STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION FOR A DECLARATORY RULING ON THE NEED TO OBTAIN A SITING COUNCIL CERTIFICATE FOR THE PROPOSED MODIFICATION OF AN EXISTING WIRELESS TELECOMMUNICATIONS FACILITY AT 387 SHORE ROAD, OLD LYME, CONNECTICUT	:	PETITION NO. _____
	:	May 24, 2024

PETITION FOR A DECLARATORY RULING:
INSTALLATION HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. §1455(a) ("Section 6409(a)") and the October 21, 2014 Report and Order (FCC-14-533) issued by the Federal Communications Commission ("FCC") (the "FCC Order"), Dish Wireless LLC ("Dish") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling that the proposed modifications to the existing tower at 387 Shore Road, Old Lyme Connecticut ("Property") constitutes an Eligible Facilities Request ("EFR") under the FCC Order. Section 6409 requires that within 60 days of submission, a state or local agency must approve an "eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."

II. Existing Facility

The Existing Facility is located on an approximately 2.15-acre parcel, both parcel and tower are owned by Blue Sky Towers LLC. The Facility consists of an 80-foot monopole tower. **Attachment 1** contains the owner's authorization permitting Dish to file this Petition. The Facility was originally approved for use by the Council on September 23, 2010, Docket No. 392 as documented in **Attachment 2**. The Modification and Amendment to Petition No. 392 Does Not Represent a Substantial Change to the Physical Dimensions of the Existing Tower and is an Eligible Facility Request (EFR).

III. Dish Facility

Dish's proposed modification to its facility is illustrated on the plans submitted as Attachment 3. Dish proposes to extend the height of the existing monopole tower by 10-feet, to a total height of approximately 90-feet above ground level (AGL). Section 6409 and the FCC Declaratory Ruling clarifying its rules provide that a modification does not constitute a "substantial change" of the physical dimensions of a tower. The proposed modification does not increase the height by more than 10-feet of the tower height.

No Generator or backup power is proposed at this time. Installation of Dish's facility will take approximately three (3) weeks to complete. Construction will take place Monday through Friday, during normal business hours of 8am-6pm, or as allowed by the tower and/or property owner.

Dish Planned Installation:

Install New:

(3) Commscope FFVV-65B-R2 antenna @ 87ft RAD
(3) Samsung RF4450t-71A @ 87ft RAD
(3) Samsung RF4451d-70A @ 87ft RAD
(1) Raycap RDIDC-9181-PF-48 @ 87ft RAD
(1) Hybrid Line
(1) Low Profile T-Arm Mount

Installation of Dish's facility will cost approximately $50,000. Dish will fund this installation.

Dish has confirmed that the Modified Facility is capable of supporting the additional antennas and other changes to the tower mounted equipment, as documented in the Structural Analysis Report annexed hereto as **Attachment 4**.

IV. The Proposed Modification Will Not Have A Substantial Adverse Environmental Effect

1. Physical Environmental Effects

The modification of Dish's Facility will not involve a significant alteration to the physical and environmental characteristics of the Property.

2. Visual Effects

Given the overall height of the existing monopole tower is 80-feet AGL, Dish's proposed extension of *10-feet* with antenna mounted at the 87-foot RAD would have a minimal visual impact. The extended monopole will be disguised in the same manner as the existing monopole structure and will have a minimal visual impact when viewed from the public right-of-way or adjacent private properties.

3. FCC Compliance

Radio frequency ("RF") emissions resulting from Dish's proposed modification of the Existing Facility will be well below the standards adopted by the Federal Communications Commission ("FCC"). Included in **Attachment 6** is a Radio Frequency Emissions Analysis Report prepared by Fox Hill Telecom. This report confirms that the modified facility will operate well within the RF emission standards established by the FCC.

V. Notice to the Municipality, Property Owner and Abutting Landowners

On May 24, 2024, a copy of this Petition was sent to Martha Shoemaker, First Selectwoman and Kim Groves, CZET, Land Use (Planning, Inland Wetlands) for the Town of Old Lyme. A notice of Dish's intent to file this Petition was also sent to the owners of land that may be considered to abut the Property or they are within 200-feet. Included in **Attachment 5** is a sample abutter's letter and the list of those abutting landowners who were sent notice. To date no responses have been received from the abutting properties.

VI. Conclusion

Based on the information provided above, the Petitioners respectfully requests that the Council issue a determination in the form of a declaratory ruling that the 10-foot extension of the existing monopole pole at the Property will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

Denise Sabo
Northeast Site Solutions
Agent for Dish Wireless
(203) 435-3640
denise@northeastsitesolutions.com

Attachments

Cc: Martha Shoemaker, First Selectwoman
Town of Old Lyme
52 Lyme Street
Old Lyme, CT 06371

Kim Groves, CZET, Land Use (Planning, Inland Wetlands)
Town of Old Lyme
52 Lyme Street
Old Lyme, CT 06371

Blue Sky Towers LLC (Property/Tower Owner)
BLUE SKY TOWERS LLC
900 CIRCLE 75 PKWY STE 300
ATLANTA, GA 30339

ATTACHMENT 1

Phoenix Tower International
999 Yamato Rd, Suite 100
Boca Raton, FL 33431
Phone: 561.257.0557
Fax: 561.257.0558

Letter of Authorization

PTI Site ID: US-CT-1004
PTI Site Name: Shore
PTI Project Name: US-CT-1004_Dish_SLA
Re: Dish Site#: BOBOS01210A
Site Address: 387 Shore Road, Old Lyme, CT 06371

RE: Application for Zoning/Permitting

To whom it may concern:

This letter authorizes Dish Wireless, LLC and its authorized agents from Northeast Site Solutions, LLC to file all necessary administrative approvals, zoning approvals and building permits for the purposes of installing and maintaining telecommunications equipment located at 387 Shore Road, Old Lyme, CT 06371 on behalf of Dish.

By: PTI US Towers I, LLC Stephen Orchard

Representative Signature: _____

Title: US General Counsel

Date: 1/16/2024

ATTACHMENT 2

DOCKET NO. 392 - T-Mobile Northeast, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located 387 Shore Road, Old Lyme, Connecticut.	Connecticut Siting Council September 23, 2010

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to T-Mobile Northeast, LLC (T-Mobile), hereinafter referred to as the Certificate Holder, for a telecommunications facility at the proposed site, located at 387 Shore Road, Old Lyme, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Certificate Holder and other entities, both public and private, but such tower shall not exceed a height of 80 feet above ground level (agl). The height at the top of T-Mobile's antennas shall not exceed 80 feet above ground level. The wireless antennas shall be attached to the tower via T-arm mounts.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Old Lyme for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound with privacy slats, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Old Lyme public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Old Lyme. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.

12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder\transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder\transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in *The Day*.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
T-Mobile Northeast, LLC	Julie D. Kohler, Esq. Monte E. Frank, Esq. Jesse A. Langer, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604

Party	**Its Representative**
Town of Old Lyme	The Honorable Timothy G. Griswold Office of the Selectman Town of Old Lyme 52 Lyme Street Old Lyme, CT 06371

Party	**Its Representative**
Mary Staley	Mary Staley 5805 Ogden Road Bethesda, MD 20816

387 SHORE RD

Location	387 SHORE RD	**Mblu**	10/ / 8/ /
Acct#	00027500	**Owner**	BLUE SKY TOWERS LLC
Assessment	$356,000	**Appraisal**	$508,400
PID	293	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$124,400	$384,000	$508,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$87,200	$268,800	$356,000

Owner of Record

Owner	BLUE SKY TOWERS LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	900 CIRCLE 75 PKWY STE 300 ATLANTA, GA 30339	**Book & Page**	477/868
		Sale Date	11/18/2021

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
BLUE SKY TOWERS LLC	$0		477/868	11/18/2021
BENOIT KATHY	$0		0402/0316	12/30/2014
BENOIT GREGORY	$285,000		0400/0060	08/07/2014
BENOIT GREGORY	$330,000		0339/0601	11/03/2006
SALKA DAVID	$100,000		0227/0921	10/05/1995

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style:	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Cndtn	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Building Photo

(https://images.vgsi.com/photos/OldLymeCTPhotos//default.jpg)

Building Layout

Building Layout
(https://images.vgsi.com/photos/OldLymeCTPhotos//Sketches/293_293.jpg

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	4340
Description	CELL TWR
Zone	C-30
Neighborhood	C3
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2.15
Frontage	0
Depth	0
Assessed Value	$268,800
Appraised Value	$384,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	PAVING-ASPHALT			3000.00 S.F.	$3,800	1
FN3	FENCE-6' CHAIN			180.00 L.F.	$1,300	1
ARRY	CELL ARRAY			1.00 UNITS	$76,500	1
TWR	CELL TOWER			50.00 L.F.	$42,800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$124,400	$384,000	$508,400
2021	$124,400	$384,000	$508,400
2020	$124,400	$384,000	$508,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2022	$87,200	$268,800	$356,000
2021	$87,200	$268,800	$356,000
2020	$87,200	$268,800	$356,000

Property Information

Property ID	10-8
Location	387 SHORE RD
Owner	BLUE SKY TOWERS LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Old Lyme, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 09/21/2023
Data updated on a daily basis

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

ATTACHMENT 3

dish wireless

DISH Wireless L.L.C. SITE ID:

BOBOS01210A

DISH Wireless L.L.C. SITE ADDRESS:

387 SHORE RD,
OLD LYME, CT 06371

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:
- EXTEND EXISTING 80' MONOPOLE TOWER BY 10' TO 90'
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) AT ELEVATION 90'
- INSTALL (1) PROPOSED T-ARM ANTENNA MOUNT
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED METAL PLATFORM
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
- INSTALL (1) PROPOSED METER SOCKET
- INSTALL (1) POWER BOOSTER (IF REQUIRED, APPLICABLE FOR SITE WITH RAD CENTER > 240')

SITE INFORMATION

PROPERTY OWNER:	BENOIT KATHY
ADDRESS:	34 IRVINGDELL PL EAST LYME, CT 06333-1221
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT-1004 PTI
TOWER APP NUMBER:	CT-1004 PTI
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 17' 47.436" N 41.29651°
LONGITUDE (NAD 83):	72° 15' 34.884" W -72.25969°
ZONING JURISDICTION:	OLD LYME, CT
ZONING DISTRICT:	C-30
PARCEL NUMBER:	293
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	EVERSOURCE ELECTRIC
TELEPHONE COMPANY:	TBD

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	PHOENIX TOWER INTERNATIONAL 999 YAMATO ROAD, SUITE 100 BOCA RATON, FL 33431 PHONE # (561) 257-0557
SITE DESIGNER:	FORESITE LLC 462 WALNUT STREET, SUITE 1 NEWTON, MA 02460 617-212-3123 SMOSSAVAT@FORESITELLC.COM
SITE ACQUISITION:	DAVID GOODFELLOW DAVID.GOODFELLOW@DISH.COM
CONSTRUCTION MANAGER:	CHAD WILCOX CHAD.WILCOX@DISH.COM
RF ENGINEER:	IRENE RANGEL IRENE.RANGEL@DISH.COM

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

SITE PHOTO

DIRECTIONS

BRADLEY INTERNATIONAL AIRPORT
SCHOEPHOESTER RD, WINDSOR LOCKS, CT 06096

TAKE I-91 S AND CT-9 S TO 4 MILE RIVER RD IN OLD LYME. TAKE EXIT 71 FROM I-95 N , 55 MIN (59.3 MI) CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON. 2.6 MI. MERGE ONTO I-91 S TOWARD HARTFORD 20.4 MI, TAKE EXIT 22S TO MERGE ONTO CT-9 S TOWARD MIDDLETOWN/OLD SAYBROOK 29.3 MI MERGE ONTO I-95 N/US-1 N TOWARD NEW LONDON/PROVIDENCE CONTINUE TO FOLLOW I-95 N 5.7 MI TAKE EXIT 71 FOR FOUR MILE RIVER ROAD 0.3 MI, DRIVE TO CT-156 W 3 MIN (1.9 MI), TURN LEFT ONTO 4 MILE RIVER RD 0.9 MI, CONTINUE ONTO CT-156 W, DESTINATION WILL BE ON THE LEFT.

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	PLOT PLAN
A-2	SITE PLAN
A-3	OVERALL AND ENLARGED SITE PLAN
A-4	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-5	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-6	EQUIPMENT DETAILS
A-7	EQUIPMENT DETAILS
A-8	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
E-4	PPC NEUTRAL-TO-GROUND SCHEMATIC
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
G-4	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	GENERAL NOTES
S-1	STRUCTURAL DETAILS (PENDING STRUCTURAL ANALYSIS)
S-2	STRUCTURAL DETAILS (PENDING STRUCTURAL ANALYSIS)

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

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

811

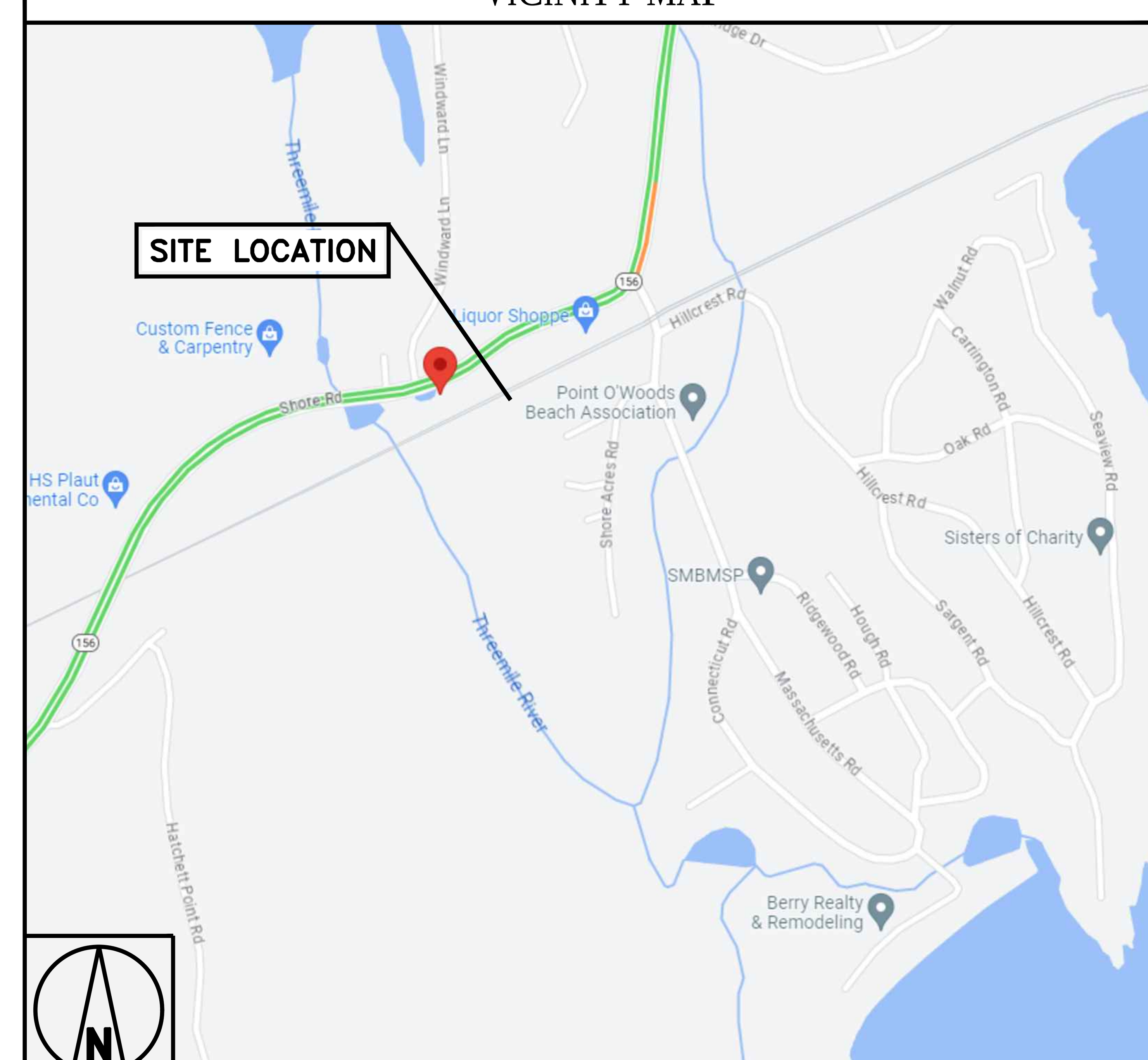
GENERAL NOTES

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

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

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

VICINITY MAP



NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02460
617-212-3123

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:
HV	SM	SM

RFDS REV # A

CONSTRUCTION DOCUMENTS

SUBMITTALS

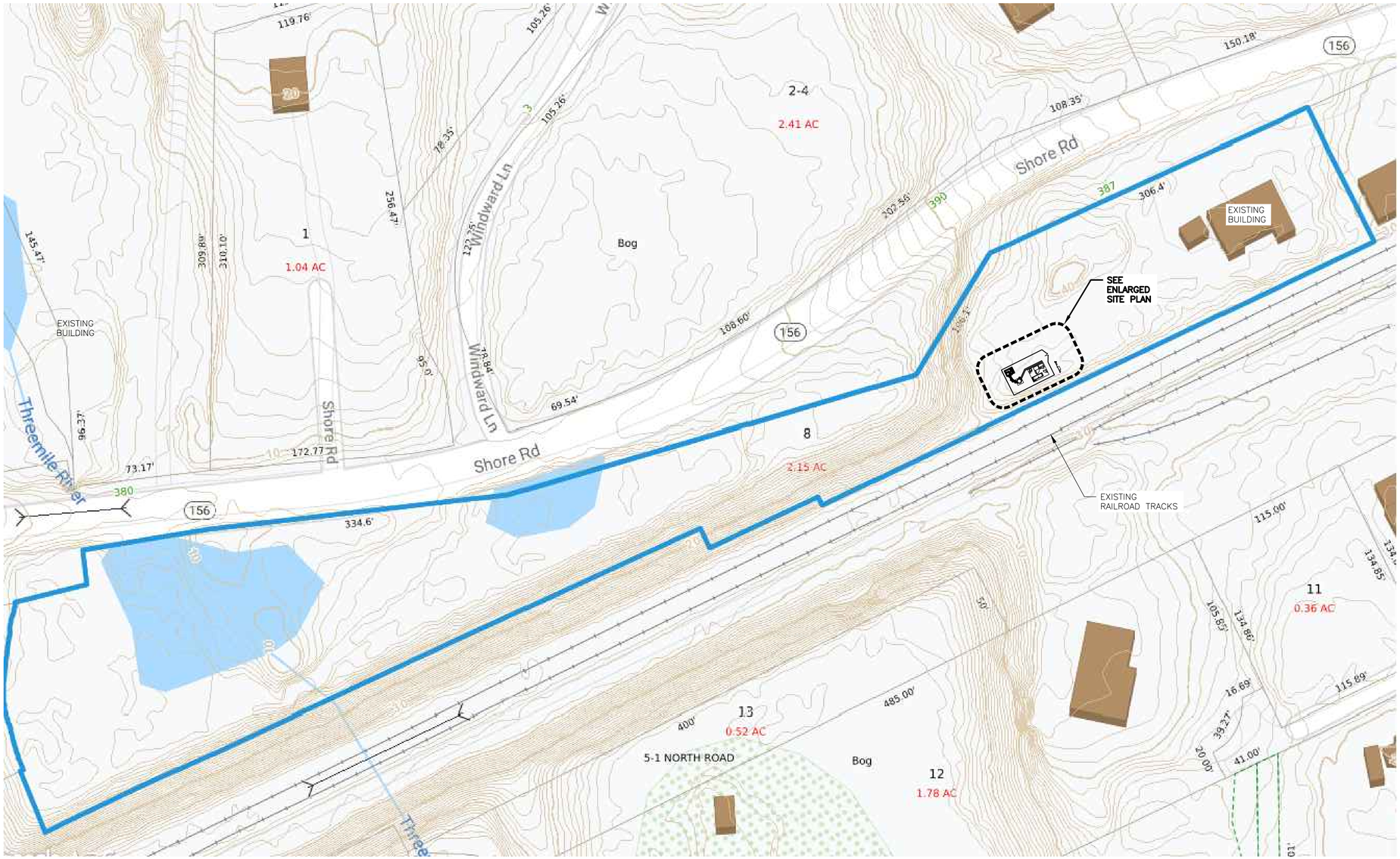
REV	DATE	DESCRIPTION
A	10/10/2023	ISSUED FOR REVIEW
0	11/01/2023	FINAL ISSUED
1	03/29/2024	REVISED MOUNT
2	05/09/2024	REVISED

A&E PROJECT NUMBER
BOBOS01210A

DISH Wireless L.L.C. PROJECT INFORMATION
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



OVERALL SITE PLAN

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

1

DISH Wireless L.L.C. TEMPLATE VERSION 55 – 06/30/2023

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032
203-275-6669

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462 WALNUT STREET, SUITE 1
NEWTON, MA 02460
617-212-3123

DRAWN BY:	CHECKED BY:	APPROVED BY:
HV	SM	SM

RFDS REV # A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/10/2023	ISSUED FOR REVIEW
0	11/01/2023	FINAL ISSUED
1	03/29/2024	REVISED MOUNT
2	05/09/2024	REVISED

A&E PROJECT NUMBER

BOBOS01210A

DISH Wireless L.L.C.
PROJECT INFORMATION

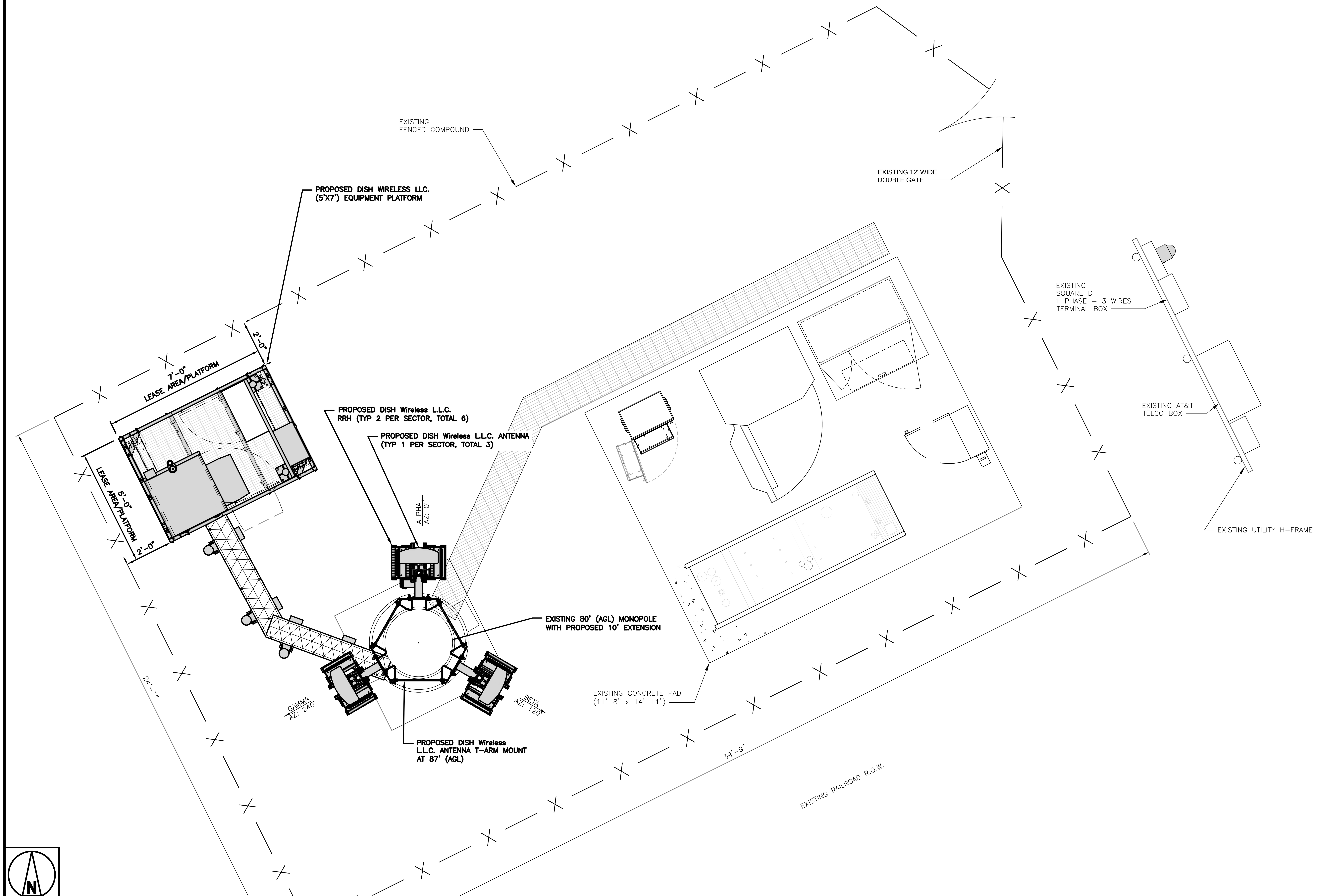
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

PLOT PLAN

SHEET NUMBER

A-1



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5'

1/2"=1'–0"

