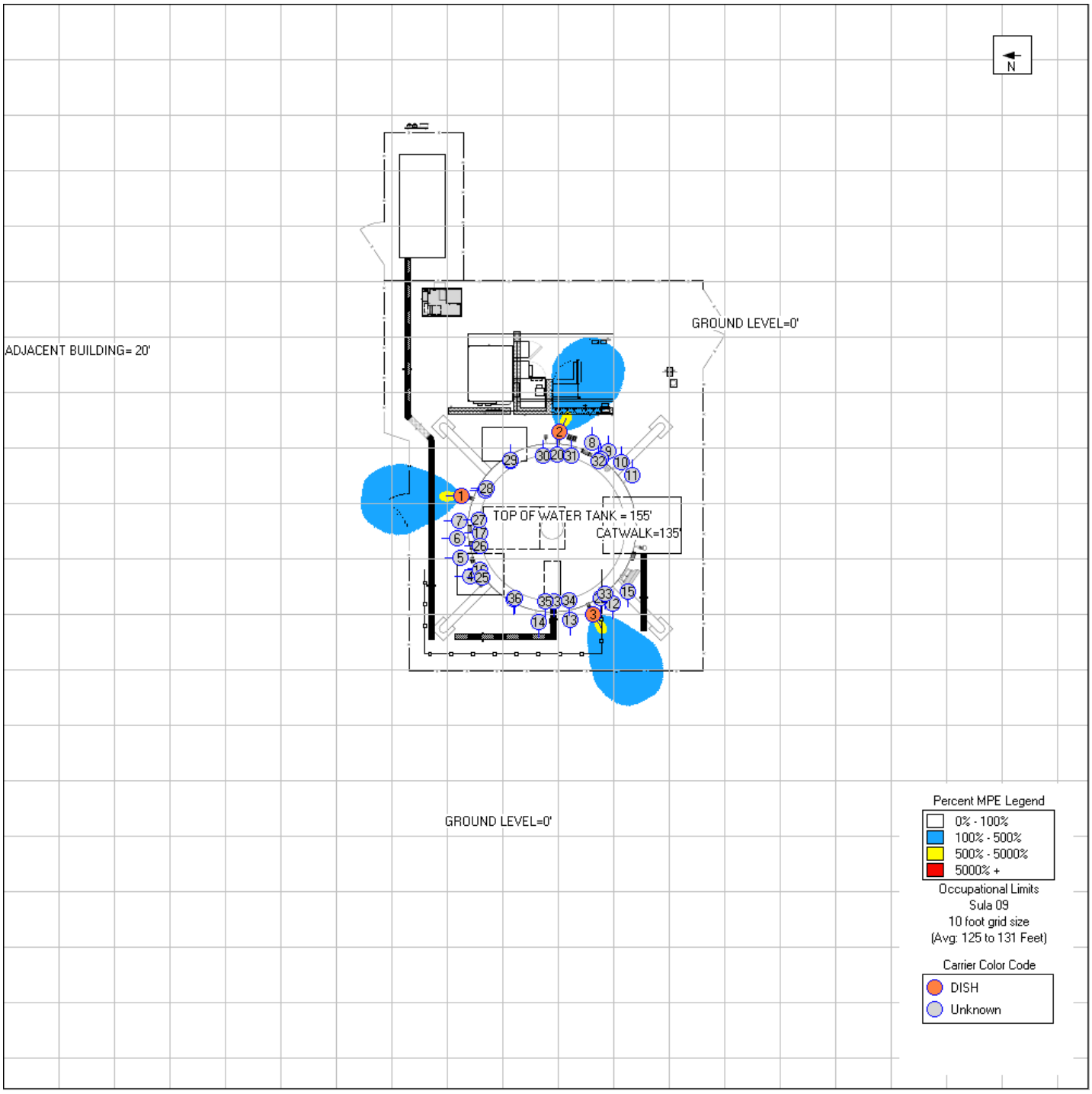
Nearest Walking Surface (Catwalk Level) Simulation