1

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NORTHEAST SITE SOLUTIONS

FORESITE LLC
Architects . Engineers . Surveyors

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:
HV	SM	SM

RFDS REV # A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/10/2023	ISSUED FOR REVIEW
0	11/01/2023	FINAL ISSUED
1	03/29/2024	REVISED MOUNT
2	05/09/2024	REVISED

A&E PROJECT NUMBER

BOBOS01210A

DISH Wireless L.L.C. PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

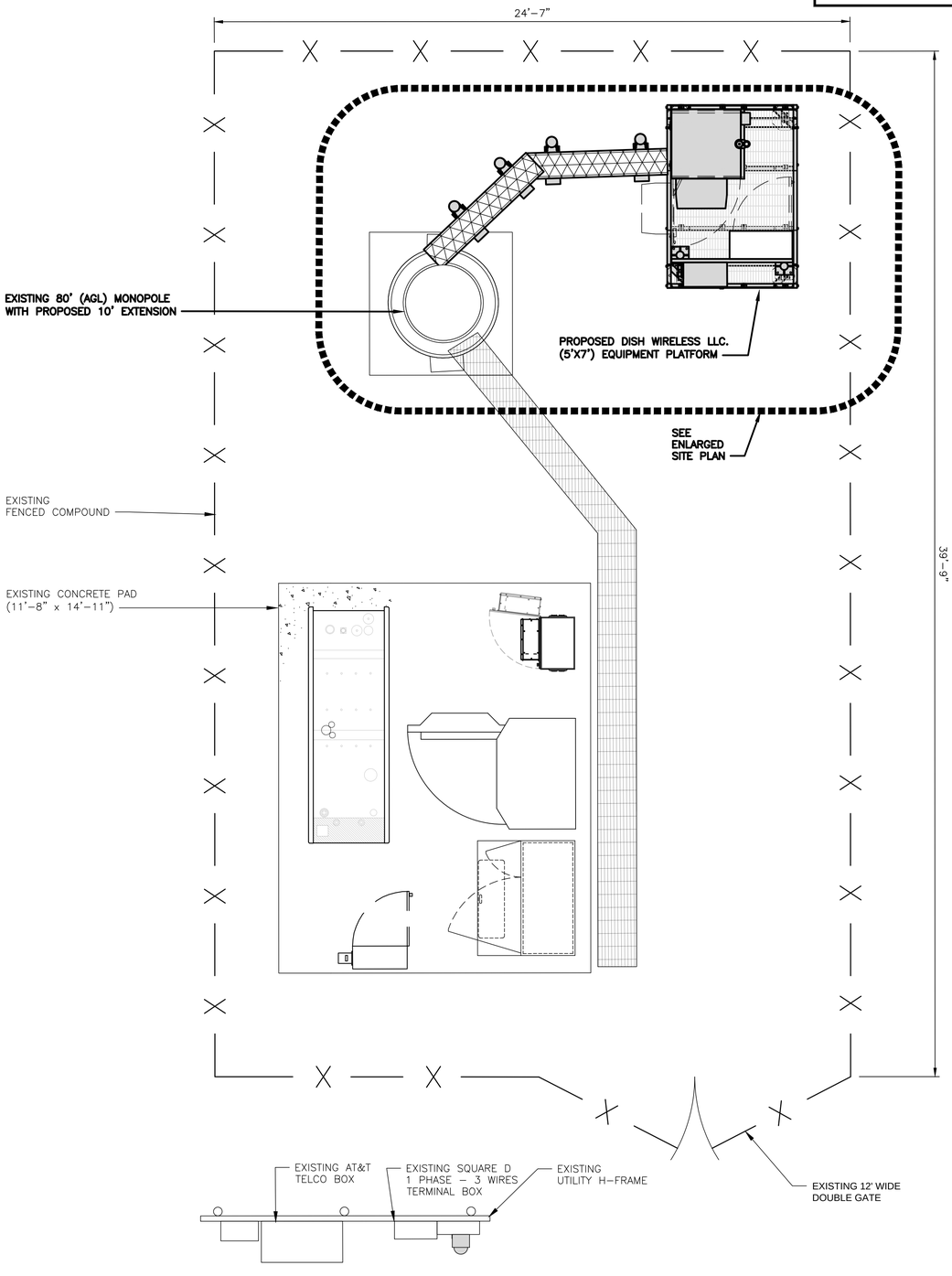
ENLARGED SITE PLAN

SHEET NUMBER

A-2

NOTES

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



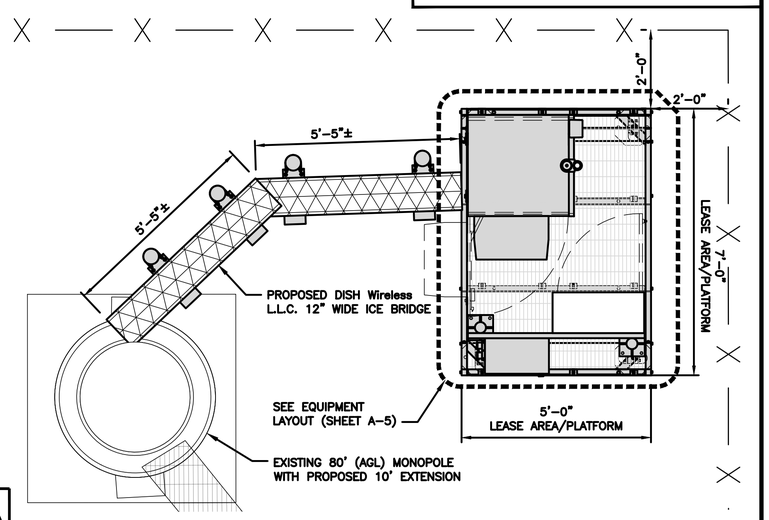
OVERALL SITE PLAN

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

SATELLITE PHOTO

NO SCALE

3

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02460
617-212-3123

DRAWN BY:	CHECKED BY:	APPROVED BY:
HV	SM	SM

RFDS REV # A

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PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

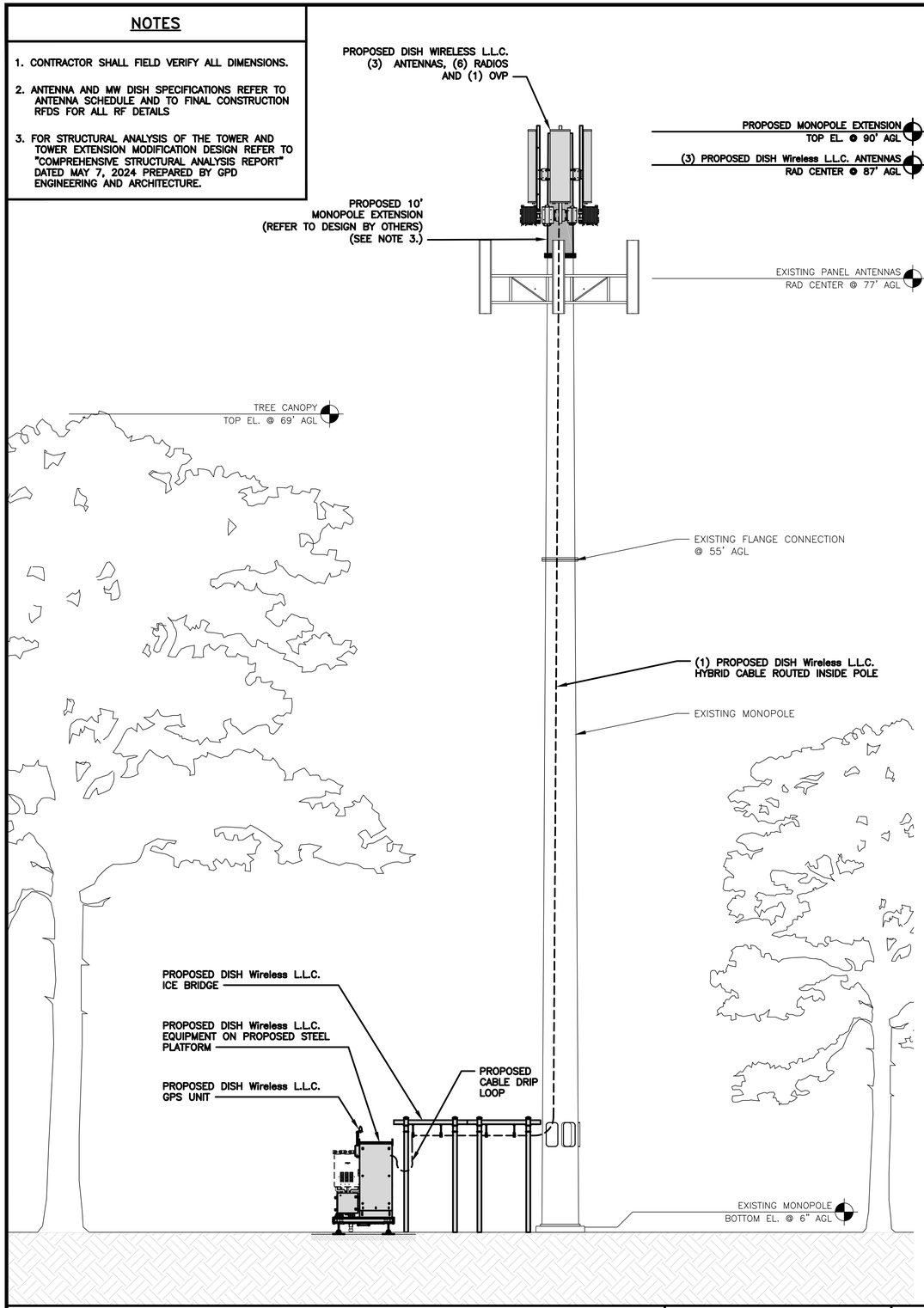
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-3

NOTES

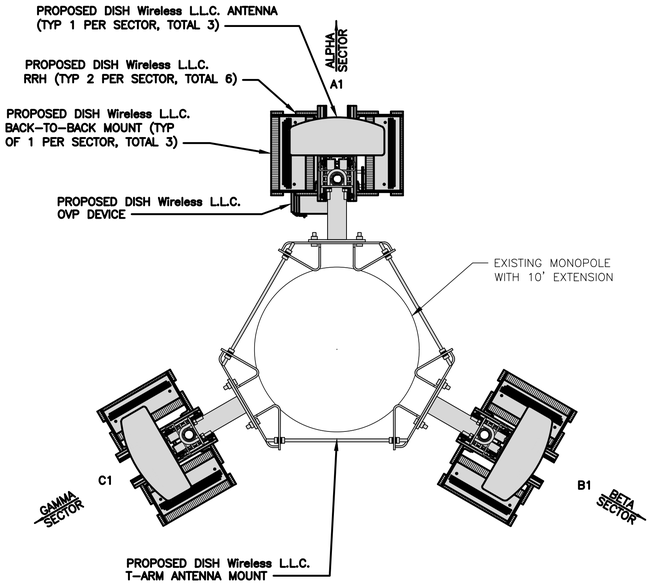
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. FOR STRUCTURAL ANALYSIS OF THE TOWER AND TOWER EXTENSION MODIFICATION DESIGN REFER TO "COMPREHENSIVE STRUCTURAL ANALYSIS REPORT" DATED MAY 7, 2024 PREPARED BY GPD ENGINEERING AND ARCHITECTURE.



PROPOSED NORTH ELEVATION

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

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=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	PROPOSED	Commscope – FFVV-65B-R2	5G	0°	87'	(1) HIGH-CAPACITY HYBRID CABLE (140'± LONG)	SAMSUNG RF4451D-70A/SFG-ARR3KM01DI	5G	A2	Raycap – RDIDC-9181-PF-48
A2							SAMSUNG RF4450T-71A/SFG-ARR3JJ601DI	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	PROPOSED	Commscope – FFVV-65B-R2	5G	120°	87'	SHARED W/ALPHA	SAMSUNG RF4451D-70A/SFG-ARR3KM01DI	5G	B2	SHARED W/ALPHA
B2							SAMSUNG RF4450T-71A/SFG-ARR3JJ601DI	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	PROPOSED	Commscope – FFVV-65B-R2	5G	240°	87'	SHARED W/ALPHA	SAMSUNG RF4451D-70A/SFG-ARR3KM01DI	5G	C2	SHARED W/ALPHA
C2							SAMSUNG RF4450T-71A/SFG-ARR3JJ601DI	5G	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.

ANTENNA SCHEDULE

NO SCALE

3

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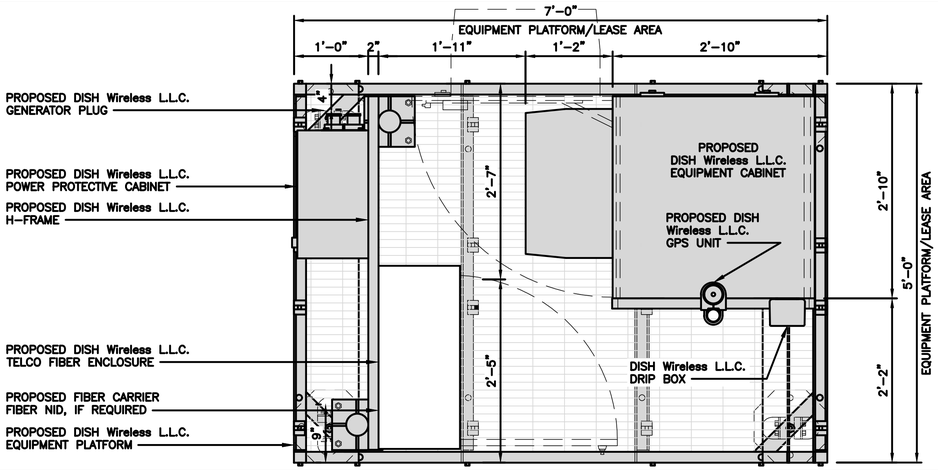
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-4



PLATFORM EQUIPMENT PLAN

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

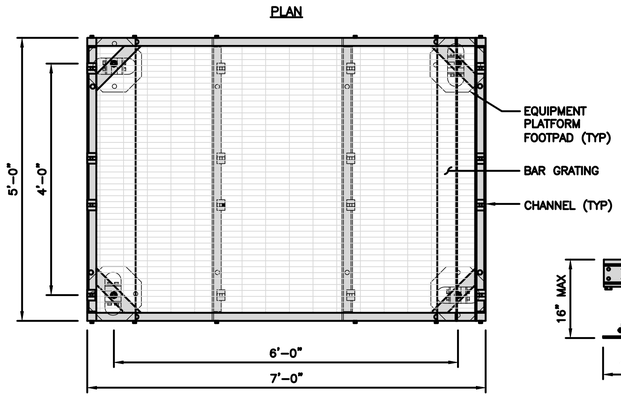
1

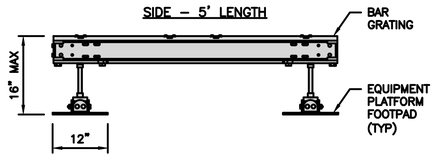
NOTES

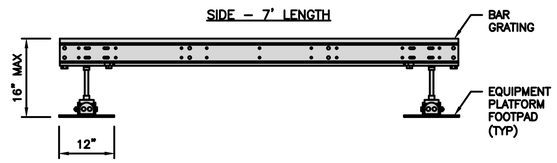
1. INSTALL POSTS BASES TO GRATING JUST INSIDE PLATFORM FRAME. NO DRILLING REQUIRED.
2. GPS MAY BE MOVED TO ICE BRIDGE OR H-FRAME.
3. ALL CONDUIT TO BE ROUTED THROUGH PLATFORM GRATING USING LIQUIDTIGHT, EMT, RIGID OR PVC COUPLERS. CONDUIT QUANTITY AND SIZES ARE PER ONE-LINE DIAGRAM ON E-3 SHEET OF CDS. (DC PLANT DEPENDENT.)
4. CONTRACTOR MAY FIELD INSTALL CONDUIT HOLES IN BOTTOM OF PPC CABINET TO MATCH CONDUIT SIZES. (SEAL TO PPC MANUFACTURER SPECIFICATIONS).
5. H-FRAME POSTS ARE STAGGERED TO ALLOW FIBER NID BOXES TO BE INSTALLED CLOSE TO PERIMETER FRAME OF PLATFORM.
6. CONDUITS FROM PPC/FIBER DEMARK CABINETS TO EQUIPMENT CABINET (BBU) SHALL BE INSTALLED INSIDE PERIMETER OF PLATFORM AND UNDER GRATING.

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

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

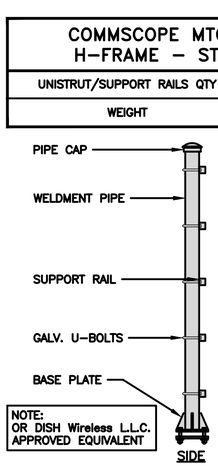


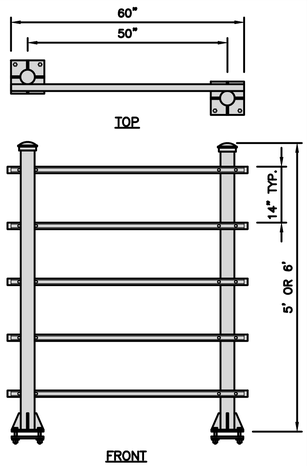




PLATFORM DETAIL | NO SCALE | 2

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





H-FRAME DETAIL | NO SCALE | 3

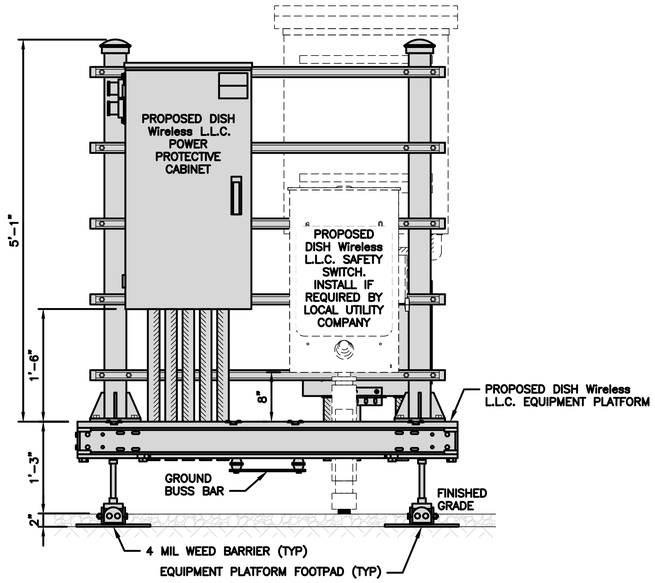
NOTE FOR THE FIELD CREWS:

CONSULT WITH DISH CM FOR H-FRAME POSTS AND UNISTRUT PLACEMENTS.

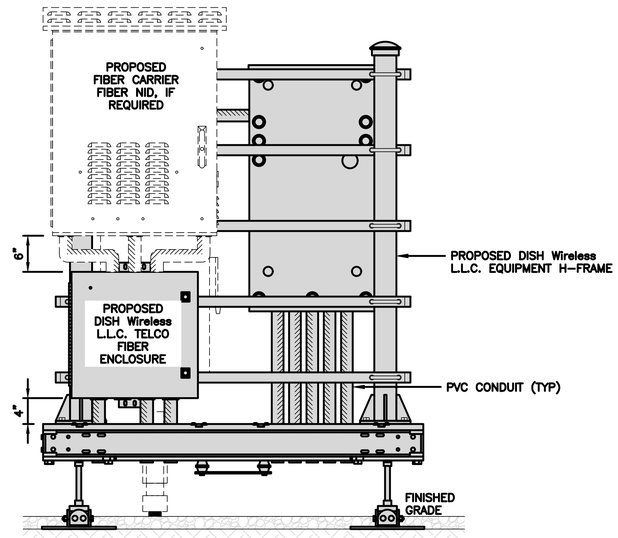
NOTE | NO SCALE | 4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

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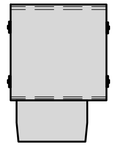
BOBOS01210A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

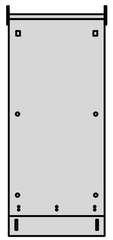
SHEET TITLE
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER
A-5

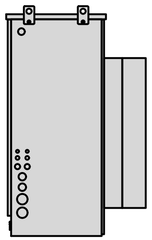
CHARLES INDUSTRY HEX CUBE–PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs



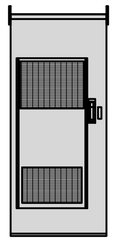
PLAN



BACK



SIDE

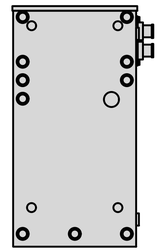


FRONT

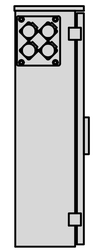
CABINET DETAIL | NO SCALE | 1

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

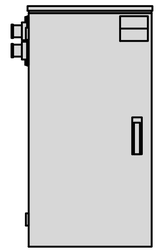
TOP



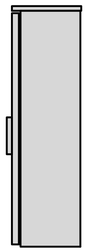
BACK



SIDE



FRONT



SIDE

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

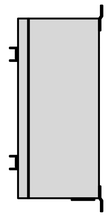
NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

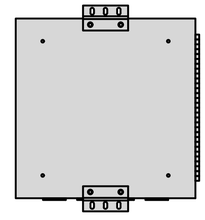
NOT USED | NO SCALE | 5

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

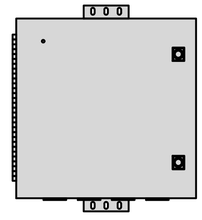
FRONT



SIDE



BACK

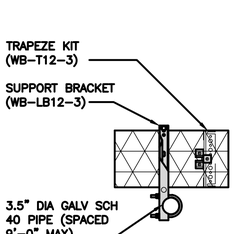


FRONT

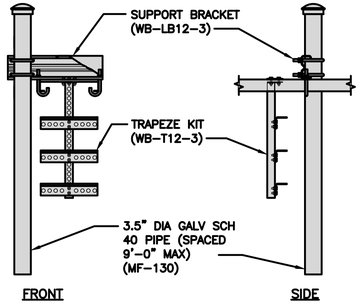
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

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

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



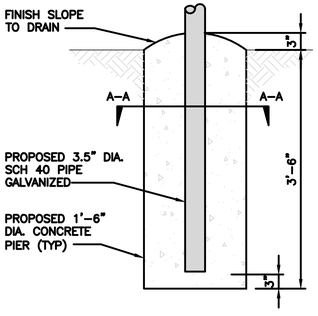
PLAN



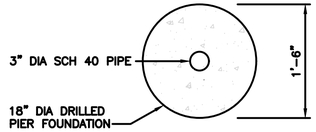
FRONT

SIDE

ICE BRIDGE DETAIL | NO SCALE | 7



CONCRETE PIER



A–A SECTION

TYPICAL ICE BRIDGE CONCRETE PIER DETAIL | NO SCALE | 8

NOT USED | NO SCALE | 9

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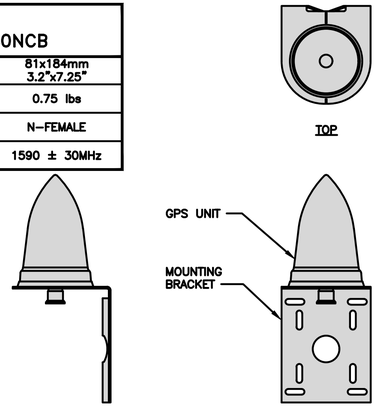
SHEET TITLE

EQUIPMENT DETAILS

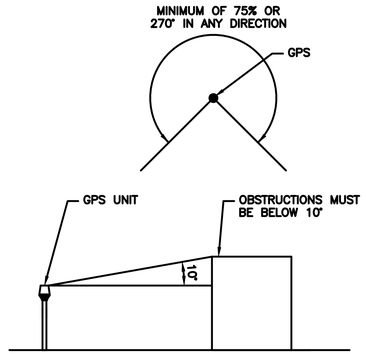
SHEET NUMBER

A-4

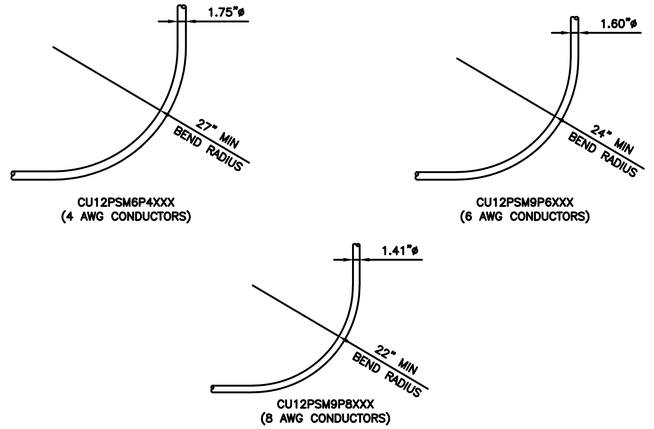
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	0.75 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL — NO SCALE — 1



GPS MINIMUM SKY VIEW REQUIREMENTS — NO SCALE — 2

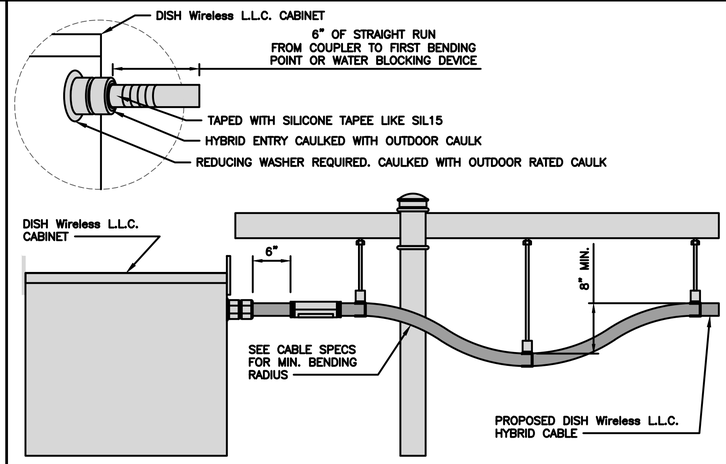


CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES — NO SCALE — 3

NOTE:

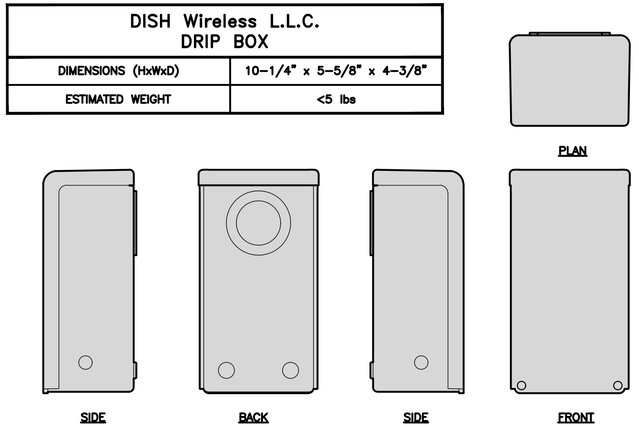
CONTRACTOR SHALL NOT LOOP EXCESS HYBRID OUTSIDE CABINET. EXCESS HYBRID LENGTH IS TO BE ADJUSTED BY STRIPPING JACKET AND SHIELDING AND TERMINATING DC CABLE TO LENGTH. FIBER EXCESS IS TO BE COILED IN FIBER SLACK TRAY INSIDE NETWORK CABINET.