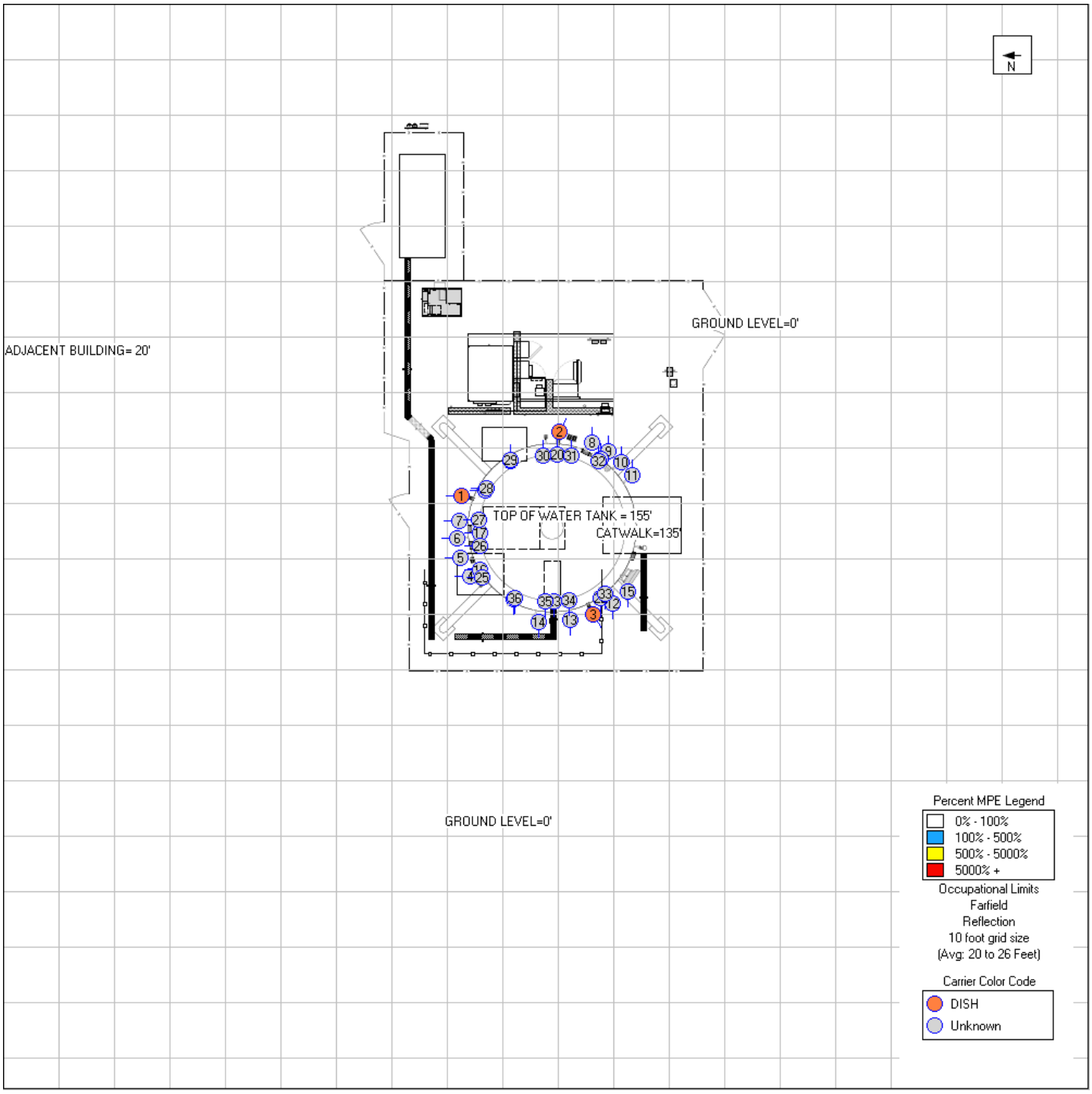
Top of Water Tank Level Simulation



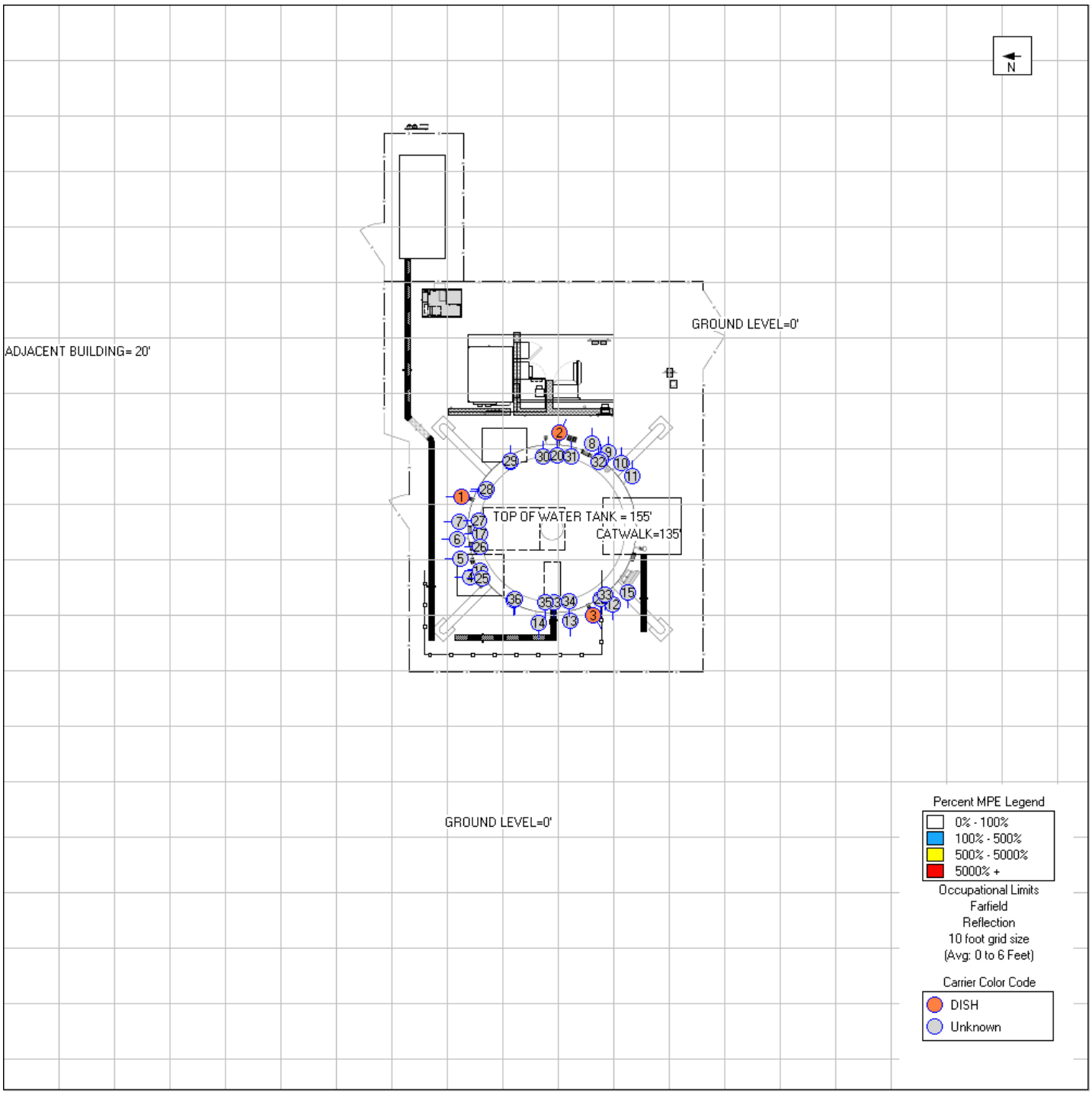
Antenna Face Level Simulation



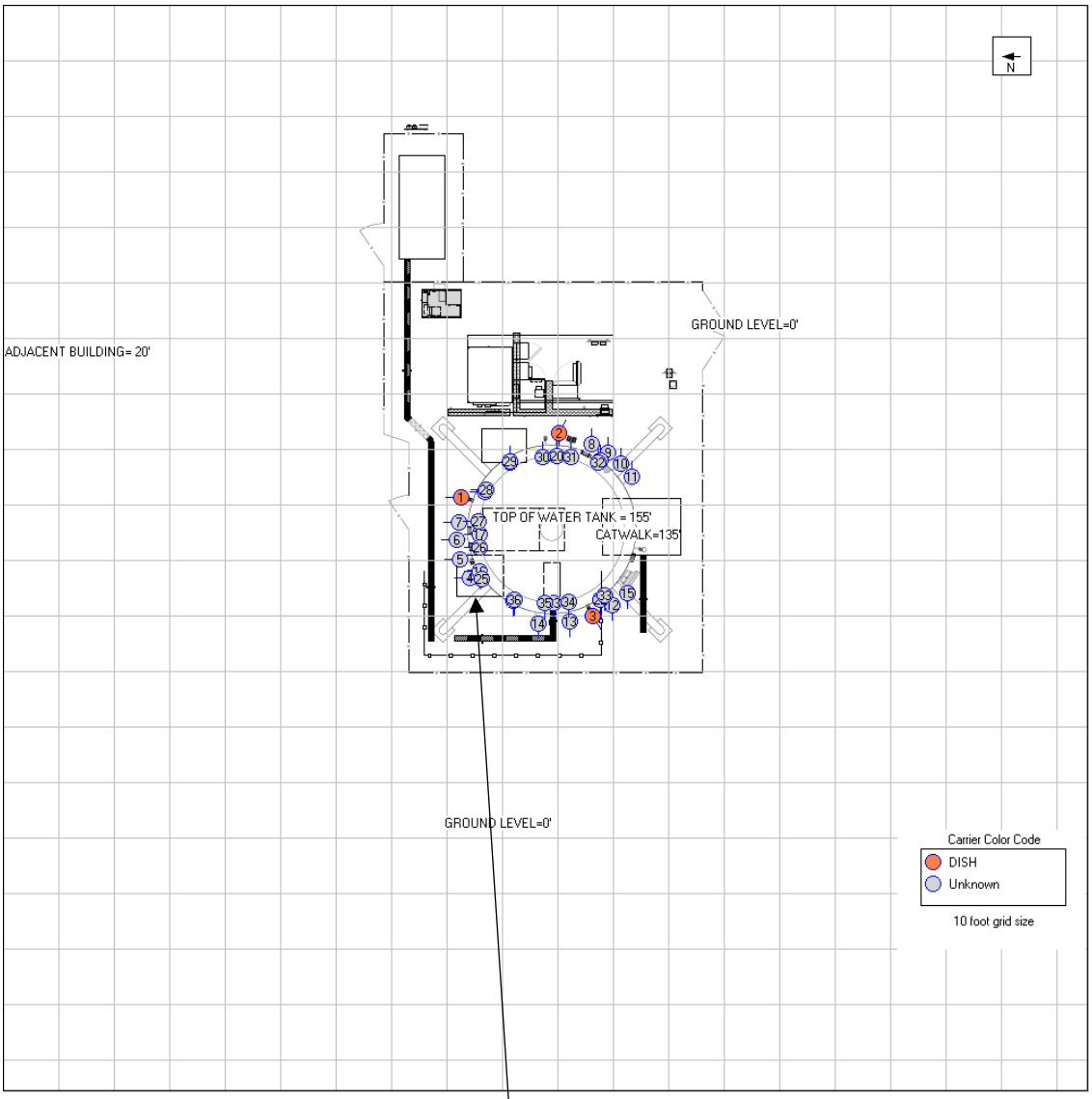
Adjacent Building Level Simulation



Ground Level Simulation



Dish Wireless Safety (Signage) Plan



Post at 10' agl at
base of Water Tank

Final Compliance Configuration							
	GUIDELINES	NOTICE	CAUTION	WARNING	NOC INFO	BARRIER/MARKER	
Access Point(s)	0	0	1	0	1	0	N/A
Alpha	0	0	0	0	0	0	N/A
Beta	0	0	0	0	0	0	N/A
Gamma	0	0	0	0	0	0	N/A

Sign	Posting Instructions	Required Signage / Mitigation
	**NOC Information** Information signs are used to provide contact information for any questions or concerns for personnel accessing the site.	Securely post every point of access to the site in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	**Guidelines** Informational sign used to notify workers that there are active antennas installed and provide guidelines for working in RF environments.	