HYBRID CABLE INSTALLATION NOTE — NO SCALE — 4



HYBRID CABLE INSTALLATION DETAIL — NO SCALE — 5

DISH Wireless L.L.C. DRIP BOX	
DIMENSIONS (HxWxD)	10-1/4" x 5-5/8" x 4-3/8"
ESTIMATED WEIGHT	<5 lbs



DISH Wireless L.L.C. DRIP BOX DETAIL — NO SCALE — 6

NOT USED — NO SCALE — 7

NOT USED — NO SCALE — 8

NOT USED — NO SCALE — 9

dish wireless.

5701 SOUTH SANTA FE DRIVE
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PROJECT MANAGER
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CONSULTANT:
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Architects . Engineers . Surveyors
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DRAWN BY:	CHECKED BY:	APPROVED BY:
HV	SM	SM

RFDS REV # A

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A&E PROJECT NUMBER

BOBOS01210A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

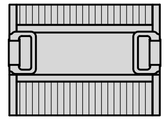
SHEET TITLE

EQUIPMENT DETAILS

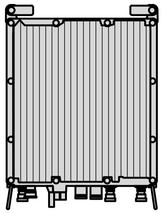
SHEET NUMBER

A-7

SAMSUNG – LOW BAND RF4450T–71A/SFG–ARR3J601DI	
DIMENSIONS (HxWxD)	15"x16.5"x11"
WEIGHT	94.6 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–36 to 58 VDC)



PLAN



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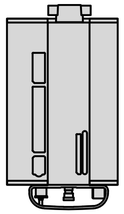

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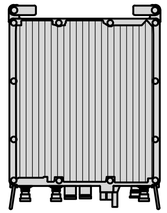
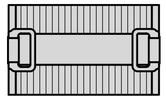


FRONT

RRH DETAIL | NO SCALE | 1

SAMSUNG – MID BAND RF4451D–70A/SFG–ARR3KM01DI	
DIMENSIONS (HxWxD)	15"x15"x8.9"
WEIGHT	61.3 lbs
CONNECTOR TYPE	4.3–10 RF CONNECTOR
INPUT VOLTAGE	–48VDC (–36 to 58 VDC)



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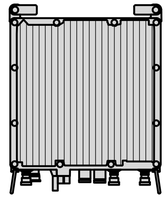

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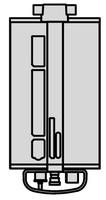

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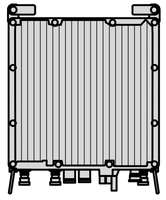
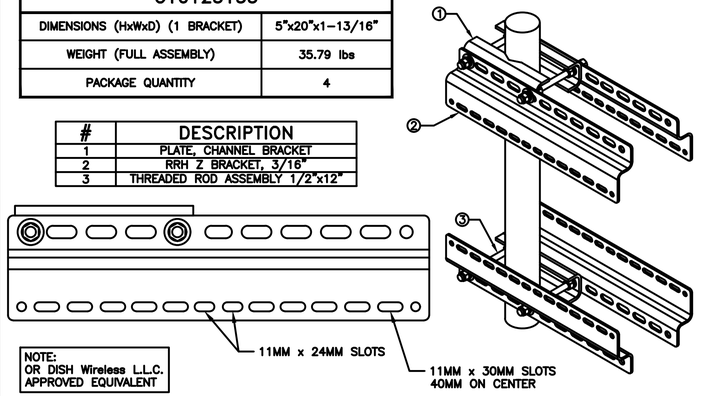


FRONT

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"



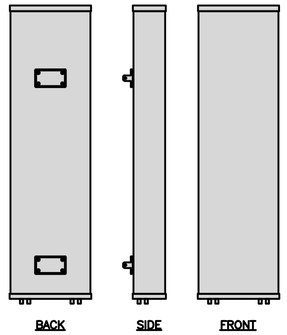
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

NOT USED | NO SCALE | 4

COMMSCOPE FFVV–65B–R2	
DIMENSIONS (HxWxD)	72"x19.6"x7.8"
ANTENNA WEIGHT	70.5 lbs
WEIGHT WITH BRACKETS	84.169 lbs

PLAN



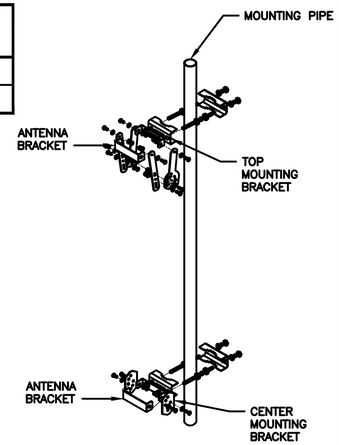
BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 5

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

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

ANTENNA BRACKET NOT PART OF KIT

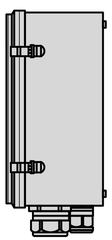


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN



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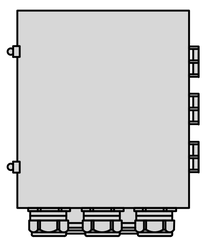

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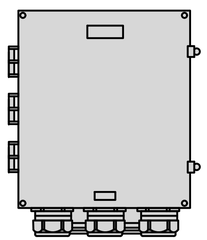
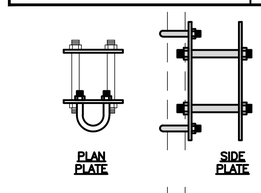


FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

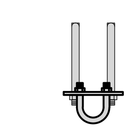
COMMSCOPE XP–2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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

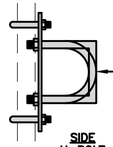


PLAN PLATE

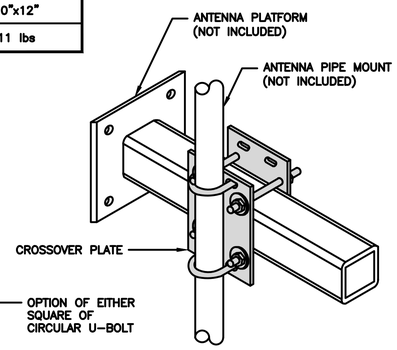
SIDE PLATE



PLAN U–BOLT

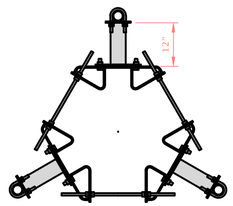


SIDE U–BOLT

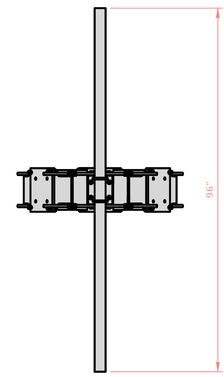


RRH/OVP MOUNT DETAIL | NO SCALE | 8

SABRE C10114331–12788	
POLE SIZE COMPATIBILITY	10"Ø - 40"Ø
WEIGHT	484 lbs



TOP



FRONT

STAND-OFF MOUNT DETAIL | NO SCALE | 9

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

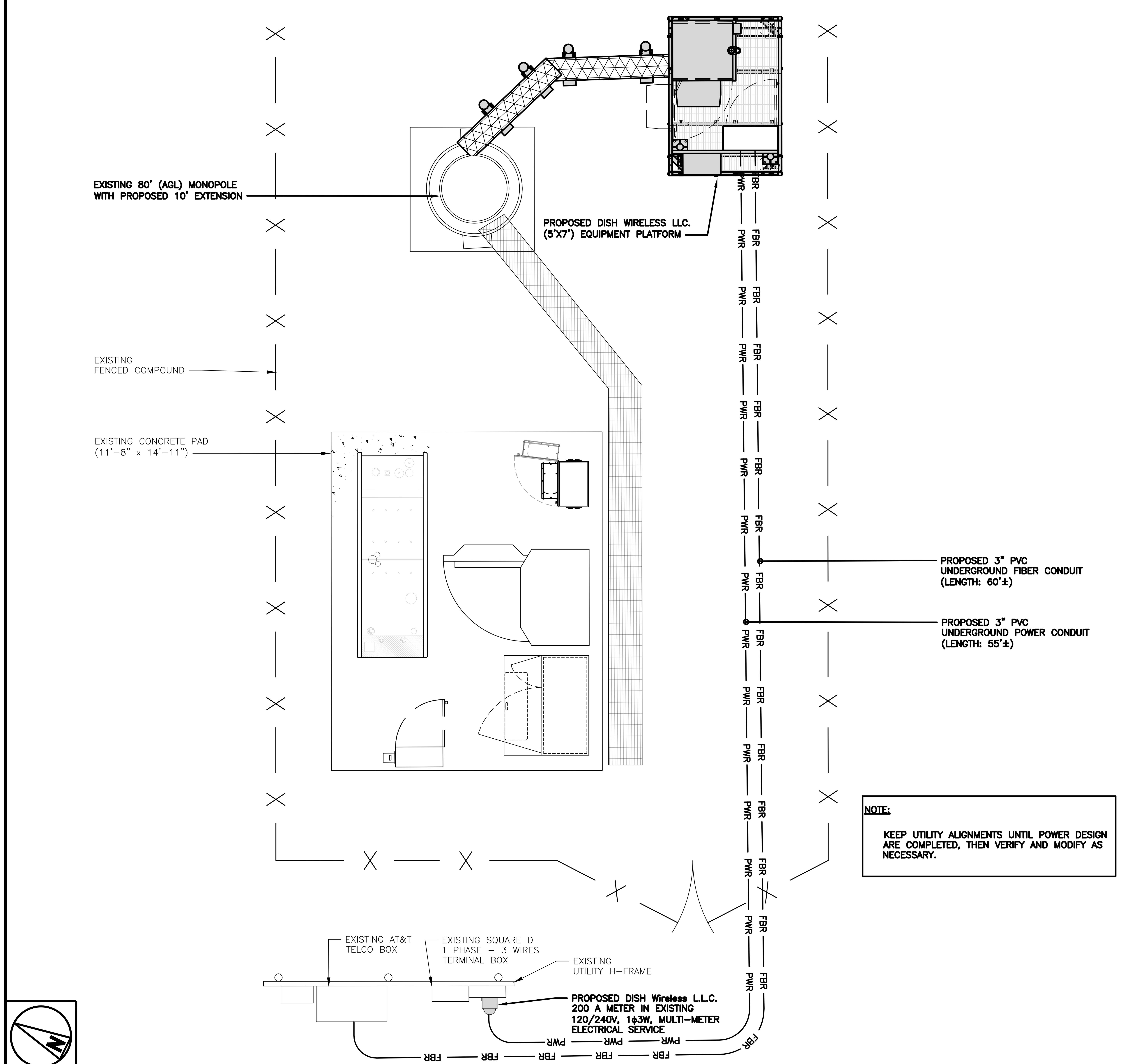
EQUIPMENT DETAILS

SHEET NUMBER

A-8

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE DOES NOT SPECIFY OUR 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 PLAEASE LOCATE AND FOLLOW EXSITING PATH. IF EXISTING PATH IS NOT AN OPTION PLEASE NOTIFY TOWER OWNER AS FURTHER COORINATION MAY BE NEEDED.



NOTE:

KEEP UTILITY ALIGNMENTS UNTIL POWER DESIGN ARE COMPLETED, THEN VERIFY AND MODIFY AS NECESSARY.

UTILITY ROUTE PLAN — 3/16"=1'–0" — 1

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

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

ELECTRICAL NOTES — NO SCALE — 2

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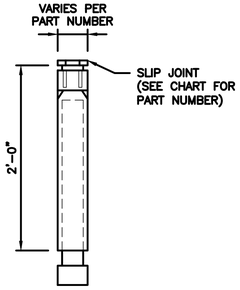
OLD LYME, CT 06371

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"

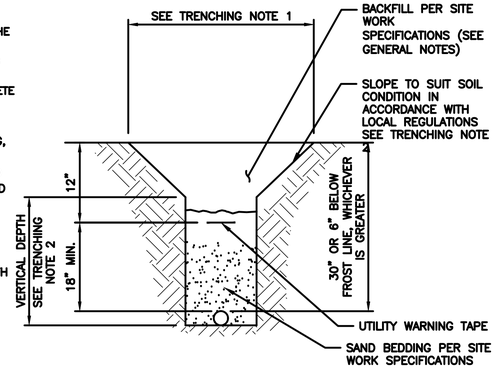


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

EXPANSION JOINT DETAIL | NO SCALE | 1

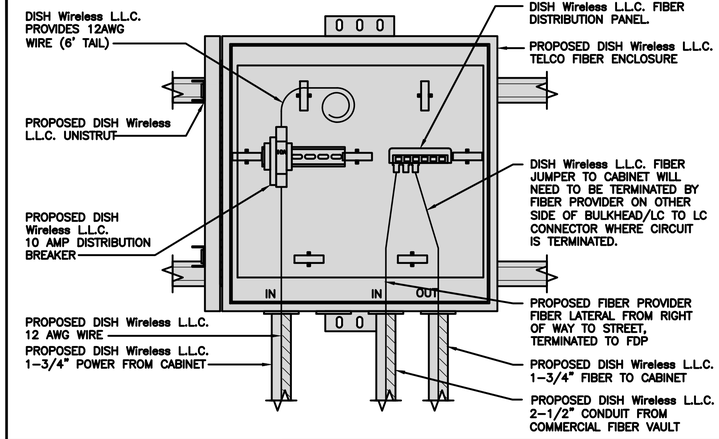
TRENCHING NOTES

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.

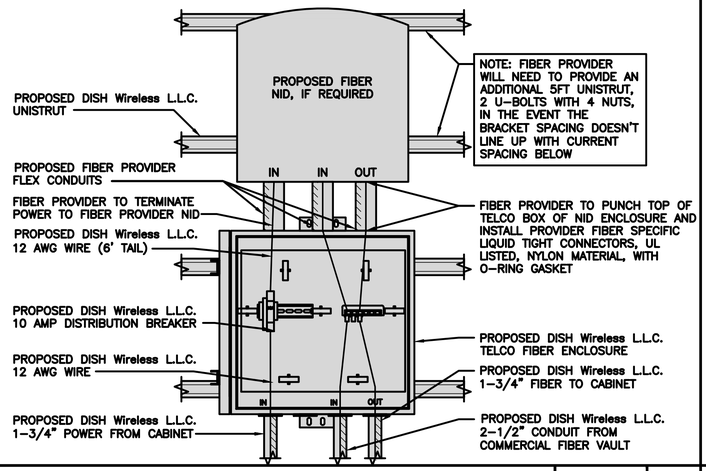


IMPORTANT: UNDERGROUND WARNING/MARKING TAPE SHALL BE BURIED AT A DEPTH OF 12 IN (30 CM) OR LESS BELOW GRADE. THE MINIMUM DISTANCE FROM THE TOP OF THE PIPELINE SHOULD BE 12 IN (30 CM). REQUIRED DEPTH OF PIPELINE SHALL BE 30" BELOW GRADE OR 6" BELOW FROSTLINE, WHICHEVER IS GREATER. EACH RUN OF UNDERGROUND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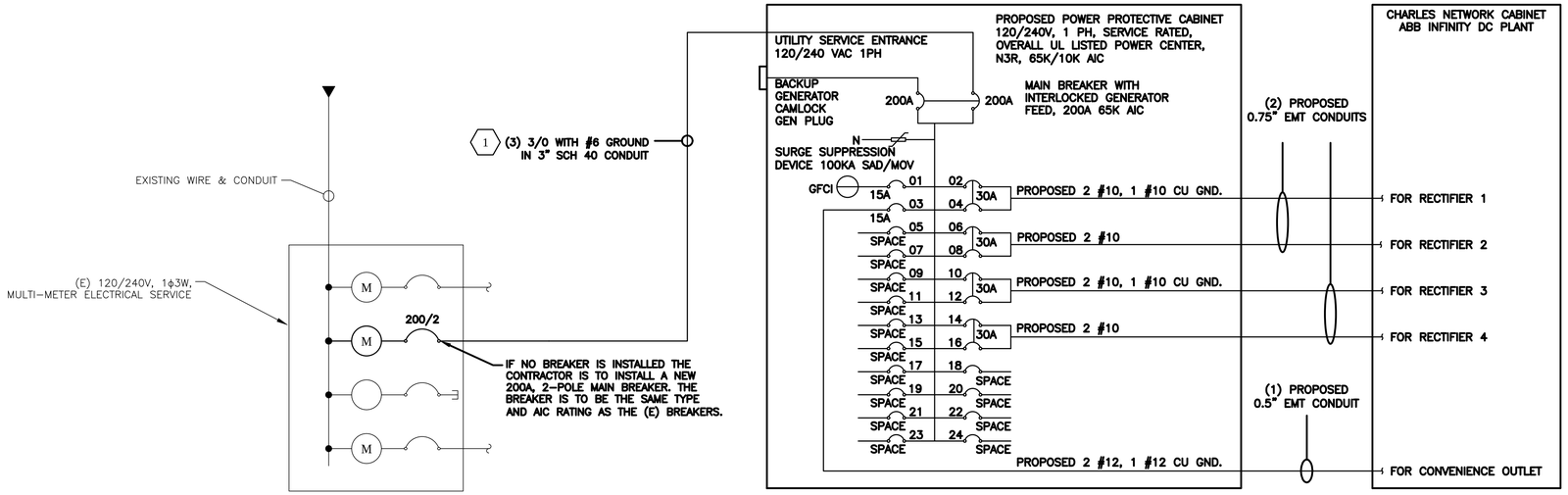
ELECTRICAL DETAILS

SHEET NUMBER
E-2



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

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

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.

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

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.

#12 - 0.0050 SQ. IN X 2 = 0.0100 SQ. IN
#12 - 0.0050 SQ. IN X 1 = 0.0050 SQ. IN <GROUND
TOTAL = 0.0150 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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A&E PROJECT NUMBER
BOBOS01210A

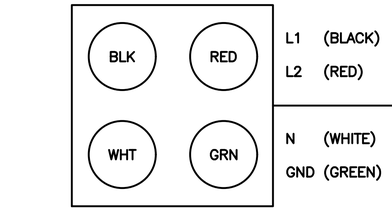
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

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



CAM–LOCK GENERATOR RECEPTACLE

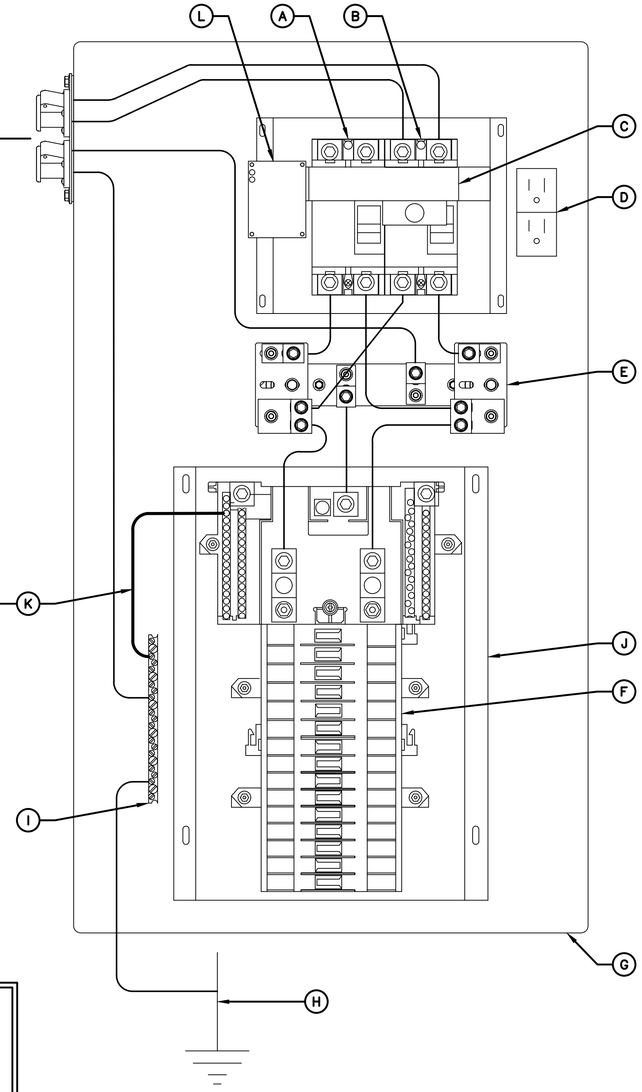
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

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 100A☐ 200A☐	GENERATOR POWER 100A☐ 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.

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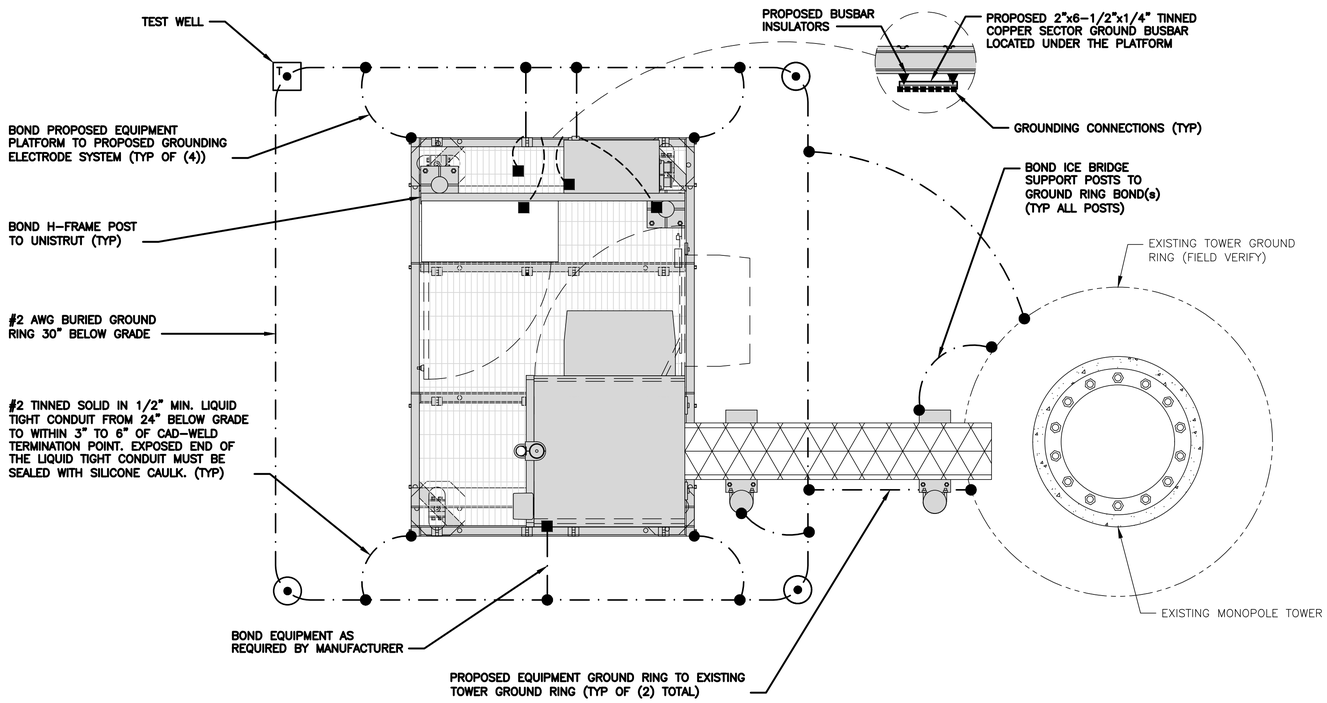
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

PPC NEUTRAL–TO–GROUND SCHEMATIC

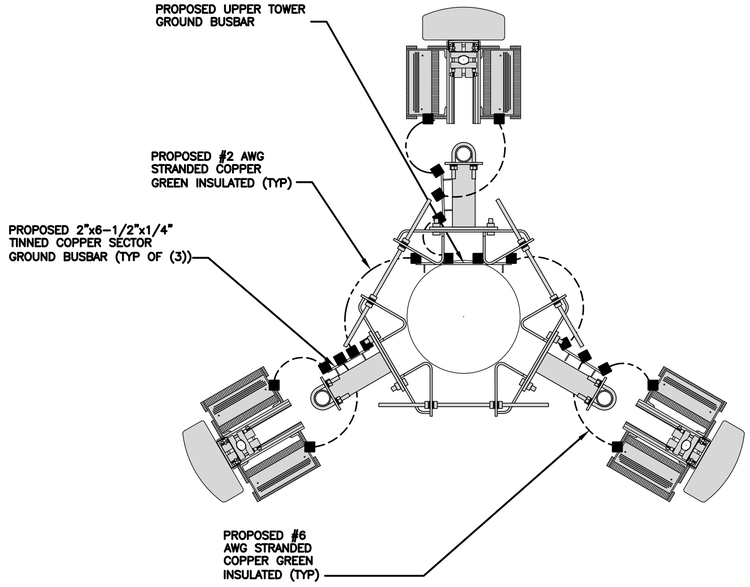
SHEET NUMBER

E-4



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE | 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE | 2

NOTES

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

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 PROPOSED ANTENNA MOUNT COLLAR.

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

GROUNDING KEY NOTES

NO SCALE | 3

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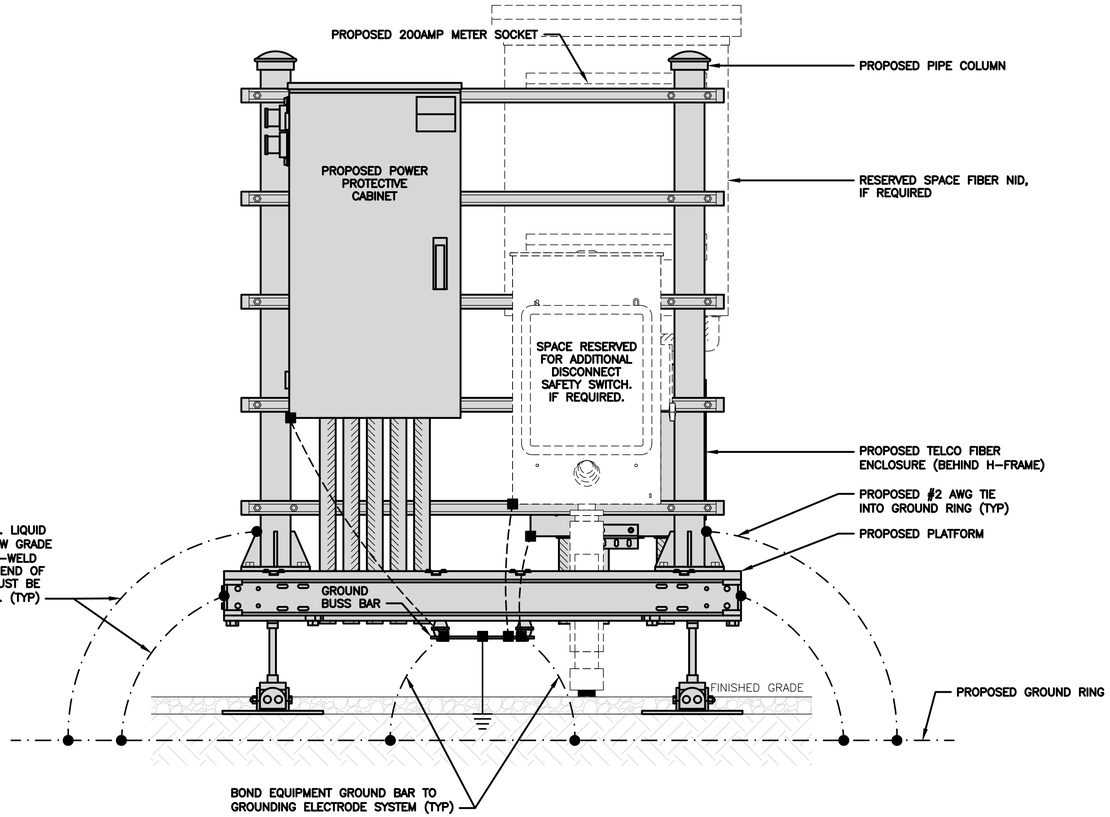
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE
GROUNDING PLANS AND NOTES

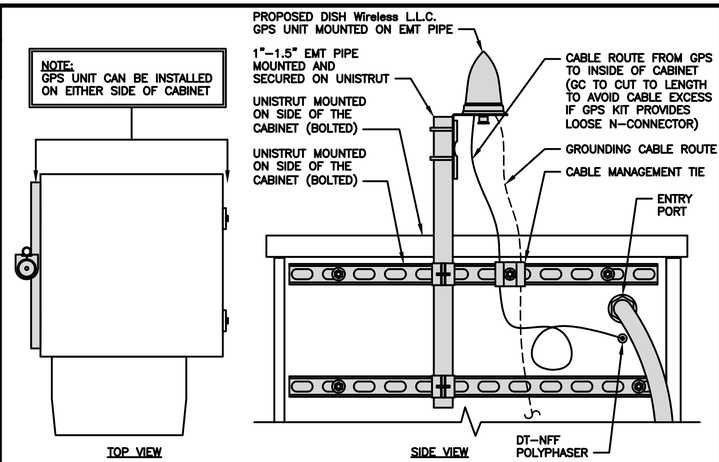
SHEET NUMBER
G-1

NOTES

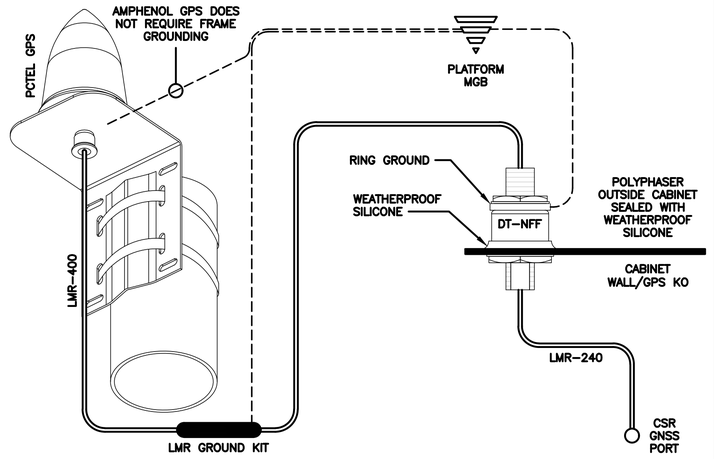
EQUIPMENT CABINET OMITTED FOR CLARITY



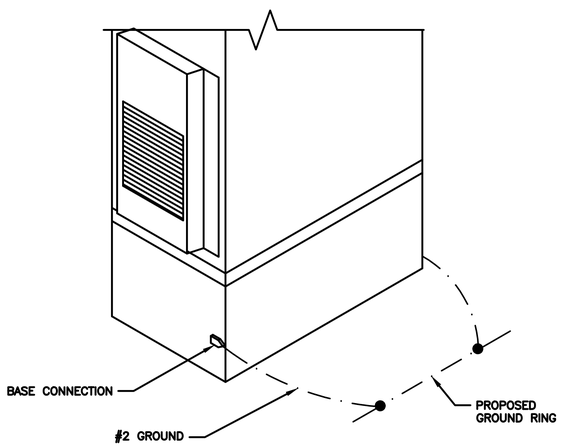
H-FRAME GROUNDING DETAIL | NO SCALE | 1



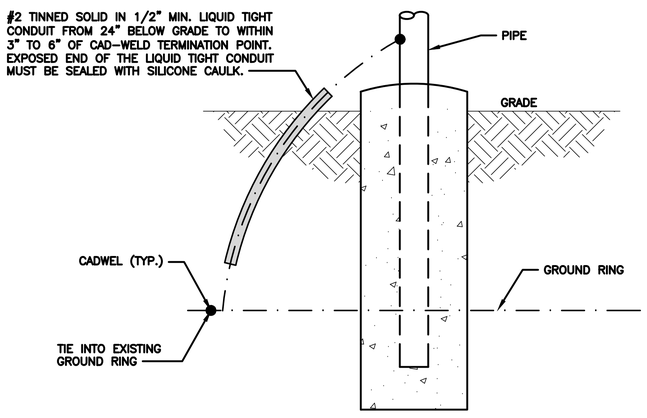
TYPICAL PCTEL GPS UNIT GROUNDING | NO SCALE | 2



TYPICAL PCTEL GPS UNIT GROUNDING DIAGRAM | NO SCALE | 3



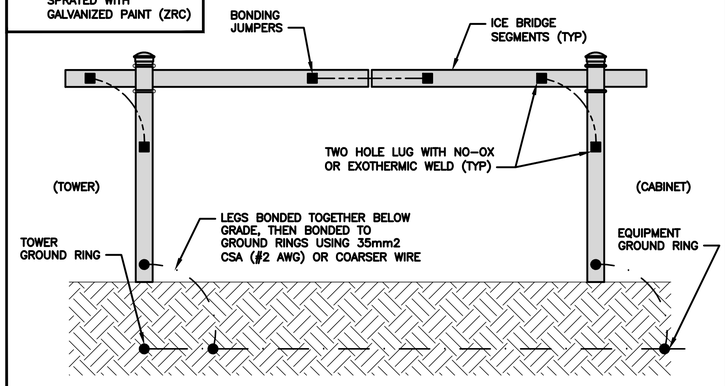
OUTDOOR CABINET GROUNDING | NO SCALE | 4



TRANSITIONING GROUND DETAIL | NO SCALE | 5

NOTES

- DRILLED HOLES TO BE SPRAYED WITH GALVANIZED PAINT (ZRC)



ICE BRIDGE GROUNDING DETAIL | NO SCALE | 6

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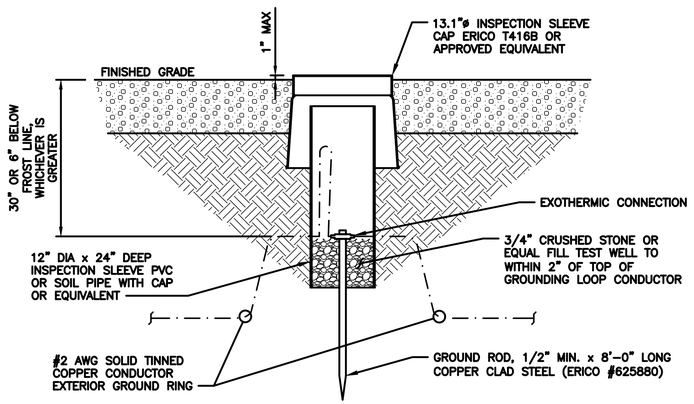
SHEET TITLE

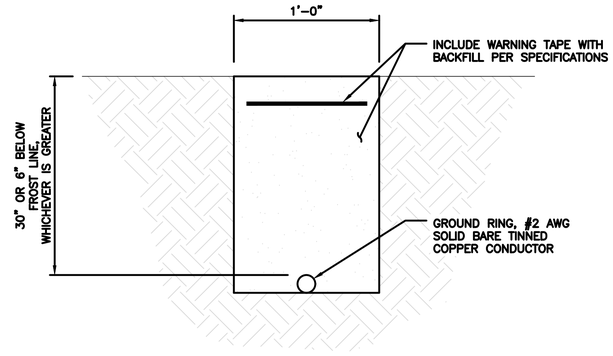
GROUNDING DETAILS

SHEET NUMBER

G-2



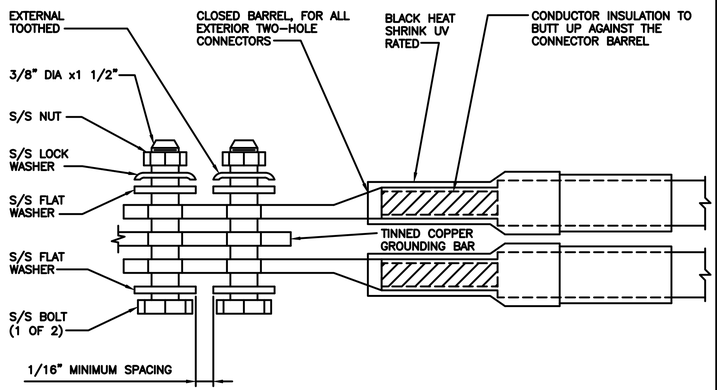
TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 1



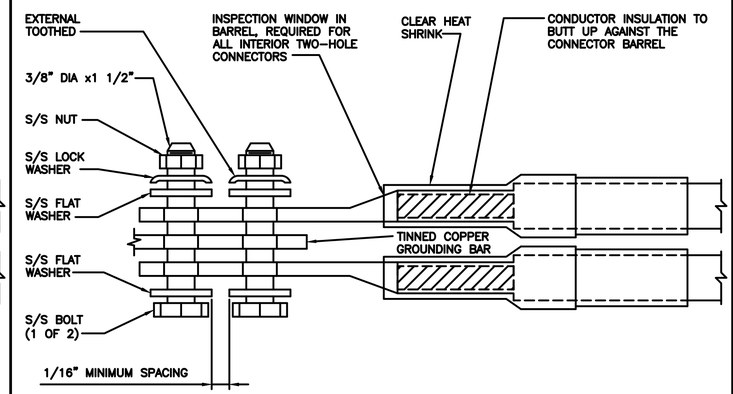
TYPICAL GROUND RING TRENCH | NO SCALE | 2

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

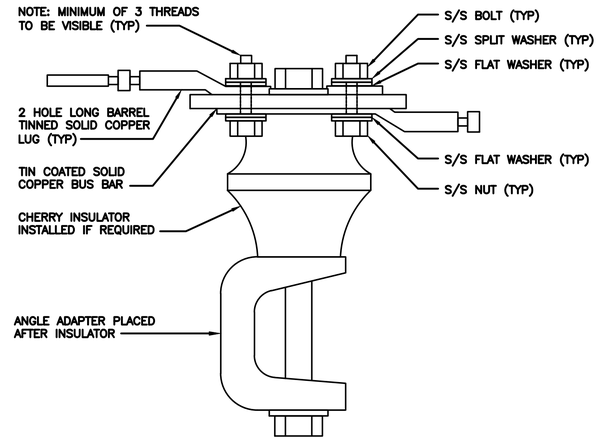
TYPICAL GROUNDING NOTES | NO SCALE | 3



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 4



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 5



LUG DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

DISH Wireless L.L.C. TEMPLATE VERSION 55 – 06/30/2023

dish wireless.
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DRAWN BY:	CHECKED BY:	APPROVED BY:
HV	SM	SM

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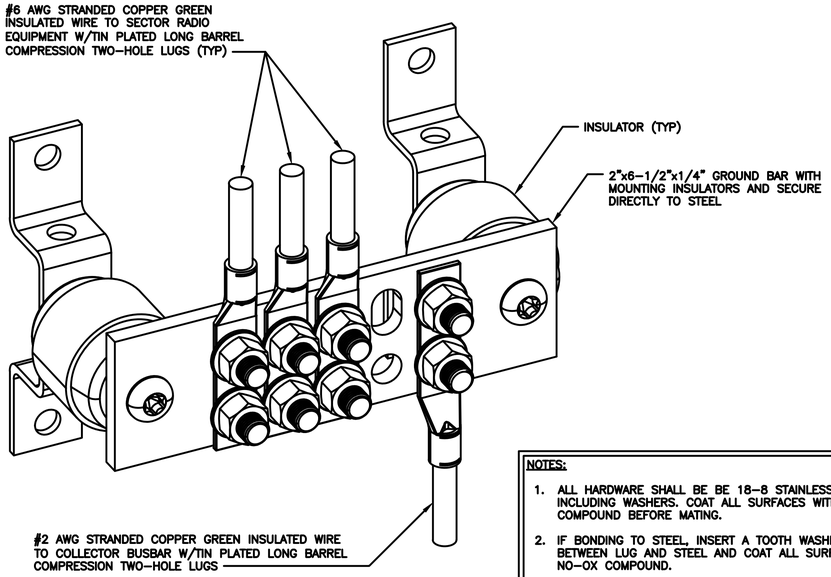
A&E PROJECT NUMBER
BOBOS01210A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE
GROUNDING DETAILS

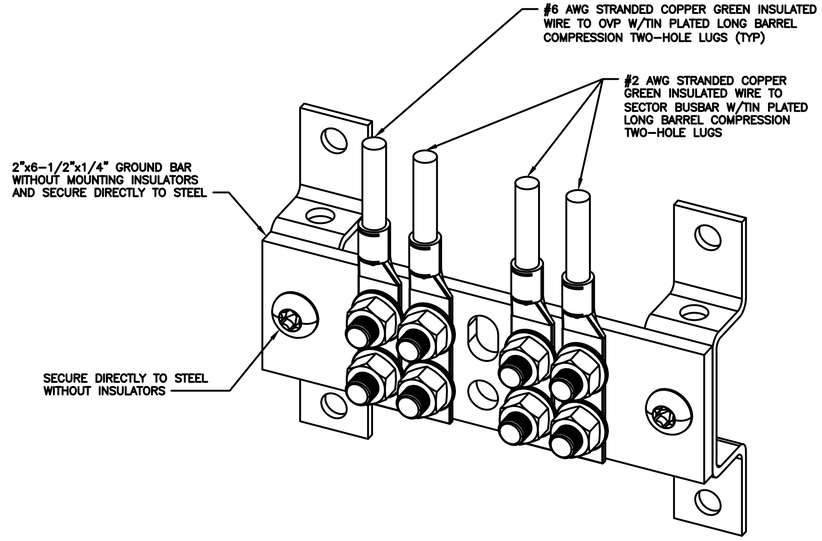
SHEET NUMBER
G-3



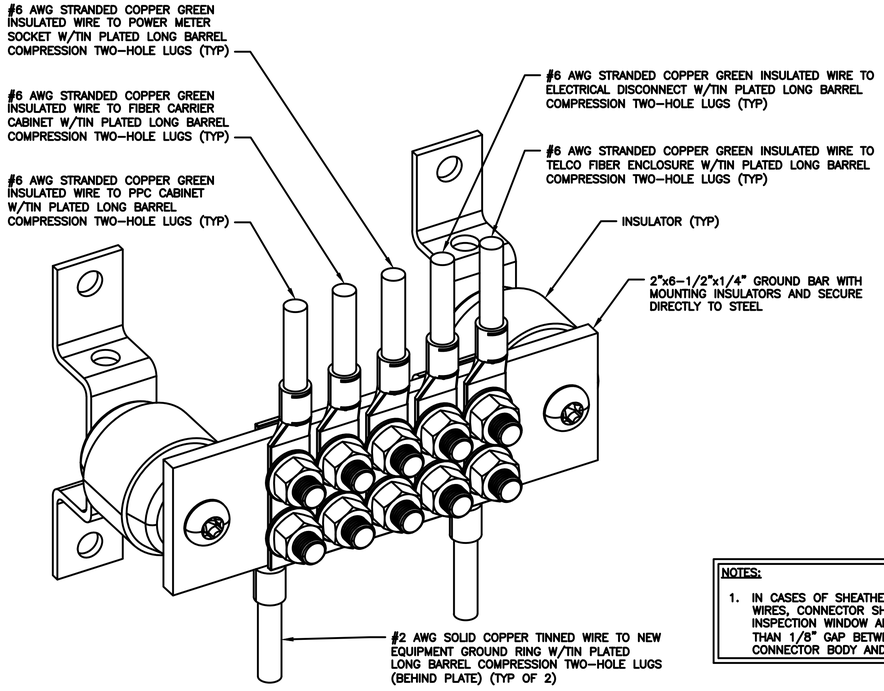
NOTES:

1. ALL HARDWARE SHALL BE BE 18-8 STAINLESS STEEL INCLUDING WASHERS. COAT ALL SURFACES WITH NO-OX COMPOUND BEFORE MATING.
2. IF BONDING TO STEEL, INSERT A TOOTH WASHER BETWEEN LUG AND STEEL AND COAT ALL SURFACE WITH NO-OX COMPOUND.
3. USE A THIN COAT OF NO-OX OR UL LISTED ANTIOXIDANT COMPOUND BETWEEN GROUNDING CONNECTIONS.

SECTOR GROUND BUSBAR DETAIL — NO SCALE — 1



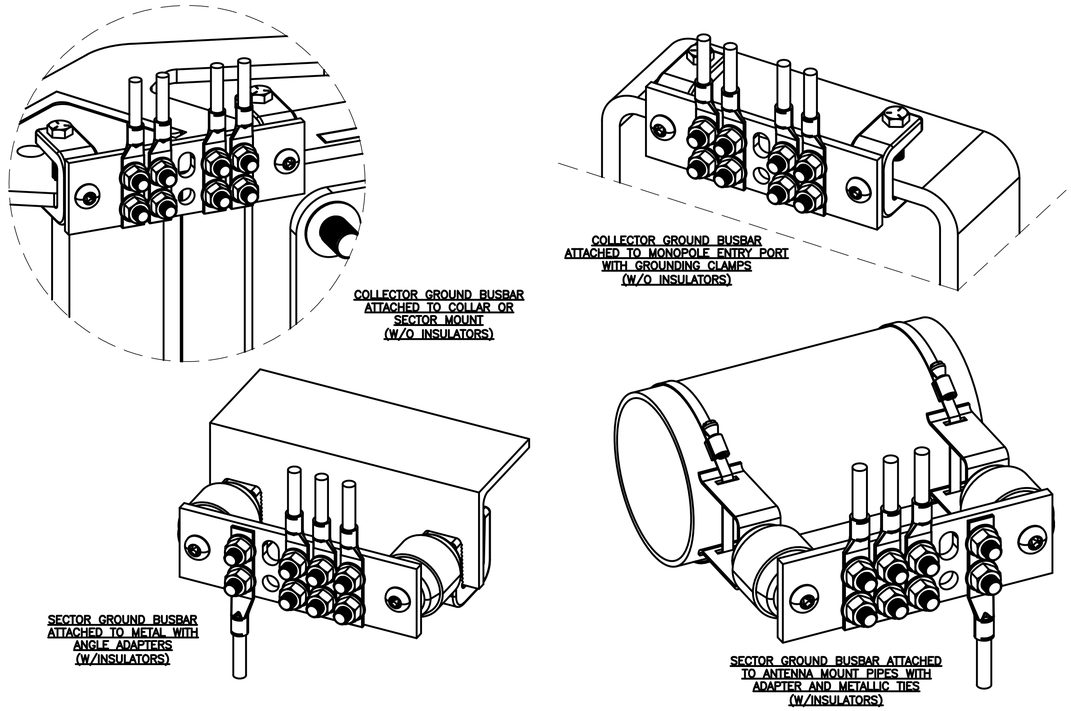
UPPER TOWER GROUND BUSBAR DETAIL — NO SCALE — 2



NOTES:

1. IN CASES OF SHEATHED STRANDED WIRES, CONNECTOR SHALL HAVE INSPECTION WINDOW AND NO MORE THAN 1/8" GAP BETWEEN CONNECTOR BODY AND SHEATH.

EQUIPMENT GROUND BUSBAR DETAIL — NO SCALE — 3



GROUND BUSBAR ATTACHMENT OPTIONS — NO SCALE — 4

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

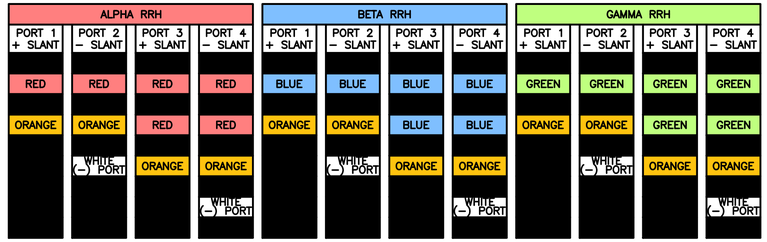
G-4

HYBRID/DISCREET CABLES

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

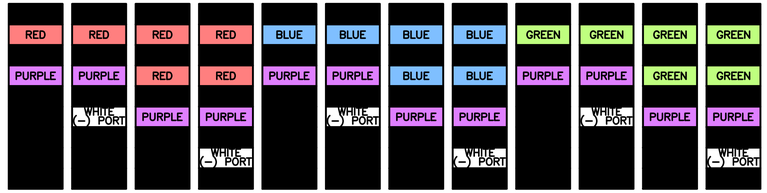
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

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)



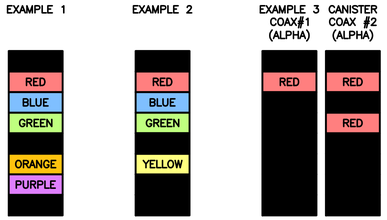
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

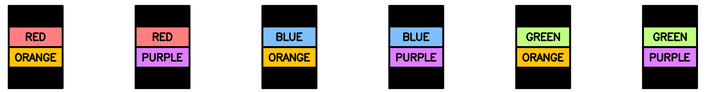
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



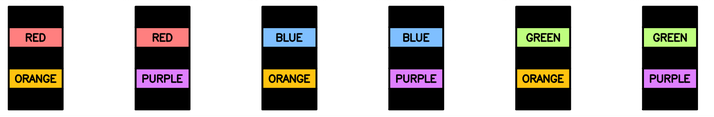
FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

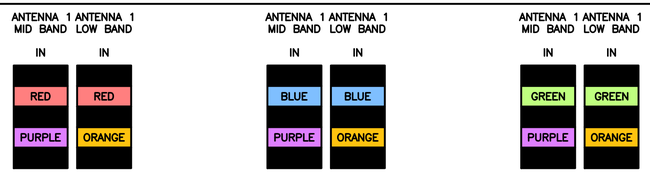
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

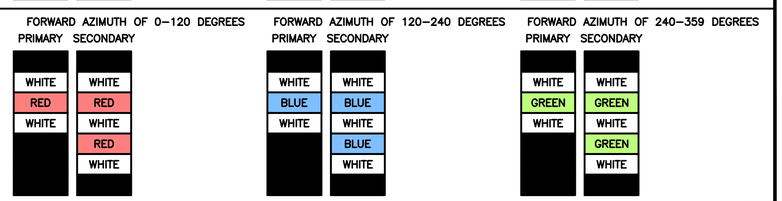
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



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

---

dish wireless.