Securely post every point of access to the site in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.
	**Notice** Used to notify individuals they are entering an area where the power density emitted from transmitting antennas may exceed the FCC's MPE limit for the general public or occupational exposures.	Signage not required.
	**Caution** Used to notify individuals that they are entering a hot spot where either the general public or occupational FCC's MPE limit is or could be exceeded.	Securely post 10' agl at base of tower
	**Warning** Used to notify individuals that they are entering a hot zone where the occupational FCC's MPE limit has been exceeded by 10x.	Signage not required.

Appendix C

Federal Communications

Commission (FCC) Requirements

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

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 public/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.

General public/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

Table 1 and Figure 1 (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

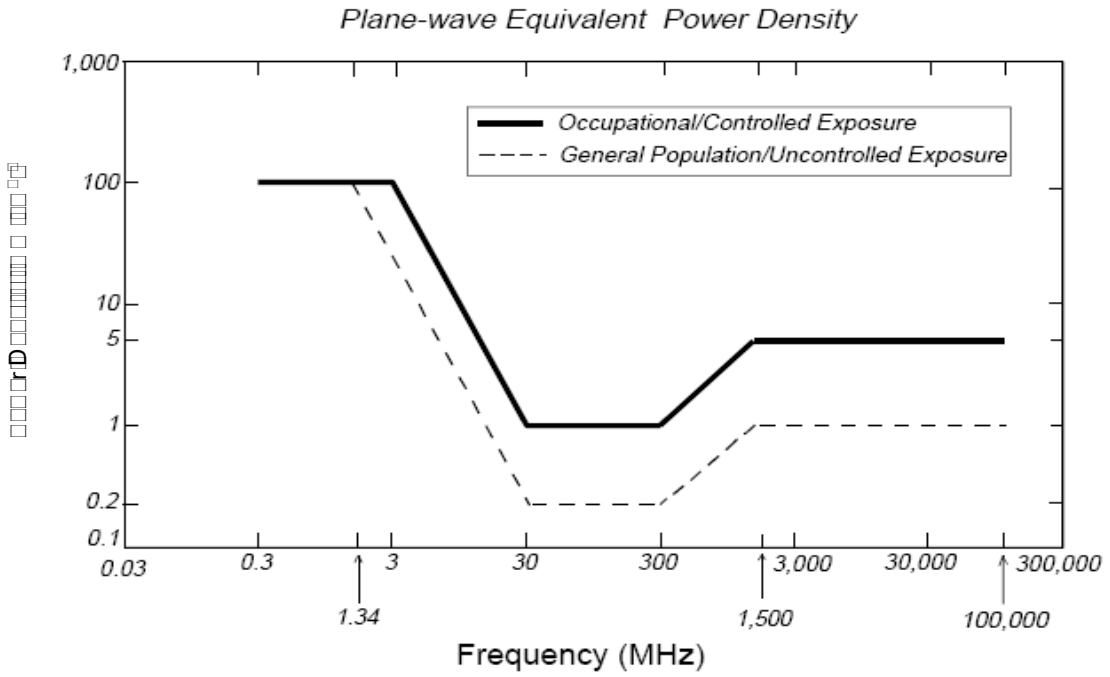
The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm^2). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm^2) and an uncontrolled MPE of 1 mW/cm^2 for equipment operating in the 1900 MHz frequency range. For the Dish Wireless equipment operating at 600 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm^2 and an uncontrolled MPE of 0.57 mW/cm^2. For the Dish Wireless equipment operating at 1900 MHz, the FCC's occupational MPE is 5.0 mW/cm^2 and an uncontrolled MPE limit of 1.0 mW/cm^2. These limits are considered protective of these populations.