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BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE
RF
CABLE COLOR CODES

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

W.P.

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

dish wireless.

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

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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Site ID: _____

dish

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⚠ WARNING

Transmitting Antenna(s)

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RF SIGNAGE

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

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COMMONWEALTH OF MASSACHUSETTS
NO. ARL. 11125
REGISTERED ARCHITECT

DRAWN BY:	CHECKED BY:	APPROVED BY:
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1	03/29/2024	REVISED MOUNT
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A&E PROJECT NUMBER
BOBOS01210A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

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.

dish wireless.

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DRAWN BY:	CHECKED BY:	APPROVED BY:
HV	SM	SM

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

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.

dish wireless.

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387 SHORE ROAD
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SHEET TITLE

GENERAL NOTES

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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.

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER

NORTHEAST SITE SOLUTIONS

5 MELROSE DR
FARMINGTON CT 06032
203-275-6669

CONSULTANT:

FORESITE LLC
Architects . Engineers . Surveyors

462 WALNUT STREET, SUITE 1
NEWTON, MA 02460
617-212-3123

DRAWN BY:	CHECKED BY:	APPROVED BY:
HV	SM	SM

RFDS REV # A

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	10/10/2023	ISSUED FOR REVIEW
0	11/01/2023	FINAL ISSUED
1	03/29/2024	REVISED MOUNT
2	05/09/2024	REVISED

A&E PROJECT NUMBER

BOBOS01210A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS01210A
387 SHORE ROAD
OLD LYME, CT 06371

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-5

ATTACHMENT 4

Phoenix Tower International
999 Yamato Road, Suite 100
Boca Raton, FL 33431

GPD Engineering and Architecture Professional Corporation
Todd Rasey
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-2198
trasey@gpdgroup.com

GPD# 2024701.14
May 7, 2024

COMPREHENSIVE STRUCTURAL ANALYSIS REPORT

SITE DESIGNATION:	**PTI Site #:**	**US-CT-1004**
	PTI Site Name:	**AMTRAK_OldLyme5**
	Dish Site #:	**BOBOS01210A**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-H & 2022 Connecticut State Building Code** **126 mph (3-second gust) w/ 0" ice** **50 mph (3-second gust) w/ 1" ice**
SITE DATA:		**387 Shore Road, Old Lyme, CT 06371, New London County** **Latitude 41° 17' 47.36" N, Longitude 72° 15' 34.89" W** **80' Sabre Monopole w/ 10' Extension**

To whom it may concern,

GPD is pleased to submit this Comprehensive Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

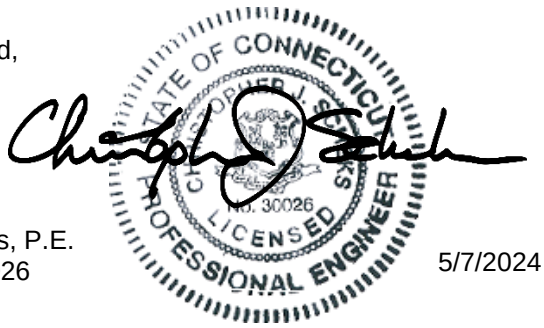
Analysis Results

Tower Stress Level with Proposed Equipment:	97.3%	Sufficient Capacity
Foundation Ratio with Proposed Equipment:	71.4%	Sufficient Capacity

Note: In order for the analysis results to be valid, the modifications shown in the design drawings by GPD (Project #: 2024701.14, dated 12/11/2023) must be installed. The drawings are included in Appendix D of this report for reference.

We at GPD appreciate the opportunity of providing our continuing professional services to you and Phoenix Tower International. If you have any questions or need further assistance on this or any other projects, please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

5/7/2024

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by Dish and commissioned by Phoenix Tower International.

This analysis has been performed in accordance with the 2022 Connecticut State Building Code based upon a 3-second gust wind speed of 126 mph. Applicable Standard references and design criteria are listed in Appendices A & B.

The proposed feedlines shall be installed as shown in Appendices A & B for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	73.7%	Sufficient Capacity
Flange Connection – 80 ft	18.6%	Sufficient Capacity
Flange Connection – 55 ft	97.3%	Sufficient Capacity
Anchor Rods	38.1%	Sufficient Capacity
Base Plate	41.8%	Sufficient Capacity
Foundation	71.4%	Sufficient Capacity

RECOMMENDATIONS

The tower and its foundation will be satisfactory for the final loading configuration once the proposed modifications designed by GPD (Project #: 2024701.14, dated 5/7/2024) are installed.

ANALYSIS METHOD

tnxTower (Version 8.2.4.3), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various load cases. Selected output from the analysis is included the report appendices. The following table details the information provided to complete this structural analysis. This analysis is based solely on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Construction Drawings	DISH Wireless Construction Drawings Rev 1, dated 3/29/2024	PTI
Tower Design	Sabre #: 40204, dated 2/7/2011	PTI
Foundation Design	Sabre #: 40204, dated 2/7/2011	PTI
Geotechnical Report	Terracon #: J2105225, dated 11/11/2010	PTI
Previous Tower Analysis	GPD Project #: 2024701.69, dated 3/15/2024	PTI
Modification Drawings	GPD Project #: 2024701.14, dated 12/11/2023	PTI

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. Material grades not supplied have been assumed based on previous experience with similar structures.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
4. The soil parameters are as per data supplied or as assumed and stated in the calculations.
5. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
8. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
9. Loading interpreted from photos is accurate to ±5' AGL, antenna size accurate to ±3.3 sf, and coax equal to the number of existing antennas without reserve.
10. All existing and proposed loading has been taken from the available site photos as well as documents supplied to GPD at the time of generating this report. All such documents are listed in the Documents Provided Table and are assumed to be accurate. GPD is not responsible for loading scenarios outside those conveyed in the supplied documentation.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Comprehensive Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Carrier Designation	BOBOS01210A
Client Site #	US-CT-1004
Client Site Name	AMTRAK_OldLyme5
Date of Analysis	5/7/2024
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	90'	
Tower Manufacturer	Sabre	
Tower Model	n/a	
Tower Design	Sabre #: 40204	2/7/2011
Foundation Design	Sabre #: 40204	2/7/2011
Geotechnical Report	Terracon #: J2105225	11/11/2010
Previous Tower Analysis	GPD Project #: 2024701.69	3/15/2024
Modification Drawings	GPD Project #: 2021701.14	12/11/2023

Design Parameters

Design Code Used	TIA-222-H & 2022 Connecticut State Building Code
Location of Tower (County, State)	New London, CT
Wind Speed (mph)	126 (3-second gust)
Ice Thickness (in)	1
Risk Category (I, II, III)	II
Exposure Category (B, C, D)	C
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	97.3%
Tower Base (%)	41.8%
Foundation (%)	71.4%
Foundation Adequate?	Yes

DISH MLA Information	
Existing Area (in^2)	0
Proposed Area (in^2)	6,835
Final Area (in^2)	6,835
Future Area (in^2)	8,165
Total Wind Area (in^2)	15,000
Does Carrier's Loading Exceed 15000 sq. in?	No
If yes, by how much? (in^2)	n/a

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int/Ext
T-Mobile	78	78	3	Panel	RFS	APXVAALL24-43-U-NA20	0/90/240	1	Site Pro 1	RMQP-3 Platform Mount	2	Hybrid	6x24	Internal
T-Mobile	78	78	3	Panel	RFS	APXVLL19P_43-C-A20	0/90/240			on the same mount				
T-Mobile	78	78	3	Panel	Ericsson	AIR6419 B41	0/90/240			on the same mount				
T-Mobile	78	78	3	RRU	Ericsson	4460				on the same mount				
T-Mobile	78	78	3	RRU	Ericsson	4480				on the same mount				
T-Mobile	78	78	3	TMA	Unknown	Generic Twin Style 1B-AWS				on the same mount				

Note: All existing/reserved loading shall remain as shown

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int/Ext
Dish Wireless	87	87	3	Panel	Commscope	FFVV-65B-R2	0/120/240	1	Sabre	C10114331-12788 T-Arm Kit	1	Unknown	1.411"	Internal
Dish Wireless	87	87	3	RRU	Samsung	RF4450t-71A				on the same mounts				
Dish Wireless	87	87	3	RRU	Samsung	RF4451d-70A				on the same mounts				
Dish Wireless	87	87	1	Surge	Raycap	RDIDC-9181-PF-48				on the same mounts				

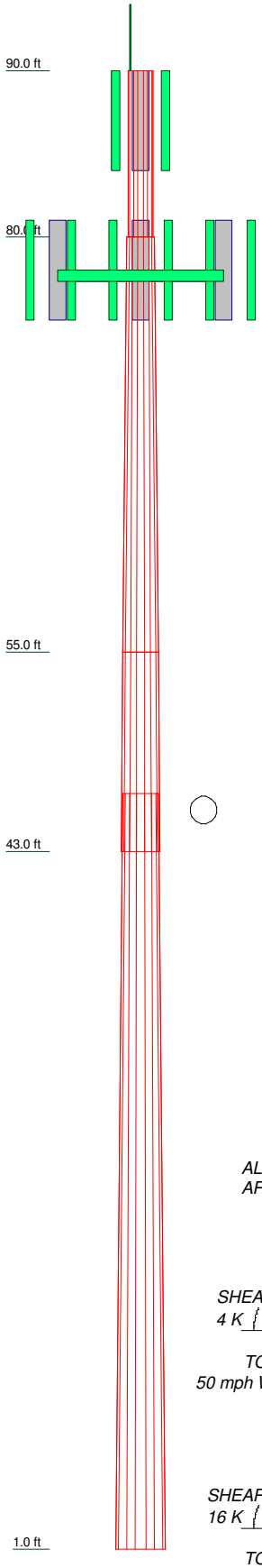
Note: The proposed loading is in addition to the existing/reserved loading shown above.

Note: All feedlines shall be installed as indicated in this report in order for the analysis results to be valid.

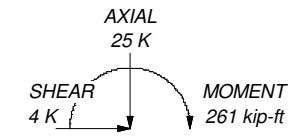
APPENDIX B

Tower Analysis Output File

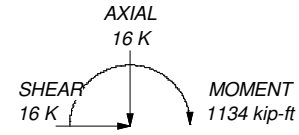
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.00	0	0.3750		18.0000	18.0000	A53-B-35	0.7
2	25.00	18	0.1875		20.0000	25.4200	A53-B-35	1.1
3	12.00	18	0.1875	3.50	25.4200	28.0300	A572-65	0.6
4	45.50	18	0.3125		26.8938	36.7700	A572-65	4.8
								7.3



ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE



TORQUE 0 kip-ft
REACTIONS - 126 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8" x 4'	90	APXVAALL24_43-U-NA20 w/ Mount Pipe	78
FFVV-65B-R2	87	APXVLL19P_43-C-A20 w/ Mount Pipe	78
FFVV-65B-R2	87	APXVLL19P_43-C-A20 w/ Mount Pipe	78
FFVV-65B-R2	87	APXVLL19P_43-C-A20 w/ Mount Pipe	78
RF4450t-71A	87	AIR6419 B41 w/ Mount Pipe	78
RF4450t-71A	87	AIR6419 B41 w/ Mount Pipe	78
RF4450t-71A	87	AIR6419 B41 w/ Mount Pipe	78
RF4451d-70A	87	4480	78
RF4451d-70A	87	4480	78
RF4451d-70A	87	4480	78
RDIDC-9181-PF-48	87	4460	78
Dish Reserved	87	4460	78
Dish Reserved	87	4460	78
Dish Reserved	87	Generic Twin Style 1B-AWS	78
C10114331-12788 T-Arm Kit	87	Generic Twin Style 1B-AWS	78
Platform Mount [LP 303-1]	78	Generic Twin Style 1B-AWS	78
APXVAALL24_43-U-NA20 w/ Mount Pipe	78	T-Mobile Reserved	78
APXVAALL24_43-U-NA20 w/ Mount Pipe	78	T-Mobile Reserved	78
		T-Mobile Reserved	78

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

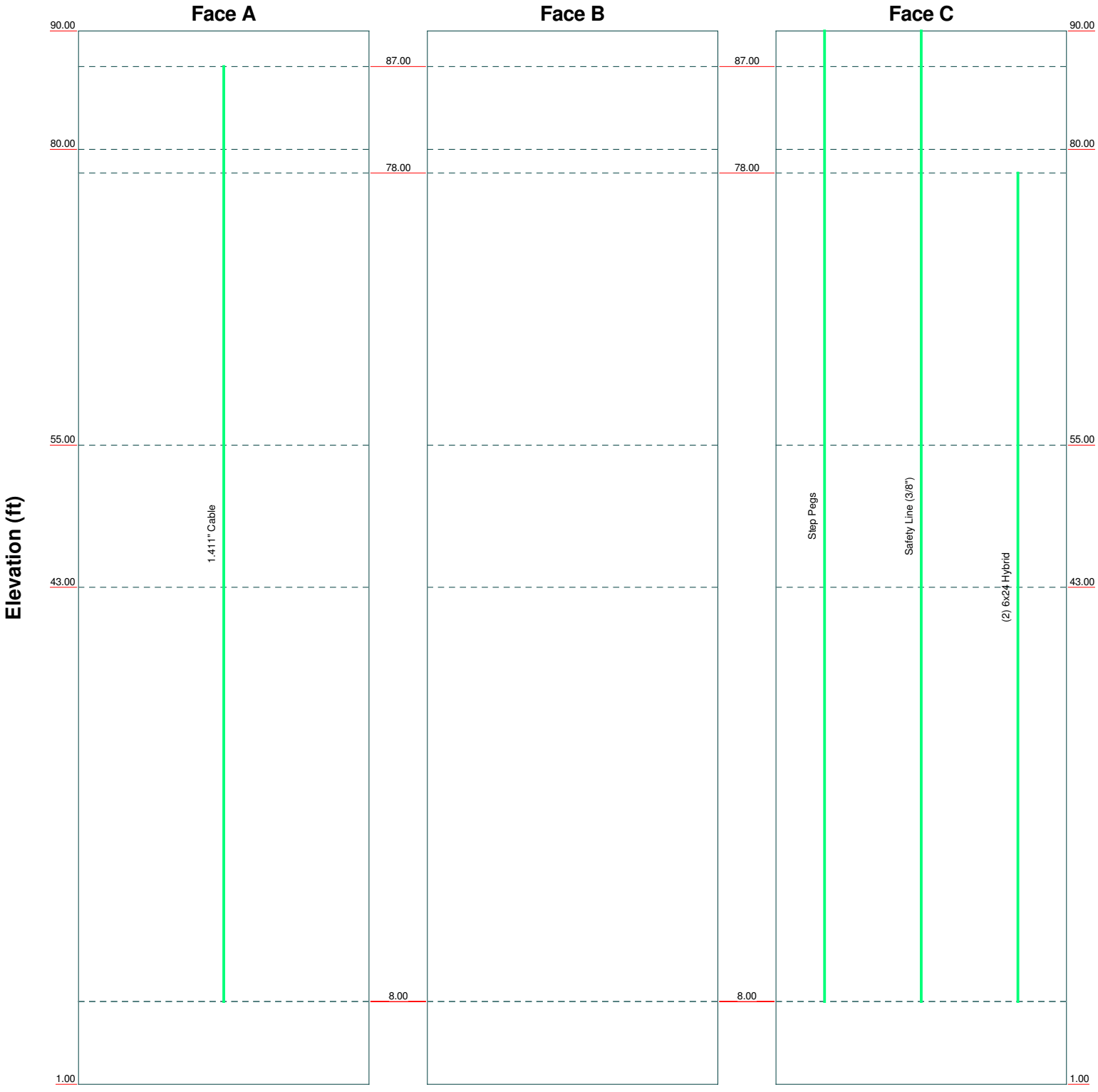
1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 126 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 73.7%

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: *US-CT-1004 / AMTRAK_OldLyme5*			
Project: *2024702.16*			
Client: PTI	Drawn by: TR	App'd:	
Code: TIA-222-H	Date: 05/07/24	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
1' - 90'

Round | Flat | App In Face | App Out Face | Truss Leg



GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: *US-CT-1004 / AMTRAK_OldLyme5*		
Project: *2024702.16*		
Client: PTI	Drawn by: TR	App'd:
Code: TIA-222-H	Date: 05/07/24	Scale: NTS
Path:		Dwg No. E-7

Tower Input Data

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

Tower base elevation above sea level: 31.00 ft.
Basic wind speed of 126 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	90.00-80.00	10.00	0.00	Round	18.0000	18.0000	0.3750		A53-B-35 (35 ksi)
L2	80.00-55.00	25.00	0.00	18	20.0000	25.4200	0.1875	0.7500	A572-65 (65 ksi)
L3	55.00-43.00	12.00	3.50	18	25.4200	28.0300	0.1875	0.7500	A572-65 (65 ksi)
L4	43.00-1.00	45.50		18	26.8938	36.7700	0.3125	1.2500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
									(65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.0000	20.7640	806.6313	6.2328	9.0000	89.6257	1613.2627	10.3758	0.0000	0
	18.0000	20.7640	806.6313	6.2328	9.0000	89.6257	1613.2627	10.3758	0.0000	0
L2	20.2796	11.7909	584.7409	7.0334	10.1600	57.5532	1170.2512	5.8966	3.1900	17.013
	25.7832	15.0165	1207.8875	8.9575	12.9134	93.5378	2417.3644	7.5097	4.1439	22.101
L3	25.7832	15.0165	1207.8875	8.9575	12.9134	93.5378	2417.3644	7.5097	4.1439	22.101
	28.4335	16.5698	1622.8199	9.8841	14.2392	113.9682	3247.7752	8.2865	4.6033	24.551
L4	28.0319	26.3653	2353.5346	9.4363	13.6620	172.2684	4710.1661	13.1851	4.1833	13.387
	37.2890	36.1613	6072.3256	12.9424	18.6792	325.0856	12152.6412	18.0841	5.9215	18.949

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 90.00-80.00				1	1	1			
L2 80.00-55.00				1	1	1			
L3 55.00-43.00				1	1	1			
L4 43.00-1.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Step Pegs	C	No	No	CaAa (Out Of Face)	90.00 - 8.00	1	No Ice	0.08	2.72
							1/2" Ice	0.18	3.51
							1" Ice	0.28	4.92
Safety Line (3/8")	C	No	No	CaAa (Out Of Face)	90.00 - 8.00	1	No Ice	0.04	0.22
							1/2" Ice	0.14	0.75
							1" Ice	0.24	1.28
1.411" Cable	A	No	No	Inside Pole	87.00 - 8.00	1	No Ice	0.00	1.00
							1/2" Ice	0.00	1.00
							1" Ice	0.00	1.00
6x24 Hybrid	C	No	No	Inside Pole	78.00 - 8.00	2	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	90.00-80.00	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.175	0.03
L2	80.00-55.00	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.938	0.11
L3	55.00-43.00	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.410	0.05
L4	43.00-1.00	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.112	0.16

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	90.00-80.00	A	1.099	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.572	0.07
L2	80.00-55.00	A	1.073	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.671	0.20
L3	55.00-43.00	A	1.040	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.403	0.10
L4	43.00-1.00	A	0.960	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	18.674	0.28

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	90.00-80.00	-1.1556	0.6672	-1.8030	1.0410
L2	80.00-55.00	-0.8710	0.5029	-1.8837	1.0875
L3	55.00-43.00	-0.8826	0.5095	-1.9240	1.1108
L4	43.00-1.00	-0.7357	0.4248	-1.6753	0.9673

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 4'	C	From Leg	0.00 0.00 2.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	0.03 0.03 0.04
FFVV-65B-R2	A	From Leg	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	5.75 6.21 6.67	0.07 0.14 0.22
FFVV-65B-R2	B	From Leg	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	5.75 6.21 6.67	0.07 0.14 0.22
FFVV-65B-R2	C	From Leg	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	12.27 12.77 13.27	5.75 6.21 6.67	0.07 0.14 0.22
RF4450t-71A	A	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.38 1.53 1.68	0.09 0.12 0.14
RF4450t-71A	B	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.38 1.53 1.68	0.09 0.12 0.14
RF4450t-71A	C	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.38 1.53 1.68	0.09 0.12 0.14
RF4451d-70A	A	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.11 1.25 1.39	0.06 0.08 0.10
RF4451d-70A	B	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.11 1.25 1.39	0.06 0.08 0.10
RF4451d-70A	C	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22	1.11 1.25 1.39	0.06 0.08 0.10
RDIDC-9181-PF-48	A	From Leg	0.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.34 1.49 1.66	0.02 0.04 0.07
Dish Reserved	A	From Leg	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	26.46 27.34 28.21	11.12 12.21 13.22	0.35 0.47 0.61
Dish Reserved	B	From Leg	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	26.46 27.34 28.21	11.12 12.21 13.22	0.35 0.47 0.61
Dish Reserved	C	From Leg	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	26.46 27.34 28.21	11.12 12.21 13.22	0.35 0.47 0.61
C10114331-12788 T-Arm Kit	C	None		0.0000	87.00	No Ice 1/2" Ice 1" Ice	6.67 7.70 8.74	6.67 7.70 8.74	0.48 0.56 0.64
Platform Mount [LP 303-1]	B	None		0.0000	78.00	No Ice 1/2" Ice 1" Ice	14.69 18.01 21.34	14.69 18.01 21.34	1.25 1.57 1.94
APXVAALL24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.63 12.06 13.34	0.18 0.31 0.46
APXVAALL24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.63 12.06 13.34	0.18 0.31 0.46
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.63 12.06 13.34	0.18 0.31 0.46

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVLL19P_43-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	8.65 9.30 9.92	6.05 7.34 8.49	0.08 0.14 0.22
APXVLL19P_43-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	8.65 9.30 9.92	6.05 7.34 8.49	0.08 0.14 0.22
APXVLL19P_43-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	8.65 9.30 9.92	6.05 7.34 8.49	0.08 0.14 0.22
AIR6419 B41 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	6.47 6.85 7.24	3.16 3.64 4.14	0.10 0.15 0.20
AIR6419 B41 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	6.47 6.85 7.24	3.16 3.64 4.14	0.10 0.15 0.20
AIR6419 B41 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	6.47 6.85 7.24	3.16 3.64 4.14	0.10 0.15 0.20
4480	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	2.84 3.05 3.27	1.38 1.54 1.70	0.08 0.10 0.13
4480	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	2.84 3.05 3.27	1.38 1.54 1.70	0.08 0.10 0.13
4480	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	2.84 3.05 3.27	1.38 1.54 1.70	0.08 0.10 0.13
4460	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	0.11 0.13 0.16
4460	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	0.11 0.13 0.16
4460	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	0.11 0.13 0.16
Generic Twin Style 1B-AWS	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	0.40 0.49 0.59	0.58 0.69 0.80	0.01 0.02 0.03
Generic Twin Style 1B-AWS	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	0.40 0.49 0.59	0.58 0.69 0.80	0.01 0.02 0.03
Generic Twin Style 1B-AWS	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	0.40 0.49 0.59	0.58 0.69 0.80	0.01 0.02 0.03
T-Mobile Reserved	A	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	18.37 20.12 20.87	7.17 9.86 10.68	0.24 0.35 0.46
T-Mobile Reserved	B	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	18.37 20.12 20.87	7.17 9.86 10.68	0.24 0.35 0.46
T-Mobile Reserved	C	From Leg	4.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice 1" Ice	18.37 20.12 20.87	7.17 9.86 10.68	0.24 0.35 0.46

Load Combinations

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	90 - 80	9.461	45	0.9082	0.0006
L2	80 - 55	7.563	45	0.8996	0.0006
L3	55 - 43	3.409	45	0.6332	0.0004
L4	46.5 - 1	2.405	45	0.4930	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
90.00	Lightning Rod 5/8" x 4'	45	9.461	0.9082	0.0006	32359
87.00	FFVV-65B-R2	45	8.888	0.9090	0.0006	32359
78.00	Platform Mount [LP 303-1]	45	7.190	0.8916	0.0006	12283

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	90 - 80	46.823	14	4.4991	0.0029
L2	80 - 55	37.431	14	4.4568	0.0028
L3	55 - 43	16.874	14	3.1358	0.0017
L4	46.5 - 1	11.903	14	2.4409	0.0013

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
90.00	Lightning Rod 5/8" x 4'	14	46.823	4.4991	0.0029	6605
87.00	FFVV-65B-R2	14	43.989	4.5030	0.0029	6605
78.00	Platform Mount [LP 303-1]	14	35.585	4.4168	0.0028	2505

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	90 - 80 (1)	TP18x18x0.375	10.00	0.00	0.0	20.7640	-3.19	654.07	0.005
L2	80 - 55 (2)	TP25.42x20x0.1875	25.00	0.00	0.0	15.0165	-8.77	878.47	0.010

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L3	55 - 43 (3)	TP28.03x25.42x0.1875	12.00	0.00	0.0	16.1167	-9.50	942.83	0.010
L4	43 - 1 (4)	TP36.77x26.8938x0.3125	45.50	0.00	0.0	36.1613	-16.37	2115.44	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	90 - 80 (1)	TP18x18x0.375	34.29	305.83	0.112	0.00	305.83	0.000
L2	80 - 55 (2)	TP25.42x20x0.1875	330.97	521.74	0.634	0.00	521.74	0.000
L3	55 - 43 (3)	TP28.03x25.42x0.1875	445.19	584.79	0.761	0.00	584.79	0.000
L4	43 - 1 (4)	TP36.77x26.8938x0.3125	1134.30	1903.66	0.596	0.00	1903.66	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	90 - 80 (1)	TP18x18x0.375	5.02	196.22	0.026	0.05	304.05	0.000
L2	80 - 55 (2)	TP25.42x20x0.1875	13.19	263.54	0.050	0.17	582.35	0.000
L3	55 - 43 (3)	TP28.03x25.42x0.1875	13.70	282.85	0.048	0.21	670.82	0.000
L4	43 - 1 (4)	TP36.77x26.8938x0.3125	16.52	634.63	0.026	0.41	2026.22	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	90 - 80 (1)	0.005	0.112	0.000	0.026	0.000	0.118	1.050	
L2	80 - 55 (2)	0.010	0.634	0.000	0.050	0.000	0.647	1.050	
L3	55 - 43 (3)	0.010	0.761	0.000	0.048	0.000	0.774	1.050	
L4	43 - 1 (4)	0.008	0.596	0.000	0.026	0.000	0.604	1.050	

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	90 - 80	Pole	TP18x18x0.375	1	-3.19	686.77	11.2	Pass
L2	80 - 55	Pole	TP25.42x20x0.1875	2	-8.77	922.39	61.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L3	55 - 43	Pole	TP28.03x25.42x0.1875	3	-9.50	989.97	73.7	Pass
L4	43 - 1	Pole	TP36.77x26.8938x0.3125	4	-16.37	2221.21	57.6	Pass
							Summary	
						Pole (L3)	73.7	Pass
						RATING =	**73.7**	**Pass**

APPENDIX C

Additional Calculations

Existing Flange Connection @ 80'
US-CT-1004 / AMTRAK_OldLyme5
2024702.16

Moment =	34.29	k-ft
Axial =	3.19	k
Shear =	5.02	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	Yes

Flange Bolts

# Bolts =	6	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	24.5	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.52	k
V_{ub} =	0.84	k
T_{ub} =	10.66	k
Max Comp. on Bolt =	11.72	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	2.3%
Tensile Capacity =	18.6%
Interaction Capacity =	3.7%
Bolt Capacity =	**18.6% OK**

Upper Flange Plate

Location =	External	
Plate Strength (F_y) =	50	ksi
Plate Tensile (F_u) =	65	ksi
Plate Thickness =	1.5	in
Outer Diameter =	29	in
ϕ_f =	0.9	
wcalc =	16.62	in
wmax =	15.00	in
w =	15.00	in
Z =	8.44	in^3
M_u =	38.09	k-in
ϕM_n =	379.69	k-in
Upper Plate Capacity =	**9.6% OK**	

Upper Stiffeners

Configuration =	None

Pole Information

Shaft Diam. (Upper) =	18	in
Thickness (Upper)=	0.375	in
# of Sides (Upper) =	Round	
F_y (Upper) =	35	ksi
Shaft Diam. (Lower) =	20	in
Thickness (Lower)=	0.1875	in
# of Sides (Lower) =	18	
F_y (Lower) =	65	ksi

Lower Flange Plate

Location =	External	
Plate Strength (F_y) =	50	ksi
Plate Thickness =	1.5	in
Outer Diameter =	29	in
b =	3.00	in
Le =	3.50	in
Z =	3.38	in^3
M_u =	13.32	k-in
ϕM_n =	151.88	k-in
Lower Plate Capacity =	**8.4% OK**	

Lower Stiffeners

Configuration =	2/Bolt	
Thickness =	1	in
Width =	3.5	in
Notch =	0.5	in
Height =	18	in
Stiffener Strength (F_y) =	50	ksi
Clear Spacing b/w Stiffeners=	3	in
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.3125	in
Horiz. Weld Type =	Fillet	
Fillet Size =	0.3125	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	4.85	k
Vert. Weld Capacity =	2.0%	
Horiz. Weld Capacity =	11.2%	
Stiffener Capacity =	3.1%	
Controlling Capacity =	**11.2%**	**OK**

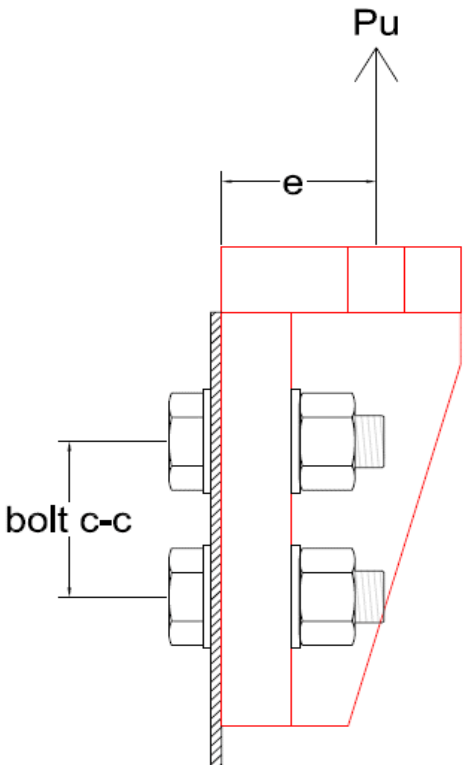
EXTENSION BRACKET BOLT ANALYSIS - TIA-222-H

Site Name:	US-CT-1004 / AMTRAK_OldLyme5
GPD Project No:	GPD Project #: 2024701.69
Sheet Application:	Analysis
Max Capacity:	100%
Apply TIA-222-H Section 15.5?	Yes
Seismic Design Category:	B

Loading Information		
Elevation =	80	ft
Flange Bolt Compression Force =	11.72	kips
Flange Bolt Tension Force =	10.66	kips
Flange Bolt Eccentricity, e =	2.25	in

Tower Information		
Shaft Thickness, t =	0.1875	in
Shaft Fu =	80	ksi

Bolt Calculations		
Bolt Type =	A325N	
# Bolts in Connection =	4	
Bolt C-C Spacing =	3	in
Bolts Above Neutral Axis, n' =	2	
Moment Arm, dm =	6	in
Bolt/Shear Sleeve ø =	1	in
Bolt Hole ø =	1.0625	in
Bolt Head ø (Flat-Flat) =	1.625	in
Does Bolt Have a Washer?	No	
Washer ø =	2	in
$\phi R_{n,\ shear}$ =	35.34	kips/bolt
$\phi R_{n,\ bearing}$ =	28.80	kips/bolt
$\phi R_{n,\ tension}$ =	54.54	kips/bolt
$\phi R_{n,\ pull\text{-}out}$ =	30.78	kips/bolt
$V_{u,\ bolt}$ =	2.93	kips/bolt
$T_{u,\ bolt}$ =	2.20	kips/bolt
Connection Capacity =	9.7%	OK



Existing Flange Connection @ **55'**
US-CT-1004 / AMTRAK_OldLyme5
2024702.16

Moment =	330.97	k-ft
Axial =	8.77	k
Shear =	13.19	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	Yes

Flange Bolts		
# Bolts =	10	
Bolt Type =	A325	
Threads Included? =	Yes	
Bolt Diameter =	1	in
Bolt Circle =	28.375	in
ϕ_t =	0.75	
ϕ_v =	0.75	
F_{ub} =	120	ksi
A_b =	0.785	in^2
A_n =	0.606	in^2
ϕR_{nv} =	35.34	k
ϕR_{nt} =	54.54	k
ϕR_{nt} (adjusted)=	54.50	k
V_{ub} =	1.32	k
T_{ub} =	55.08	k
Max Comp. on Bolt =	56.83	k

Prying Action Check
N/A, top flange thickness > tc

Shear Capacity =	3.6%
Tensile Capacity =	96.2%
Interaction Capacity =	97.3%
Bolt Capacity =	**97.3% OK**

Upper Flange Plate		
Location =	External	
Plate Strength (F_y) =	60	ksi
Plate Tensile (F_u) =	75	ksi
Plate Thickness =	1	in
Outer Diameter =	32.625	in
ϕ_f =	0.9	
wcalc =	12.61	in
wmax =	18.77	in
w =	12.61	in
Z =	3.15	in^3
M_u =	84.72	k-in
ϕM_n =	170.21	k-in
Upper Plate Capacity =	**47.4% OK**	

Upper Stiffeners	
Configuration =	None

Pole Information		
Shaft Diam. (Upper) =	25.42	in
Thickness (Upper)=	0.1875	in
# of Sides (Upper) =	18	
F_y (Upper) =	65	ksi
Shaft Diam. (Lower) =	25.42	in
Thickness (Lower)=	0.1875	in
# of Sides (Lower) =	18	
F_y (Lower) =	65	ksi

Lower Flange Plate		
Location =	External	
Plate Strength (F_y) =	60	ksi
Plate Thickness =	1	in
Outer Diameter =	32.625	in
wcalc =	12.61	in
wmax =	18.77	in
w =	12.61	in
Z =	3.15	in^3
M_u =	84.72	k-in
ϕM_n =	170.21	k-in
Lower Plate Capacity =	**47.4% OK**	

Lower Stiffeners	
Configuration =	None

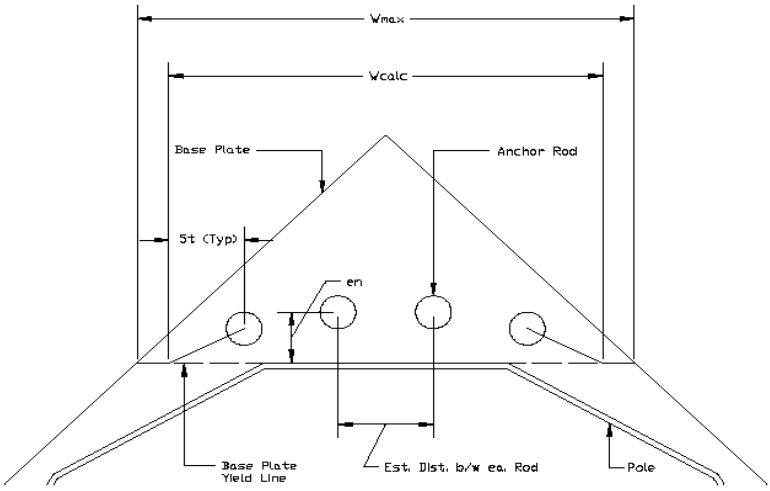
Anchor Rod and Base Plate Stresses, TIA-222-H-1
US-CT-1004 / AMTRAK_OldLyme5
2024702.16

Overturning Moment =	1134.00	k*ft
Axial Force =	16.00	k
Shear Force =	16.00	k

Maximum Capacity	100%
Apply TIA-222-H Section 15.5?	Yes

Anchor Rods		
Pole Diameter =	36.77	in
Number of Rods =	12	
Rod Yield Strength, F_y =	75	ksi
Rod Ultimate Strength, F_u =	100	ksi
Rod Circle =	42.75	in
Rod Diameter =	2.25	in
Rod Projection, l_{ar} =	2.25	in
Is grout present?	No	
Max Tension on Rod, P_{ut} =	104.63	k
Max Compression on Rod, P_{uc} =	107.29	k
Shear on Rod, V_u =	1.33	k
Moment on Rod, M_u =	0.00	k-in
Tension Interaction =	**17.6%**	**OK**
Compression Interaction =	**38.1%**	**OK**

Base Plate		
Plate Yield Strength, F_y =	50	ksi
ϕ =	0.9	
Plate Thickness =	2.5	in
Plate Width =	43.5	in
Est. Dist. b/w ea. Rod =	6	in
w_{calc} =	36.88	in
w_{max} =	24.75	in
w =	24.75	in
Z =	38.67	in^3
M_u =	763.77	k-in
φM_n =	1740.11	k-in
Base Plate Capacity =	**41.8%**	**OK**



Mat Foundation Analysis
US-CT-1004 / AMTRAK_OldLyme5
2024702.16

General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-H
Apply TIA-222-H Section 15.5?	Yes
Soil Code	AASHTO 2012
Concrete Code	ACI 318-14
Seismic Design Category	B
Tower Height	90 ft
Bearing On	Soil
Foundation Type	Monopole Pad
Pier Type	Round
Reinforcing Known	Yes
Max Bearing Capacity	100%
Max Overturning Capacity	100%

Tower Reactions	
Moment, M	1134 k-ft
Axial, P	16 k
Shear, V	16 k

Pad & Pier Geometry	
Pier Diameter, ø	5.5 ft
Pad Length, L [y]	18.5 ft
Pad Width, W [x]	18.5 ft
Pad Thickness, t	1.5 ft
Depth, D	5.5 ft
Height Above Grade, HG	1 ft
Tower Centroid, X	9.25 ft
Tower Centroid, Y	9.25 ft
Tower Eccentricity	0.0000 ft

Pad & Pier Reinforcing	
Rebar Fy	60 ksi
Concrete F'c	4 ksi
Pier Reinforcing Clear Cover	3 in
Shear Rebar Type	Tie
Shear Rebar Size	# 4
Pad Reinforcing Clear Cover	3 in
Reinforced Top & Bottom?	Yes
Top and Bot. Reinf. Different?	No
Pad Reinforcing Size	# 8
Pad Quantity Per Layer	20
Pier Rebar Size	# 7
Pier Quantity of Rebar	30

Soil Properties	
Soil Type	Granular
Soil Unit Weight	120 pcf
Angle of Friction, ø	30
Base Friction Coeff. Provided in Geo?	Yes
Base Friction Coefficient, µ	0.5
Bearing Type	Net
Ultimate Bearing	6 ksf
Water Table Depth	99 ft
Neglected Depth	3.5 ft

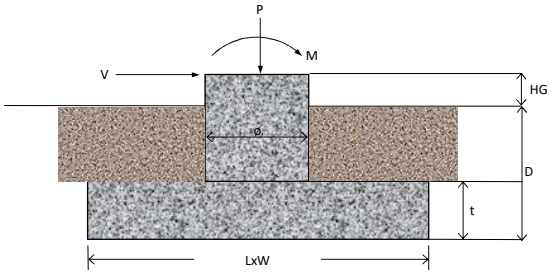
GPD Mat Foundation Analysis - V4.4

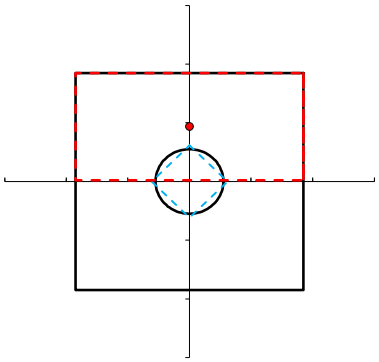
Bearing Summary					
Case	*Demand/Limits*	*Capacity/Availability*	*Check*	*Eccentricity*	*Load Case*
Qxmax	1.69 ksf	5.00 ksf	OK, <= 100%	L/5.2	1.2D+1.0W
Qymax	1.69 ksf	5.00 ksf	OK, <= 100%	W/5.2	1.2D+1.0W
Qmax @ 45°	1.68 ksf	5.00 ksf	OK, <= 100%	W/7.6	1.2D+1.0W
Controlling Capacity		**32.2%**	**Pass**		

Overturning Summary					
Case	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Ovtx	1098.3 k-ft	2173.1 k-ft	48.1%	OK	0.9D+1.0W
Ovty	1098.3 k-ft	2173.1 k-ft	48.1%	OK	0.9D+1.0W
Ovtxy	758.4 k-ft	2173.1 k-ft	33.2%	OK	0.9D+1.0W
Controlling Capacity		**48.1%**	**Pass**		

Sliding Summary					
Case	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Slidingx	16.0 k	126.5 k	12.0%	OK	0.9D+1.0W
Slidingy	16.0 k	126.5 k	12.0%	OK	0.9D+1.0W
Controlling Capacity		**12.0%**	**Pass**		

Reinforcement Summary					
Component	*Demand/Limits*	*Capacity/Availability*	*Check*		*Load Case*
Pad Flexural Bending	364.7 k-ft	915.2 k-ft	38.0%	OK	0.9D+1.0W
One-Way Shear in Pad	85.7 k	284.3 k	28.7%	OK	0.9D+1.0W
Two-Way Shear in Pad	266.3 k	714.6 k	35.5%	OK	0.9D+1.0W
Compression on Pier	37.4 k	15121.7 k	0.2%	OK	1.2D+1.0W
Moment on Pier	1213.3 k-ft	2295.2 k-ft	50.4%	OK	1.2D+1.0W
Pad Flexural 2-Way	728.4 k-ft	971.4 k-ft	71.4%	OK	1.2D+1.0W
As Min Pad Met?	1.71 sq. in.	0.38 sq. in.	Yes		
As Min Pier Met?	18.00 sq. in.	11.39 sq. in.	Yes		
Controlling Capacity		**71.4%**	**Pass**		





APPENDIX D

Referenced Modification Drawings

AMTRAK_OLDLYME5

SITE #: US-CT-1004

CLIENT #: BOBOS01210A

PHOENIX TOWER INTERNATIONAL

TOWER INFORMATION:

TOWER DRAWINGS:	SABRE/JOB #: 40204
TOWER HEIGHT/TYPE:	80'-0" MONOPOLE
TOWER LOCATION:	
LAT.:	41° 17' 47.36"
LONG.:	-72° 15' 34.89"
STREET ADDRESS:	387 SHORE ROAD
CITY, STATE ZIP:	OLD LYME, CT 6371
COUNTY:	NEW LONDON
REFERENCED ANALYSIS:	GPD/PROJ #: 2024701.09 REV 1
ANALYSIS DATE:	11/20/2023

CODE COMPLIANCE:

GOVERNING CODES:	TIA-222-H & 2022 CSBC
WIND SPEEDS:	126 MPH 3 SECOND GUST 50 MPH 3 SECOND GUST
ICE THICKNESS:	1"
RISK CATEGORY:	II
EXPOSURE CATEGORY:	C
TOPO CATEGORY:	1

PROJECT CONTACTS:

CLIENT CONTACT:

CHELSI MONIHAN
525 3RD STREET, SUITE 200
LAKE OSWEGO, OR 97034
(503) 593-0282

ENGINEER CONTACT:

GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION
520 SOUTH MAIN STREET, SUITE 2531
AKRON, OH 44311
(330) 572-2100
FOR QUESTIONS PLEASE EMAIL:
GPDMODS@GPDGROUP.COM

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM GPD TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTING QUALIFIED ENGINEERING SERVICES PLEASE CONTACT GPD AT GPDMODS@GPDGROUP.COM.

SHEET INDEX:

STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKSNAYDER
No. 30026
PROFESSIONAL ENGINEER

12/11/23

GPD Engineering and Architecture Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 Fax 330.572.2102

PHOENIX TOWER INTERNATIONAL
AMTRAK_OLDLYME5
SITE #: US-CT-1004

DESIGN DRAWINGS PREPARED FOR:
dish
CLIENT #: BOBOS01210A

REV.	DATE	DESCRIPTION
0	12/11/23	INITIAL RELEASE

AMTRAK_OLDLYME5
387 SHORE ROAD
OLD LYME, CT 6371

TITLE SHEET

ISSUED FOR:	
PERMIT	12/11/2023
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
BK	RV
PROJECT MANAGER	APPROVED BY
TR	CJS

JOB NO.
2024701.14

T-01

MODIFICATION INSPECTION CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
	PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING	THIS CHECKLIST SERVES AS A GUIDELINE FOR THE REQUIRED CONSTRUCTION DOCUMENTS AND INSPECTIONS FOR THIS MODIFICATION
X	EOR APPROVED SHOP DRAWINGS	PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS TO THE EOR FOR APPROVAL.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR STATING THAT ALL FABRICATION (I.E. DRILLING, CUTTING, WELDING, SHEARING, MILLING, GALVANIZING, ETC) HAS BEEN DONE ACCORDING TO INDUSTRY STANDARDS AND ALL APPLICABLE ANSI/ASTM STANDARDS.
X	FABRICATOR CERTIFIED WELD INSPECTION	A CWI SHALL INSPECT ALL FABRICATION WELDS IN ACCORDANCE WITH AWS D1.1 AND A REPORT DETAILING THE RESULTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR ALL MATERIAL USED. MTR'S SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR NDE INSPECTION REPORT	CRITICAL SHOP WELDS THAT REQUIRE ADDITIONAL TESTING ARE NOTED WITHIN THE MODIFICATION DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION ON ALL PJP, CJP, AND FILLET WELDS >5/16" IN ACCORDANCE WITH AWS D1.1 AND A REPORT DETAILING THE RESULTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	NDE OF MONOPOLE BASE PLATE	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	PACKING/SHIPPING LIST FOR ALL MATERIAL USED DURING CONSTRUCTION OF THE MODIFICATION SHALL BE PROVIDED.
	DURING CONSTRUCTION	
NA	PRE-POUR REBAR INSPECTIONS	A 3RD PARTY VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED **BEFORE** PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	POST-INSTALLED REBAR AND/OR DOWEL INSPECTIONS	PHOTOGRAPHIC DOCUMENTATION OF DRILL HOLE SIZES AND DEPTHS SHALL BE RECORDED **BEFORE** SETTING THE POST INSTALLED REBAR AND DOWELS WITH EPOXY/GROUT.
NA	CONCRETE COMP. STRENGTH & SLUMP TEST	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE MI REPORT.
NA	EARTHWORK: LIFT & DENSITY REPORT	REPORT DETAILING SOIL COMPACTION TEST RESULTS TO BE INCLUDED IN THE MI REPORT.
NA	MICROPILE/ROCK ANCHOR	MICROPILES AND ROCK ANCHORS SHALL BE INSPECTED BY A 3RD PARTY. INSPECTION SHALL VERIFY ANCHOR SIZE, STEEL GRADE, AND HOLE DEPTHS. PHOTOGRAPHIC DOCUMENTATION OF ALL MEASUREMENTS ALONG WITH THE PULL TEST RESULTS SHALL BE INCLUDED IN THE MI REPORT.
NA	HELICAL ANCHOR	HELICAL INSTALLER SHALL SUBMIT FINAL SEALED HELICALS DESIGN, TORQUE LOGS, AND FINAL LOAD TEST RESULTS TO BE INCLUDED IN THE MODIFICATION INSPECTION REPORT.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED AND SHALL INCLUDE PHOTO VERIFICATION OF HOLE DEPTH, HOLE CLEANOUT AND ROUGHENING, AND EPOXY LABELING. REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	3RD PARTY FIELD CERTIFIED WELD INSPECTION	A CWI SHALL CONDUCT A VISUAL INSPECTION OF ALL FIELD WELDS IN ACCORDANCE WITH AWS D1.1. CRITICAL WELDS THAT REQUIRE ADDITIONAL TESTING ARE NOTED IN THE MODIFICATION DRAWINGS.
X	ON-SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS.
X	TENSION TWIST & PLUMB DELIVERABLES	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THE TOWER TWIST AND PLUMB CONDITION AS WELL AS THE WIRE TENSIONS (AS REQUIRED). REPORT SHALL INCLUDE PRE-TENSION, PLUMB & TWIST RESULTS, POST-TENSION REPORT, POST PLUMB AND TWIST REPORT, AND PHOTOS OF THE TENSION GAUGES FOR ALL GUY WIRES.
X	GC AS-BUILT DRAWINGS	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED.
X	BOLT PRE-TENSION VERIFICATION	TURN-OF-THE NUT METHOD IS THE DEFAULT METHOD FOR PRE-TENSIONING BOLTS. MATCH-MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES AND SHALL BE APPLIED IN ACCORDANCE WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. ALTERNATIVE PRE-TENSIONING METHODS ARE NOT ALLOWED WITHOUT PRIOR EOR CONSENT.
	POST-CONSTRUCTION	
X	CONSTRUCTION COMPLIANCE LETTER	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE MODIFICATION DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI INSPECTOR. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	FOUNDATION SEALER	PHOTOGRAPHIC DOCUMENTATION OF THE FOUNDATION SEALING SHALL BE INCLUDED IN THE MI REPORT.
NA	BOLT HOLE INSTALLATION VERIFICATION REPORT	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS OF 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.