□

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)
* Plane-wave equivalent power density

Figure 1. *FCC Limits for Maximum Permissible Exposure (MPE)*



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Microwave (Point-to-Point)	5,000 - 80,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Broadband Radio (BRS)	2,600 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Wireless Communication (WCS)	2,300 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Advanced Wireless (AWS)	2,100 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Cellular Telephone	870 MHz	2.90 mW/cm^2	0.58 mW/cm^2
Specialized Mobile Radio (SMR)	855 MHz	2.85 mW/cm^2	0.57 mW/cm^2
Long Term Evolution (LTE)	700 MHz	2.33 mW/cm^2	0.47 mW/cm^2
Most Restrictive Frequency Range	30-300 MHz	1.00 mW/cm^2	0.20 mW/cm^2

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication (PCS) facilities used by Dish Wireless in this area will potentially operate within a frequency range of 600 to 2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

Exhibit F

Letter of Authorization

Letter of Authorization (LOA)

CT95630-L Site Reference	
Site #	CT95630-L
Site Name:	Mystic/ Broadway
Site Address:	7 Broadway Avenue, Mystic CT 06355

Property Reference	
Site ID #	BOBOS00067
Name:	Mystic-Broadway Ave-BOBOS00067

Authorization

Planeta Properties, for itself and on behalf of its affiliates, ("Owner") authorizes Dish Wireless ("Tenant") and/or its authorized agents and contractors, to act as Owner nonexclusive agent for the sole purpose of applying for FAA applications or FAA filings and consummating any land use or building permit application(s) necessary to obtain approval of the applicable jurisdiction for Tenant's installation of a new wireless telecommunications facility and related equipment on the above-described site.

In granting this authorization it is understood that: (a) Tenant will hold harmless and indemnify Owner and its affiliates from any claims arising out of the above mentioned activities, and (b) signing this LOA does not constitute a legally binding agreement to license or lease the site.

Owner understands that this application may be denied, modified or approved with conditions, and that any such conditions of approval or modifications will be the sole responsibility of the carrier and will be complied with prior to issuance of a building permit.