*THE MI CHECKLIST SHALL BE REVIEWED PRIOR TO THE START OF CONSTRUCTION. ALL PARTIES TO THE MODIFICATION SHALL UNDERSTAND ALL REQUIREMENTS AND INSPECTION/DOCUMENTATION THAT IS APPLICABLE TO THE SCOPE OF WORK THEY ARE PERFORMING. ERRORS ON THE MI CHECKLIST SHALL BE BROUGHT TO THE ATTENTION OF THE TOWER/STRUCTURE OWNER AND EOR AS SOON AS POSSIBLE.

MODIFICATION INSPECTION NOTES

GENERAL

1. THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE INDUSTRY STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.
3. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE TOWER/STRUCTURE OWNER AND EOR FOR EVALUATION.
4. TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. CONTACT LISTED ON THE TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.

FAILING INSPECTION CORRECTIONS

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MI INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
   - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL MODIFICATION DRAWINGS AND COORDINATE A SUPPLEMENT MODIFICATION INSPECTION.
   - OR, WITH TOWER OWNER'S APPROVAL, THE GC MAY WORK WITH THE ENGINEER OF RECORD TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

SERVICE LEVEL COMMITMENT

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
   - THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
   - THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.
   - IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW THE FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
   - PRE-CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
   - ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF THE MODIFICATIONS.
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKS
No. 30020
LICENSED PROFESSIONAL ENGINEER

12/11/23

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PHOENIX TOWER INTERNATIONAL

AMTRAK_OLDLYME5
SITE #: US-CT-1004

DESIGN DRAWINGS PREPARED FOR:
dish

CLIENT #: BOBOS01210A

REV	DATE	DESCRIPTION
0	12/11/23	INITIAL RELEASE

AMTRAK_OLDLYME5
387 SHORE ROAD
OLD LYME, CT 6371

MODIFICATION INSPECTION CHECKLIST

ISSUED FOR:	
PERMIT	12/11/2023
BID	-
CONSTRUCTION	-
RECORD	-

ENGINEER	DESIGNER
BK	RV
PROJECT MANAGER	APPROVED BY
TR	CJS

JOB NO.
2024701.14

MI-01

GENERAL NOTES

1. THIS DESIGN IS IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, AWS, ANSI TIA-322, AND AISC. MATERIALS, FABRICATION, INSTALLATION, AND ALL OTHER SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

2. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, ARE IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD.

3. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND NOTE ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS OR THAT INTERFERE WITH THE CONTINUOUS INSTALLATION OF THE MODIFICATIONS. CONTRACTOR SHALL NOTE ALL ATTACHMENT POINTS, ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. GPD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF ANY DEVIATION PRIOR TO ORDERING MATERIAL.

4. ALL MATERIAL SPECIFIED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER.

5. CONTRACTOR IS RESPONSIBLE FOR ENGAGING A MODIFICATION INSPECTOR AT THE TIME OF AWARD TO COORDINATE AN INSPECTION SCHEDULE AND ENSURE PROPER DOCUMENTATION IS RETAINED THROUGHOUT THE PROJECT. REFER TO SHEET MI-01 FOR MODIFICATION INSPECTION CHECKLIST.

6. SPECIAL INSPECTIONS: UNLESS OTHERWISE SPECIFIED WITHIN THE PLANS OR REQUIRED BY THE BUILDING OFFICIAL, SPECIAL INSPECTIONS AND TESTS ARE NOT REQUIRED FOR GROUP U OCCUPANCIES, BUT NOT LIMITED TO, THOSE LISTED IN SECTION 312.1 (IBC SECTION 1704.2, EXCEPTION 2). CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING IF ANY SPECIAL INSPECTIONS ARE REQUIRED BY THE JURISDICTION HAVING AUTHORITY. IF REQUIRED BY THE JURISDICTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND SCHEDULING OF THE SPECIAL INSPECTIONS WITH THE ENGINEER OF RECORD. IN THOSE CASES, SPECIAL INSPECTIONS MUST BE COMPLETED PRIOR TO FINAL INSPECTION APPROVAL.

7. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

8. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND GPD THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND GPD ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND GPD.

9. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER.

10. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

11. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THEIR WORK FORCE, THE WORK AREA, ADJACENT AREA, AND ANY PROPERTY OCCUPANTS WHO MAY BE AFFECTED BY THE WORK UNDER CONTRACT. THE CONTRACTOR SHALL REVIEW AND ABIDE BY ALL LANDOWNER, PRIME CONTRACTOR, CARRIER, OSHA, AND LOCAL SAFETY GUIDELINES. ALL TOWER WORKERS SHALL UTILIZE APPROPRIATE FALL PROTECTION AND SAFETY EQUIPMENT THAT IS UP-TO-DATE AND INSPECTED PER OSHA AND INDUSTRY GUIDELINES. ALL WORKERS SHALL BE TRAINED AND MONITORED TO ENSURE SAFE WORKING PRACTICES ARE MAINTAINED.

12. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

13. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

14. THE STRUCTURAL INTEGRITY OF THIS DESIGN EXTENDS TO THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE THE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.

15. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH). CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER SHORING, TEMPORARY GLOBAL TOWER SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

16. MODIFICATIONS SHOWN SHALL BE INSTALLED ON ALL THREE (3) TOWER LEGS/FACES UNLESS NOTED OTHERWISE.

17. FAA/FCC FILING AND LIGHTING MAY BE REQUIRED. ALL GOVERNMENTAL REGULATORY DETERMINATIONS AND FILINGS BY OTHERS, NOT GPD.

18. VERIFY IF THIS STRUCTURE IS AN FM TOWER AND TAKE NECESSARY ACTIONS TO PROVIDE SAFE WORKING CONDITIONS INCLUDING, BUT NOT LIMITED TO, HAVING FM SIGNAL TURNED OFF. CONTRACTOR SHALL HAVE PROPER RADMAN FOR NOTIFICATION OF EXCESSIVE RF EXPOSURE FOR ALL INDIVIDUALS WORKING ON SITE IF FM ANTENNAS ARE PRESENT.

19. ALL MANUFACTURERS HARDWARE AND ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY. DEVIATION FROM THE INSTRUCTIONS IS UNACCEPTABLE AND REQUIRES WRITTEN APPROVAL FROM ENGINEER.

20. DO NOT SCALE DRAWINGS.

21. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL ASSOCIATED HARDWARE SHALL NOT BE IMPEDED OR MODIFIED WITHOUT THE WRITTEN CONSENT OF GPD.

22. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

23. IMPROPER FIT-UP OF NEW BOLTED HARDWARE DUE TO OVERSIZED , DOUBLE-PUNCHED, OR SLOTTED HOLES FOUND ON THE EXISTING STRUCTURE SHALL BE REPORTED TO GPD AND THE TOWER OWNER IMMEDIATELY. INSTALLATION OF SUCH HARDWARE WILL NOT BE ACCEPTABLE AND ALL COSTS ASSOCIATED WITH REMEDYING THE INSTALLATION WILL BE THE RESPONSIBILITY OF THE GC.

STRUCTURAL STEEL NOTES

1. ALL NEW STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123, ASTM A153/A153M, OR ASTM A653 G90, AS APPLICABLE FOR FULL WEATHER PROTECTION. FOR HIGH STRENGTH STEEL FASTENERS WHERE HOT-DIPPED GALVANIZING IS NOT PERMITTED MAGNI 565 COATING (OR ENGINEER APPROVED EQUIVALENT) SHALL BE USED. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING TOWER STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

2. ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING, BUT NOT LIMITED TO, DAMAGED MEMBERS, FIELD WELDS, FIELD CUT MEMBERS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE APPLICABLE), SHALL BE SOLVENT CLEANED AND HAVE TWO (2) COATS OF BRUSHED ON ZRC ZINC RICH COLD GALVANIZING PAINT APPLIED AND SHALL BE PAINTED TO MATCH THE TOWER FINISH (WHERE APPLICABLE). PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MODIFICATION INSPECTOR.

3. ALL STRUCTURAL STEEL SHALL CONFORM TO THE LISTED REQUIREMENTS U.N.O. IN THESE DRAWINGS:

MONOPOLES:

• STRUCTURAL SHAPES AND PLATE:	ASTM A572 GRADE 50 (Fy=50 KSI)
• WELDING ELECTRODES, SMAW:	E70XX
• WELDING ELECTRODES, FCAW:	E7XT-XX

SELF-SUPPORT AND GUYED TOWERS

• STRUCTURAL SHAPES AND PLATE:	ASTM A572 GRADE 50 (Fy=50 KSI)
• GUY WIRES:	ASTM A475 GRADE EHS
• BRIDGE STRAND:	ASTM A586 GRADE 1
• WELDING ELECTRODES, SMAW:	E70XX
• WELDING ELECTRODES, FCAW:	E7XT-XX

ALL TOWER TYPES:

• STEEL ANGLE (BRACING):	ASTM A572 GRADE 50 (Fy=50 KSI)
• STEEL ANGLE (LEGS):	ASTM A572 GRADE 50 (Fy=50 KSI)
• SOLID ROUND:	ASTM A36 (FY=36 KSI)
• PIPE (ROUND):	ASTM A53 GRADE B (Fy=35 KSI)
• HSS TUBE (ROUND):	ASTM A500 GRADE C (Fy=50 KSI)
• HSS TUBE (SQUARE):	ASTM A500 GRADE C (Fy=50 KSI)
• ANCHOR RODS:	ASTM A193 GRADE B7
• BOLTS:	ASTM A325 TYPE 1
• U-BOLTS:	ASTM A307 GRADE A
• NUTS:	ASTM A563 GRADE DH
• NUTS (ANCHOR RODS):	ASTM A194 GRADE 2H
• WASHERS (AS REQUIRED):	ASTM F436 TYPE 1
• LOCKING DEVICES:	PAL-NUT OR SPLIT WASHER

4. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222 REQUIREMENTS, U.N.O..

5. ALL BOLTS, INCLUDING U-BOLTS, SHALL BE TIGHTENED IN ACCORDANCE WITH AISC "SNUG TIGHT" REQUIREMENTS, U.N.O..

6. ALL U-BOLTS SPECIFIED SHALL MEET THE REQUIREMENTS OF ASME B18.31.5-2011 BENT BOLTS.

7. ALL NEW BOLT ASSEMBLIES SHALL BE OF SUFFICIENT LENGTH TO ENSURE THE END OF THE BOLT IS FLUSH WITH, OR PROTRUDES BEYOND, THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETE.

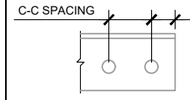
8. STRUCTURAL STEEL SHOP DRAWINGS SHALL BE PROVIDED TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

9. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

10. WELDING OF ANY KIND IS NOT PERMITTED ON SITE UNLESS SPECIFIED WITHIN THESE DRAWINGS. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING OR OPEN FLAME IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

BOLT SCHEDULE

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	C-C SPACING
1/2	9/16	9/16x11/16	7/8	1-1/2
5/8	11/16	11/16x7/8	1-1/8	1-7/8
3/4	13/16	13/16x1	1-1/4	2-1/4
7/8	15/16	15/16x1-1/8	1-1/2	2-5/8
1	1-1/8	1-1/8x1-5/16	1-3/4	3

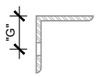


-DIMENSIONS GIVEN IN INCHES

-SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED ON THE PLANS

WORKABLE GAGES

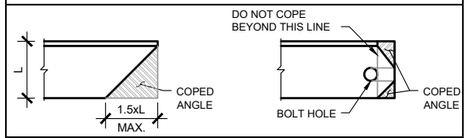
LEG	6	5	4	3-1/2	3	2-1/2	2	1-3/4
G	3-1/2	3	2-1/2	2	1-3/4	1-3/8	1-1/8	1



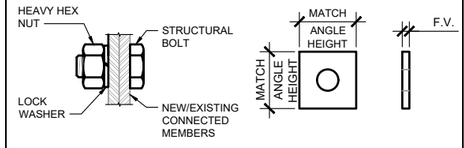
-DIMENSIONS GIVEN IN INCHES

-MATCH EXISTING WHEN APPLICABLE

ALLOWABLE ANGLE COPE



BOLTING DETAILS



TYPICAL BOLT ASSEMBLY

TYPICAL STITCH WASHER

1. ALL DIMENSIONS REPRESENTED IN THESE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. AS AN ALTERNATIVE TO USING A LOCK WASHER PAL-NUTS CAN BE INSTALLED ABOVE THE HEX NUT. ALL BOLTS MUST HAVE LOCKING DEVICES INSTALLED AS PART OF THE ASSEMBLY.
4. ADDITIONAL HARDENED FLAT WASHERS MAY BE REQUIRED IN CASES WHERE OVERSIZED OR SLOTTED HOLES ARE PRESENT. EXISTING CONDITIONS SHALL BE APPROVED BY THE EOR.

12/11/23

GPD Engineering and Architecture Professional Corporation
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Akron, OH 44311
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OLD LYME, CT 6371

PROJECT NOTES

ISSUED FOR:	
PERMIT	12/11/2023
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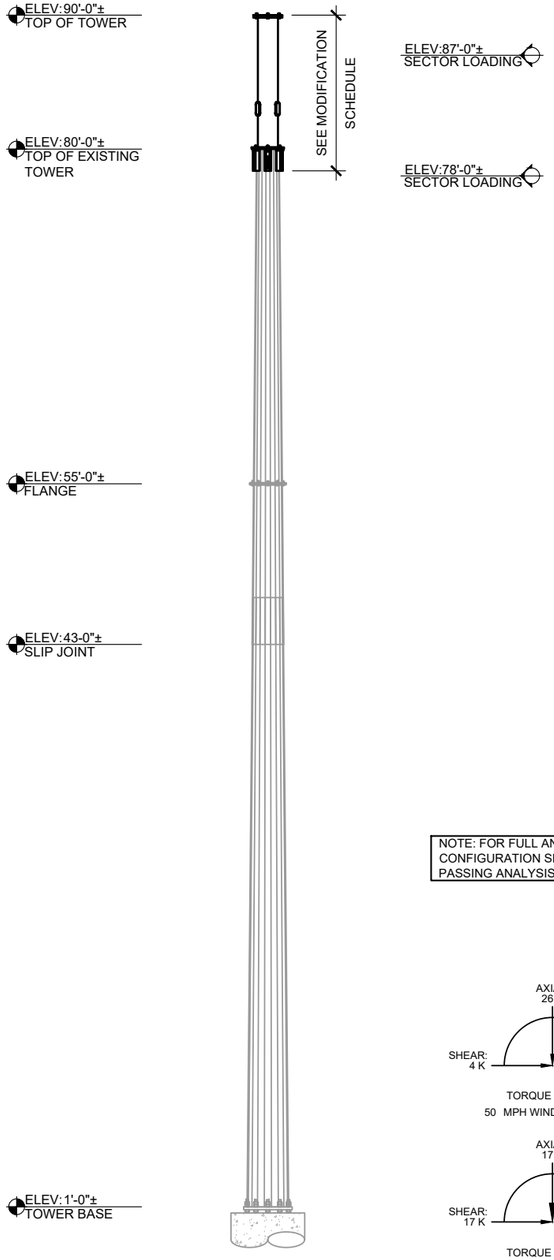
N-01



TOWER ELEVATION

N.T.S.

POLE SPECIFICATIONS	
POLE SHAPE:	18-SIDED
TAPER:	0.2171 IN/FT
SHAFT STEEL	ASTM A572 GRADE 65
BASE PLATE STEEL:	ASTM A572 GRADE 50
ANCHOR RODS:	2-1/4"Ø ASTM A615 GRADE 75

ORIGINAL POLE SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER @ TOP	DIAMETER @ BOTTOM
1	25.00	0.1875		20.00	25.42
2	12.00	0.1875	42.0	25.42	28.03
3	45.50	0.3125		26.89	36.77

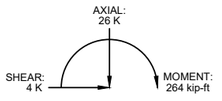
NOTE: DIMENSIONS DO NOT INCLUDE GALVANIZING TOLERANCES.

MODIFICATION SCHEDULE

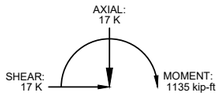
MEMBER TYPE	ELEVATION	EXISTING MEMBER	NEW MEMBER	REFERENCE DETAIL/SHEET	NOTES
LIGHTNING ROD	90'-0"±	-	-	SHEET S-02	RELOCATE LIGHTNING ROD TO THE TOP OF THE NEW EXTENSION.
TOWER EXTENSION	80'-0"± TO 90'-0"±	-	P18 STD	SHEETS S-02 & S-03	INSTALL A NEW EXTENSION TO THE TOP OF THE EXISTING TOWER.
BOLT ON BRACKET	80'-0"±	-	(6) BOLT ON BRACKETS	SHEETS S-02 & S-03	INSTALL NEW FLANGE CONNECTION BRACKET ASSEMBLIES TO THE EXISTING TOWER.
CONNECTION BOLTS	80'-0"±	-	(6) 1"Ø FLANGE BOLTS & (24) BRACKET BOLTS	SHEETS S-02 & S-03	NEW FLANGE BOLTS AND BRACKET BOLTS SHALL BE PRE-TENSIONED PER AISC TURN-OF-THE NUT METHOD, MATCH MARKING SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES.
COVER PLATE	80'-0"±	-	-	SHEET S-02	REMOVE EXISTING COVER PLATE & INTERNAL FLAT BAR AT THE TOP OF EXISTING TOWER.
SAFETY CLIMB	-	-	-	-	REMOVE AND RELOCATE SAFETY CLIMB AS REQUIRED.
TOWER PLUMB			-	-	UPON COMPLETION OF MODIFICATIONS CHECK AND ADJUST PLUMB FOR THE ENTIRE TOWER.

NOTES:
1. ALL MATERIAL REMOVED FROM THE TOWER SHALL BE DISPOSED OF BY THE CONTRACTOR OFF SITE.

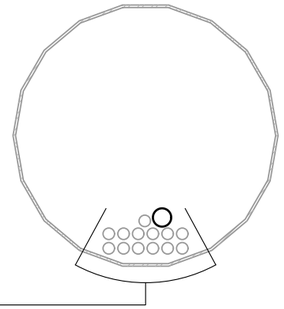
NOTE: FOR FULL ANTENNA CONFIGURATION SEE ASSOCIATED PASSING ANALYSIS.



TORQUE - 1 kip-ft
50 MPH WIND - 1.00 IN. ICE



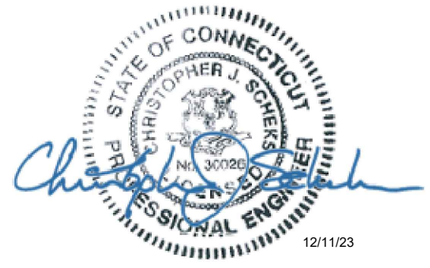
TORQUE - 6 kip-ft
REACTIONS - 126 mph WIND



(EXISTING)
(12) 7/8" COAX TO 78 FT LEVEL
(1) 6x24 HYBRID TO 78 FT LEVEL
(PROPOSED)
(1) 1.411" COAX TO 87 FT LEVEL

COAX LAYOUT

N.T.S



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TOWER ELEVATION & MODIFICATION SCHEDULE

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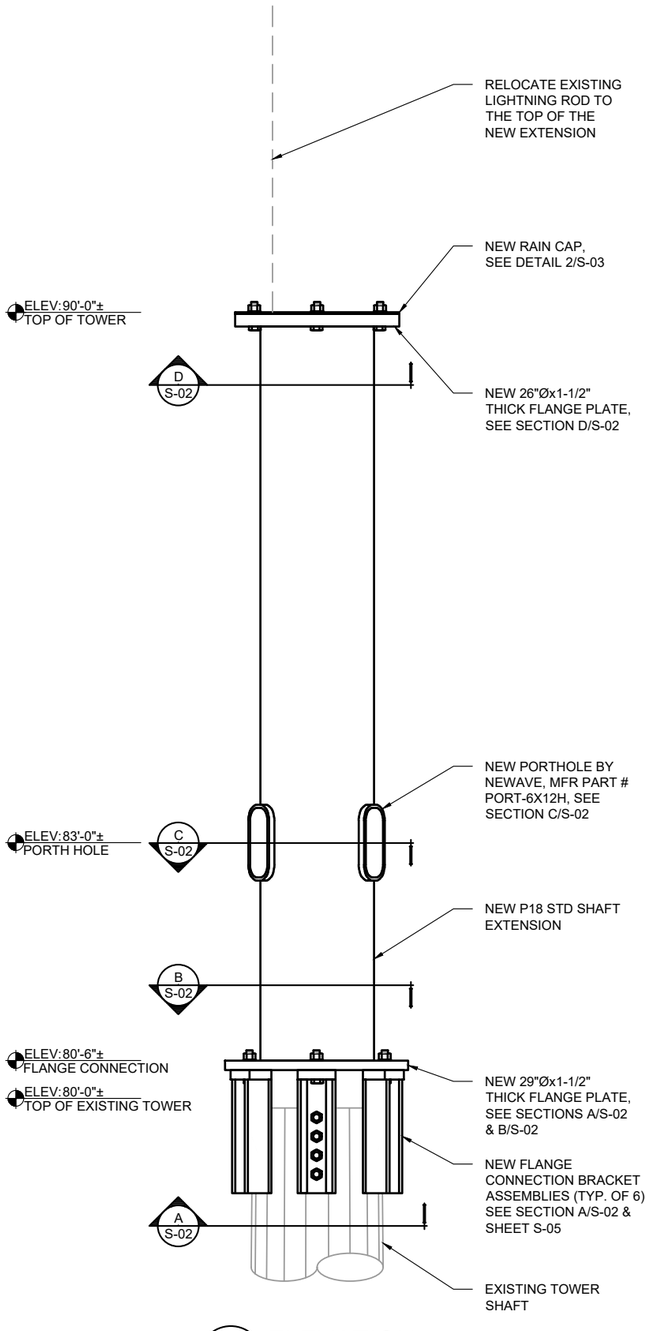
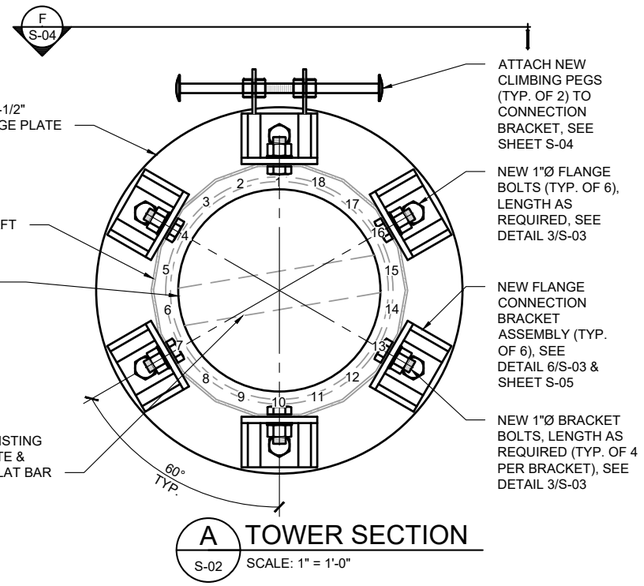


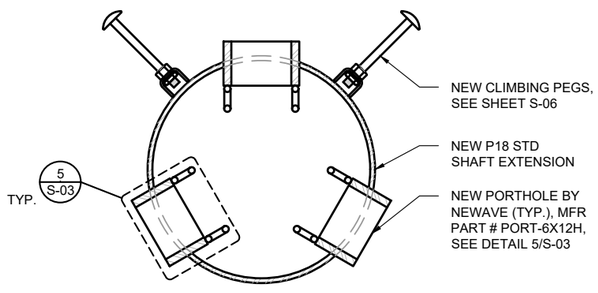
1 ELEVATION
S-02 — SCALE: 1/2" = 1'-0"

NOTES:
1. CLIMBING PEGS NOT SHOWN FOR CLARITY.

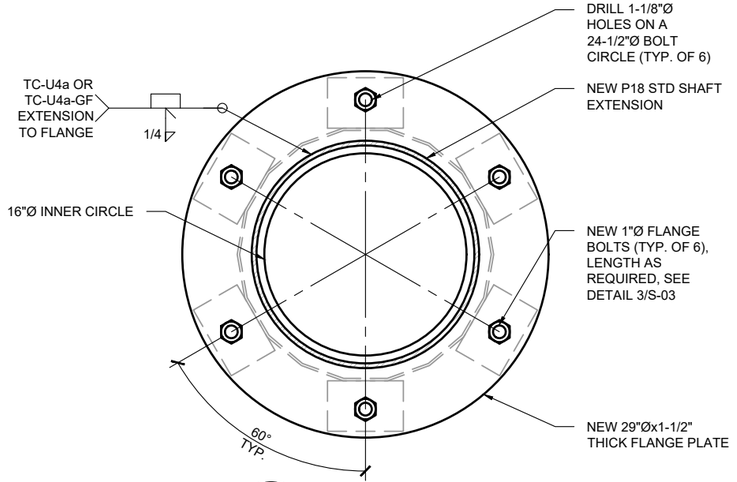


A TOWER SECTION
S-02 — SCALE: 1" = 1'-0"

NOTES:
1. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE THE EXISTING TOWER SHAFT DURING THE REMOVAL OF THE EXISTING COVER PLATE AND FLAT BAR.
2. NEW FLANGE BOLTS AND BRACKET BOLTS AT 80'-0" SHALL BE PRE-TENSIONED PER AISC TURN-OF-THE-NUT METHOD. MATCH MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES.
3. CONTRACTOR SHALL REMOVE AND REPLACE SAFETY CLIMB AS REQUIRED TO ALLOW ACCESS FOR NEW FLANGE CONNECTION BRACKET INSTALLATION.