Owner Signature

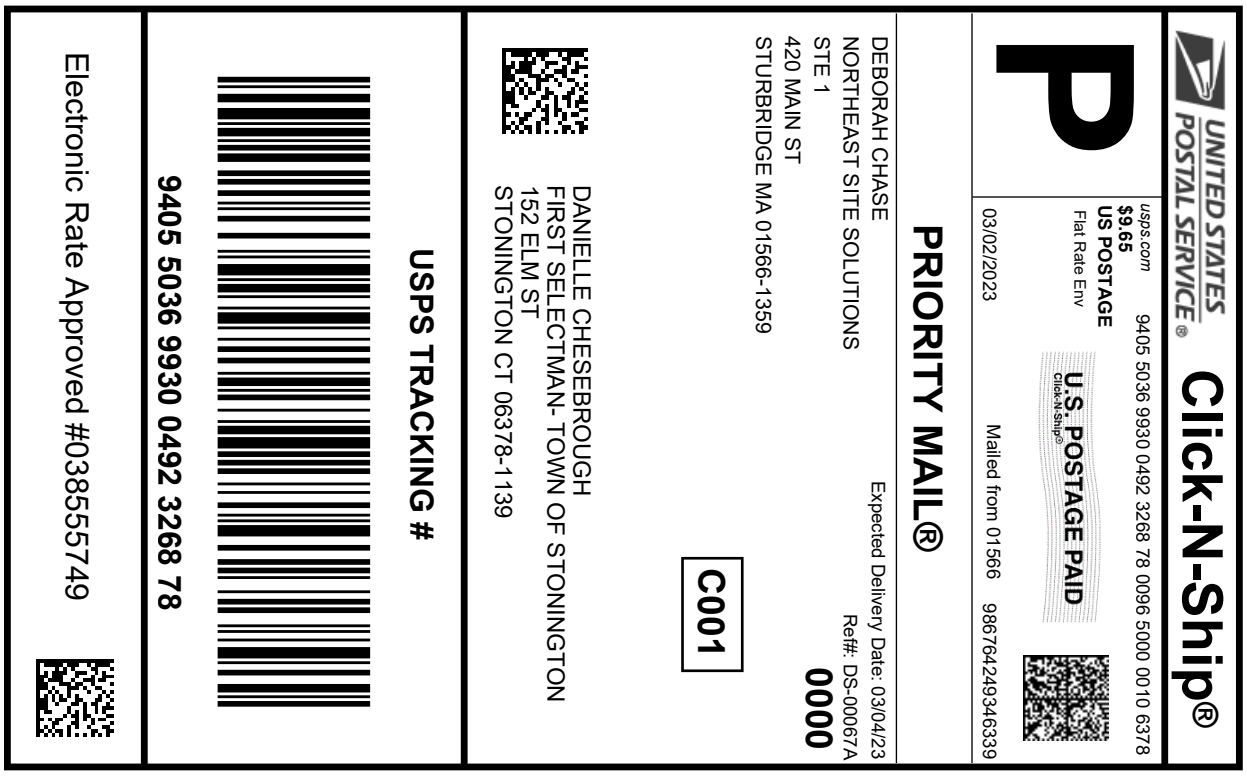
Signature: Mary P. Fitzgerald

Print Name: Mary P. Fitzgesald

Title: POA / Edward J. Planeta - Genl Partner - Planeta Properties

Exhibit G

Recipient Mailings



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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 0492 3268 78

Trans. #:	583723883
Print Date:	03/02/2023
Ship Date:	03/02/2023
Expected Delivery Date:	03/04/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

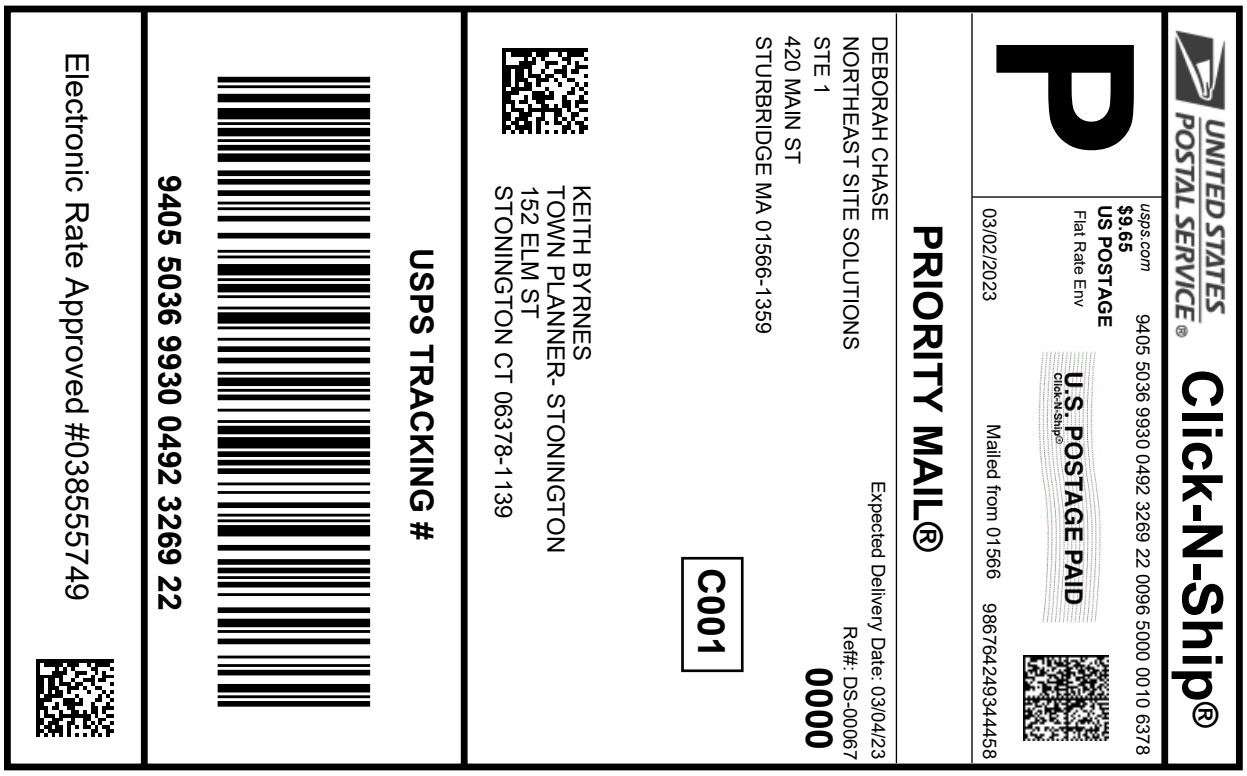
From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
420 MAIN ST
STURBRIDGE MA 01566-1359

Ref#: DS-00067A

To: DANIELLE CHESEBROUGH
FIRST SELECTMAN- TOWN OF STONINGTON
152 ELM ST
STONINGTON CT 06378-1139

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

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



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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0492 3269 22

Trans. #:	583723883
Print Date:	03/02/2023
Ship Date:	03/02/2023
Expected Delivery Date:	03/04/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

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

Ref#: DS-00067

To: KEITH BYRNES
TOWN PLANNER- STONINGTON
152 ELM ST
STONINGTON CT 06378-1139

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

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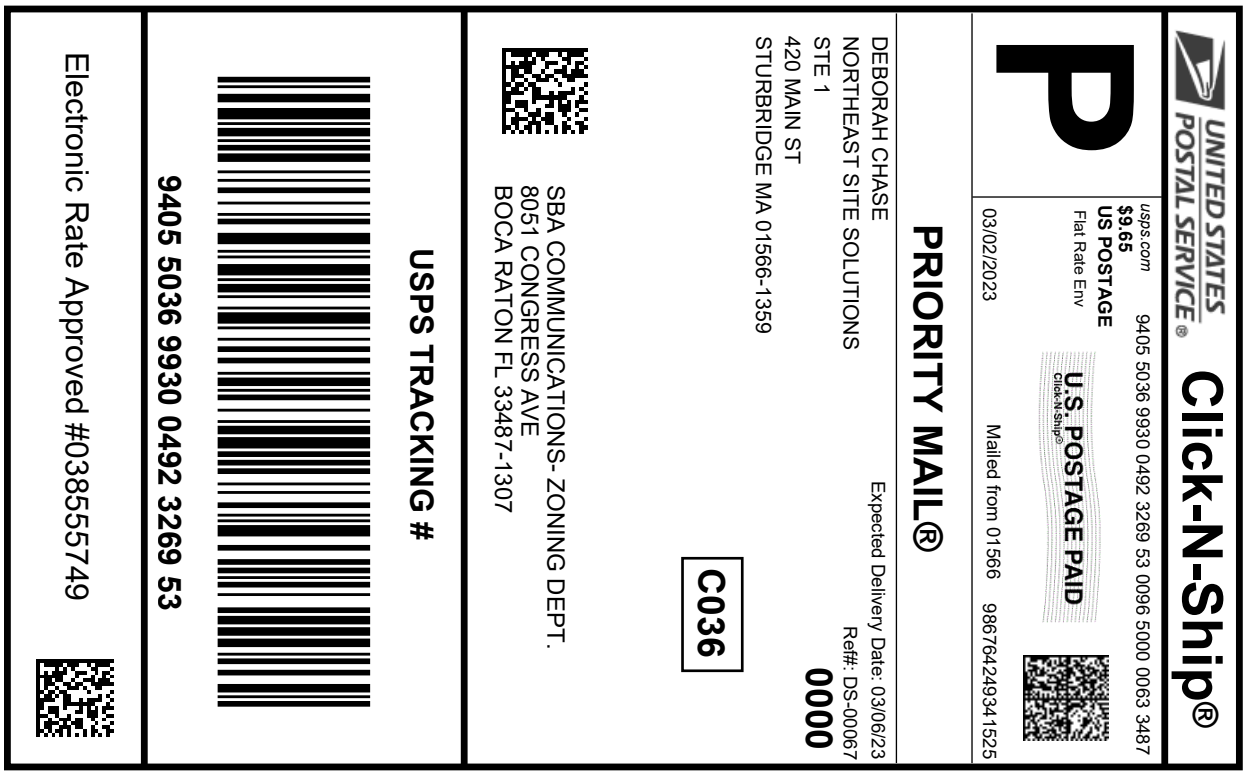

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0492 3269 53

Trans. #:	583723883
Print Date:	03/02/2023
Ship Date:	03/02/2023
Expected Delivery Date:	03/06/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

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

Ref#: DS-00067

To: SBA COMMUNICATIONS- ZONING DEPT.
8051 CONGRESS AVE
BOCA RATON FL 33487-1307

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

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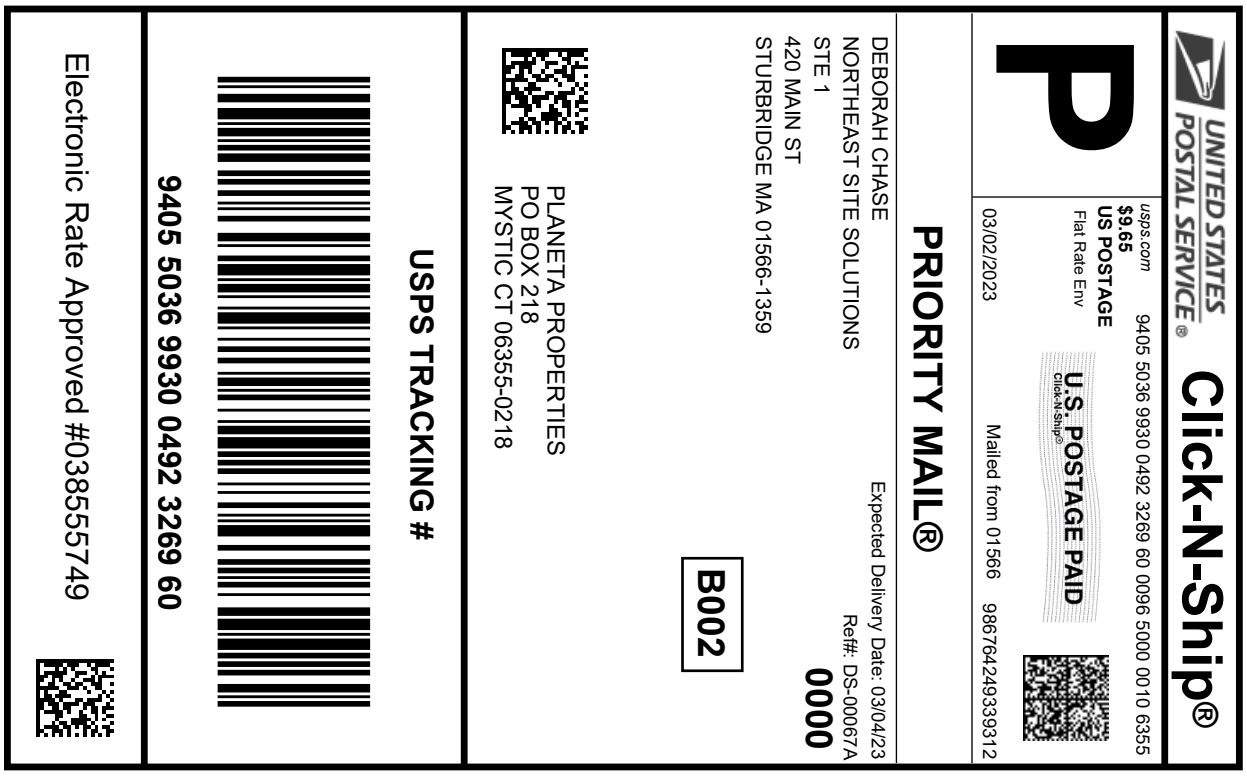

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0492 3269 60

Trans. #:	583723883
Print Date:	03/02/2023
Ship Date:	03/02/2023
Expected Delivery Date:	03/04/2023

Priority Mail® Postage:	**$9.65**
Total:	**$9.65**

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

Ref#: DS-00067A

To: PLANETA PROPERTIES
PO BOX 218
MYSTIC CT 06355-0218

* 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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B0B0S00067A - MYSTIC

LINCOLN MALL
560 LINCOLN ST STE 8
WORCESTER, MA 01605-1925
(800)275-8777

03/03/2023 10:33 AM

Product	Qty	Unit Price	Price
Prepaid Mail Stonington, CT 06378 Weight: 0 lb 15.40 oz Acceptance Date: Fri 03/03/2023 Tracking #: 9405 5036 9930 0492 3268 78	1		$0.00
Prepaid Mail Boca Raton, FL 33487 Weight: 0 lb 15.50 oz Acceptance Date: Fri 03/03/2023 Tracking #: 9405 5036 9930 0492 3269 53	1		$0.00
Prepaid Mail Mystic, CT 06355 Weight: 1 lb 0.20 oz Acceptance Date: Fri 03/03/2023 Tracking #: 9405 5036 9930 0492 3269 60	1		$0.00
Prepaid Mail Stonington, CT 06378 Weight: 0 lb 15.50 oz Acceptance Date: Fri 03/03/2023 Tracking #: 9405 5036 9930 0492 3269 22	1		$0.00
Grand Total:			$0.00