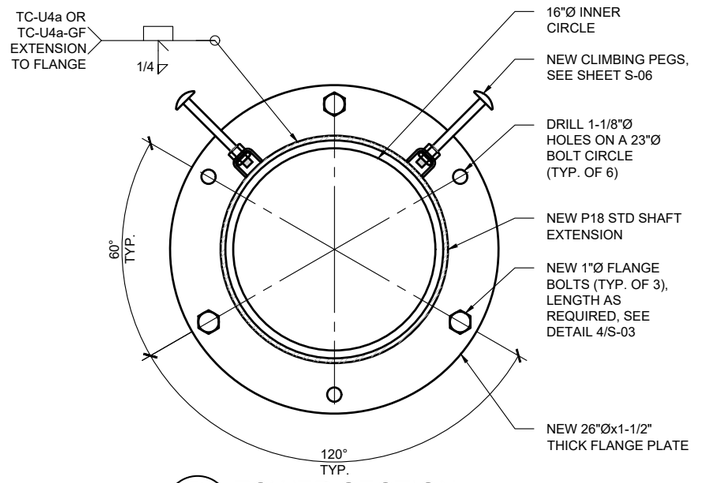


C TOWER SECTION
S-02 — SCALE: 1" = 1'-0"



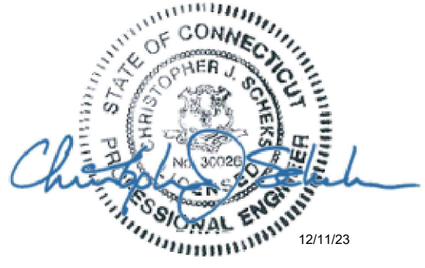
B TOWER SECTION
S-02 — SCALE: 1" = 1'-0"

NOTES:
1. CLIMBING PEGS NOT SHOWN FOR CLARITY.
2. NEW FLANGE BOLTS AT 80'-0" SHALL BE PRE-TENSIONED PER AISC TURN-OF-THE-NUT METHOD. MATCH MARKINGS SHALL BE PRESENT ON EACH FASTENER FOR INSPECTION PURPOSES.
3. FABRICATION NDE SHALL BE REQUIRED FOR ALL CJP WELDS BETWEEN THE TOWER EXTENSION AND FLANGE PLATES. THESE WELDS SHALL BE 100% INSPECTED BY MT & UT.



D TOWER SECTION
S-02 — SCALE: 1" = 1'-0"

NOTE:
1. FABRICATION NDE SHALL BE REQUIRED FOR ALL CJP WELDS BETWEEN THE TOWER EXTENSION AND FLANGE PLATES. THESE WELDS SHALL BE 100% INSPECTED BY MT & UT.



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PHOENIX TOWER INTERNATIONAL

AMTRAK_OLDLYME5
SITE #: US-CT-1004

DESIGN DRAWINGS PREPARED FOR:
dish
CLIENT #: BOBOS01210A

REV	DATE	DESCRIPTION
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OLD LYME, CT 6371

MODIFICATION DETAILS & SECTIONS

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RECORD	-

ENGINEER	DESIGNER
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PROJECT MANAGER	APPROVED BY
TR	CJS

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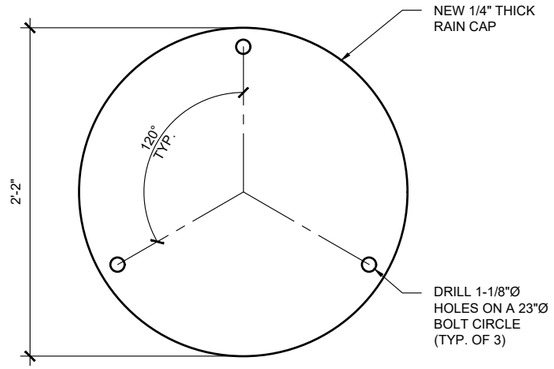
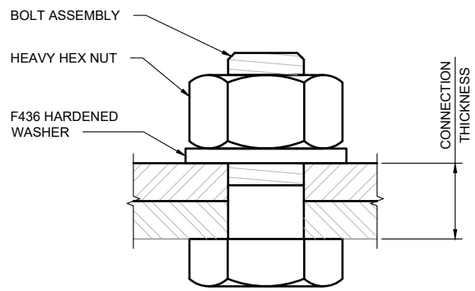
S-02

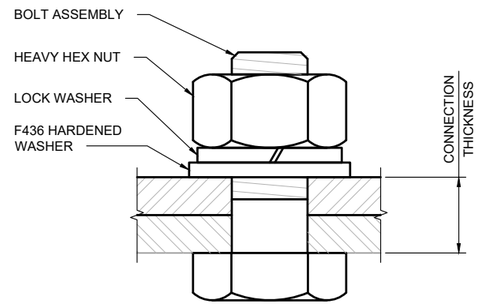


2 RAIN CAP DETAIL
S-03 — SCALE: 1" = 1'-0"



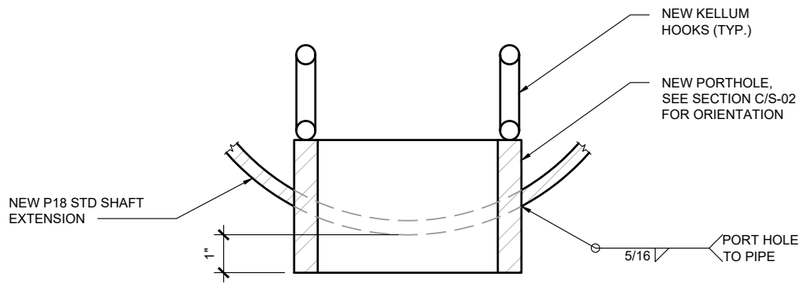
3 PRE-TENSIONED BOLT
S-03 — SCALE: N.T.S.

NOTE:
1. DETAIL IS TYPICAL FOR THE FLANGE BOLTS AND BRACKET BOLTS AT THE 80'-0" ELEVATION.

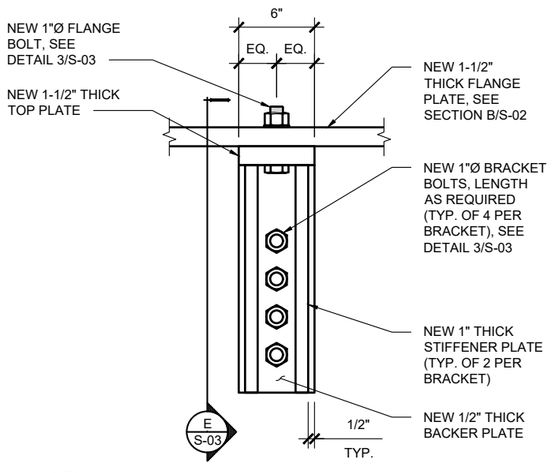


4 SNUG-TIGHT BOLT
S-03 — SCALE: N.T.S.

NOTE:
1. DETAIL IS TYPICAL FOR THE FLANGE BOLTS AT THE 90'-0" ELEVATION.

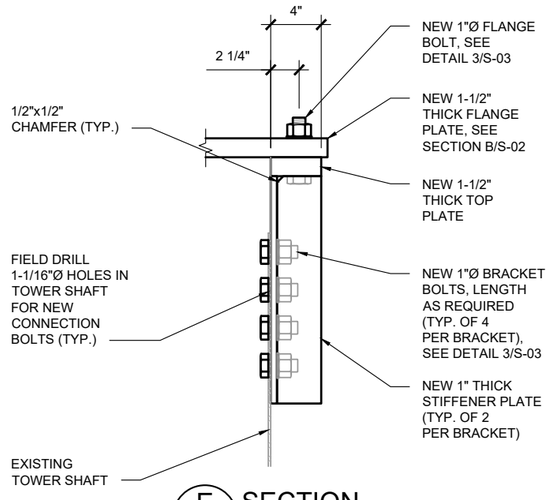


5 PORTHOLE DETAIL
S-03 — SCALE: 3" = 1'-0"

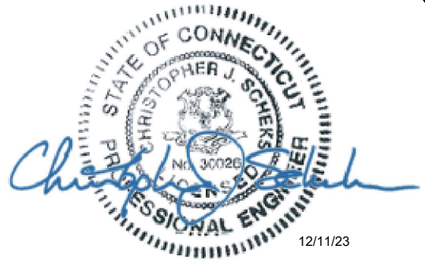


6 FLANGE CONNECTION BRACKET
S-03 — SCALE: 1" = 1'-0"

NOTE:
1. DETAIL IS TYPICAL FOR THE FLANGE CONNECTION BRACKET ASSEMBLY, SEE SHEET S-05.



E SECTION
S-03 — SCALE: 1" = 1'-0"



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TR	CJS

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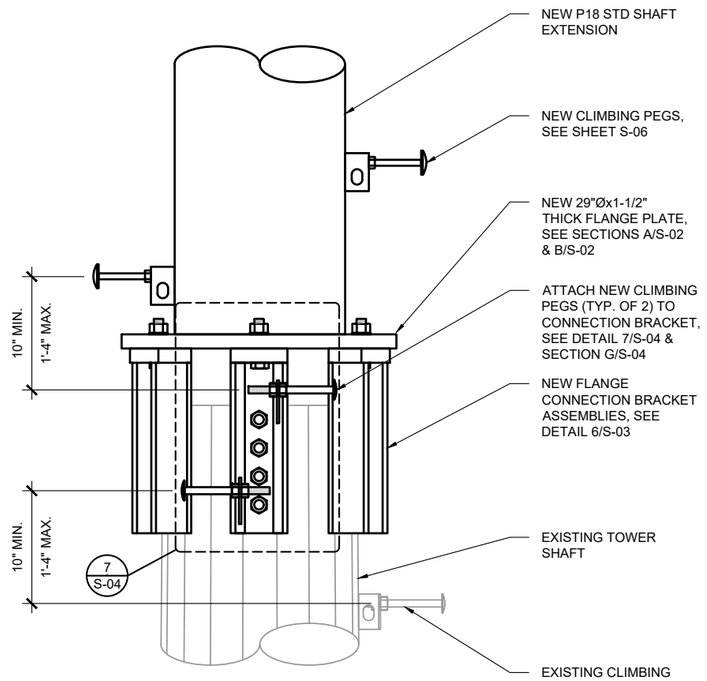
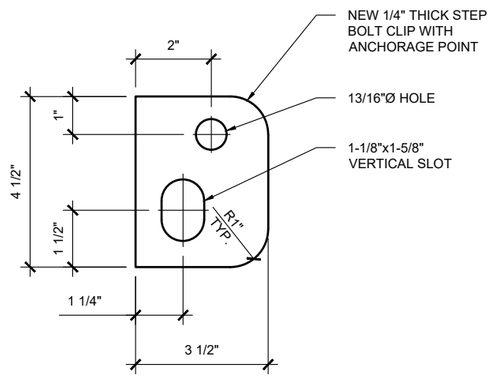
S-03

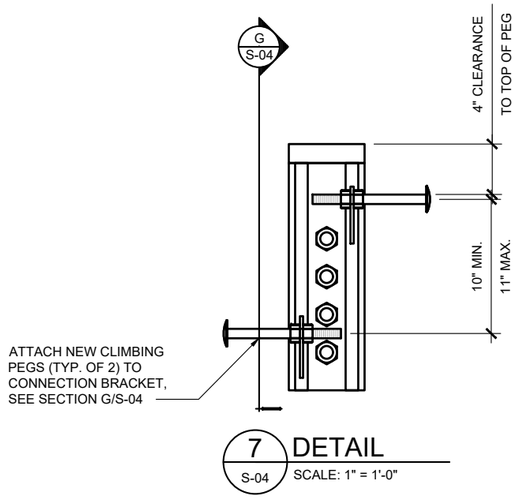


F SECTION
S-04
SCALE: 3/4" = 1'-0"

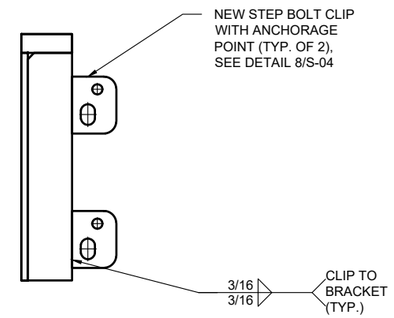


8 STEP BOLT CLIP WITH ANCHORAGE POINT
S-04
SCALE: 3" = 1'-0"

NOTE:
1. BOLT HOLES SHALL BE SHOP DRILLED OR PUNCH.
2. STEP BOLT CLIP SHALL BE ASTM A572-50 OR A36.



7 DETAIL
S-04
SCALE: 1" = 1'-0"

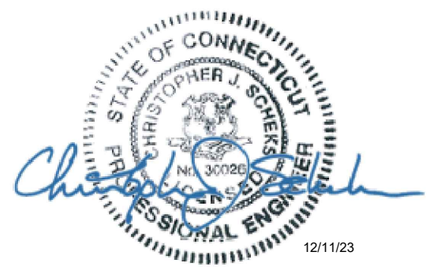


G SECTION
S-04
SCALE: 1" = 1'-0"

NOTE:
1. CLIMBING PEGS NOT SHOWN FOR DETAIL CLARITY.

NOTES:

1. STEP PEG CLIPS SHOULD BE ADDED TO 1 BRACKET ONLY, AND CENTERED ON CLIMBING PATH. IF BRACKET CANNOT BE CENTERED ON CLIMBING PATH, AN ALTERNATIVE SOLUTION MAY BE NEEDED.
2. CENTER TO CENTER STAGGERED SPACING OF STEP BOLTS SHALL BE A MINIMUM OF 10" AND MAXIMUM OF 16", IN THE VERTICAL DIRECTION. RELATIVE TO THE TOP STEP BOLT ON THE BASE TOWER AND THE BOTTOM STEP BOLT ON THE NEW EXTENSION.
3. AN ADDITIONAL STEP PEG MAY BE NEEDED BETWEEN BOTTOM STEP PEG ON BRACKET AND EXISTING STEP PEGS ON BASE TOWER.
4. STEP BOLT CLIP WELDS ARE SUBJECT TO AWS D1.1 AND MUST BE INSPECTED BY A CWI.
5. STEP BOLT CLIPS SHALL BE SHOP WELDED, AND SHALL BE WELDED IN PLACE PRIOR TO HOT DIP GALVANIZING THE WELDMENT.
6. CONTRACTOR SHALL USE ALL NEW STEP BOLTS AND HARDWARE.
7. STEP BOLT MATERIAL SHALL MEET THE REQUIREMENTS OF ASTM A449 AND SHALL BE TESTED AS FINISHED STEP BOLTS AT TEST FREQUENCY P (PIECE TESTING) OF ASTM A673 TO MEET MINIMUM ABSORBED ENERGY REQUIREMENT AT -20 DEGREES F (-29 DEGREES C) OF 15 FT-LBS (20 J) AVERAGE FOR 3 SPECIMENS AND A MINIMUM OF 12 FT-LBS (16 J) FOR ANY 1 SPECIMEN IN ACCORDANCE WITH ASTM A370.
8. STEP BOLT NUTS SHALL BE TIGHTENED TO A SNUG TIGHT CONDITION AND THEN ON NUT SHALL BE PRETENSIONED BY ROTATING THE NUT AND ADDITIONAL 1/3 TURN.



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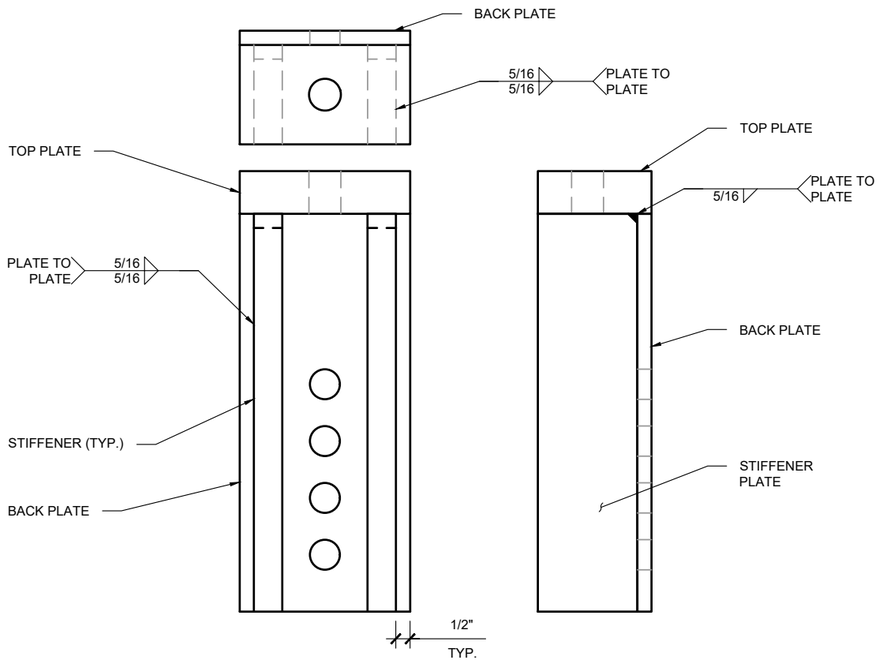
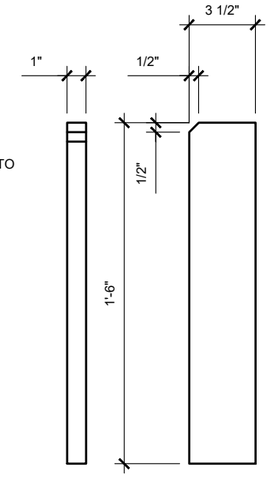
S-04



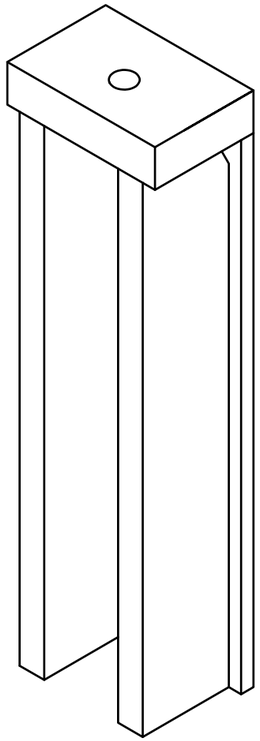
BOLT-ON EXTENSION ASSEMBLY

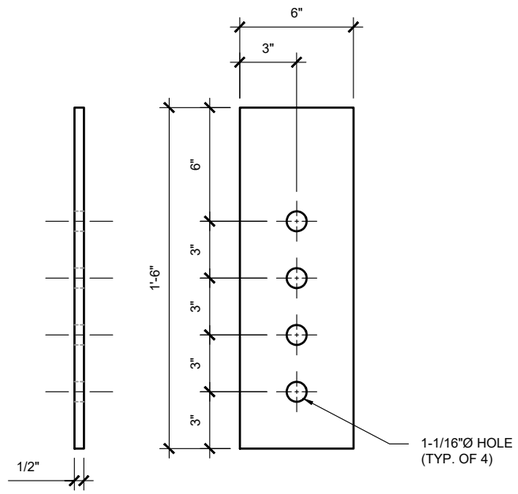


STIFFENERS

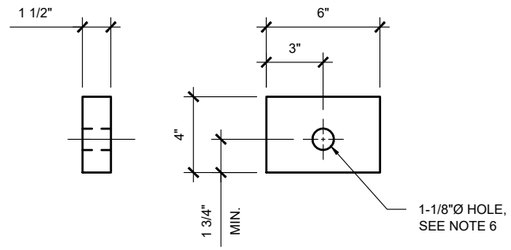
NOTES:

1. ALL HOLES TO BE SHOP FABRICATED UNLESS NOTED OTHERWISE.
2. FABRICATION TOLERANCES: FRACTIONS ± 1/16"
   ANGLES ± 1/2 DEGREE
   DECIMALS ± .010"
   BOLT HOLES ± 1/32"
3. TOP PLATE, BACK PLATE AND STIFFENERS SHALL BE ASTM A572-50
4. FOR WELDING, USE E70XX ELECTRODES.
5. FULL ASSEMBLY TO BE HOT-DIP GALVANIZED PER ASTM A153 / A153M OR A123, AS APPLICABLE.
6. TOP PLATE BOLT HOLE IS ALLOWED TO BE FIELD DRILLED.
7. GAPS BETWEEN SHAFT AND BACK PLATE GREATER THAN A 1/16" SHALL HAVE A SHIM PLATE, GAPS EXCEEDING 1/4" SHALL BE COMMUNICATED TO EOR TO PROVIDE SHIM DESIGN

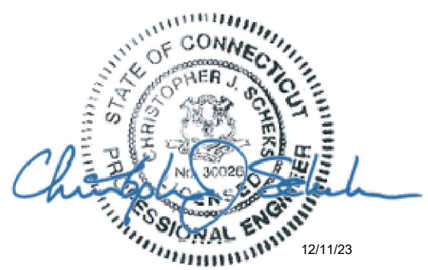




BACK PLATE



TOP PLATE



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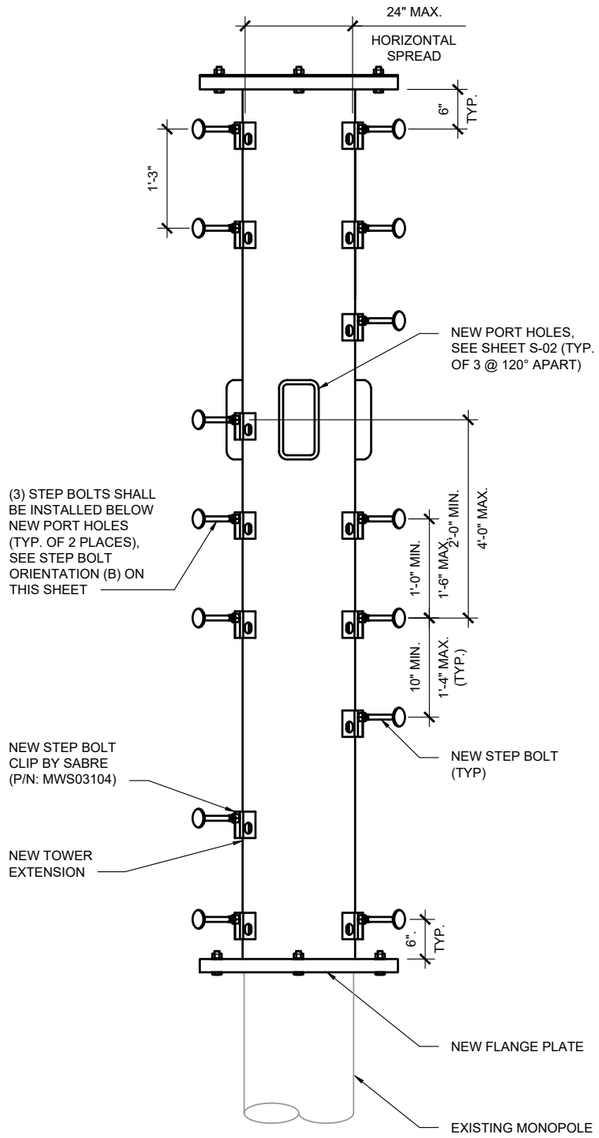
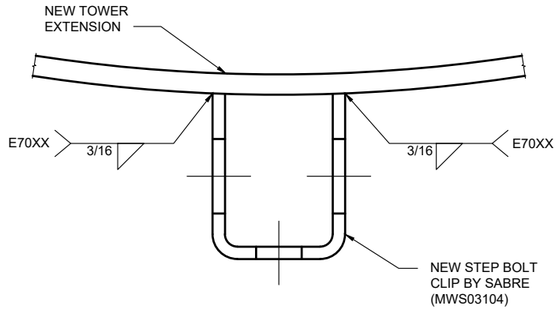
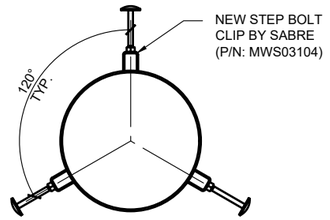


GENERIC ELEVATION

NOTES:
1. ELEVATION DOES NOT REPRESENT ACTUAL POLE GEOMETRY AND IS USED TO SHOW NEW STEP BOLT LOCATIONS AND SPACING, SEE PREVIOUS SHEETS FOR THE CORRECT POLE GEOMETRY AND/OR FLAT PLATE LAYOUT.
2. IF PROPOSED EXTENSION DOES NOT INCLUDE PORT HOLES THE DEFAULT SPACING AND ORIENTATION SHALL BE FOLLOWED FOR THE FULL LENGTH OF THE EXTENSION.
3. CONTRACTOR SHALL REMOVE AND REPLACE SAFETY CLIMB AS REQUIRED TO ALLOW ACCESS FOR NEW FLANGE CONNECTION BRACKET INSTALLATION.
4. CONTRACTOR SHALL ENSURE CLIMBABILITY OF TOWER IS MAINTAINED BETWEEN THE EXISTING TOWER AND NEW EXTENSION.
5. NEW BOLT-ON FLANGE BRACKET NOT SHOWN FOR DETAIL CLARITY.

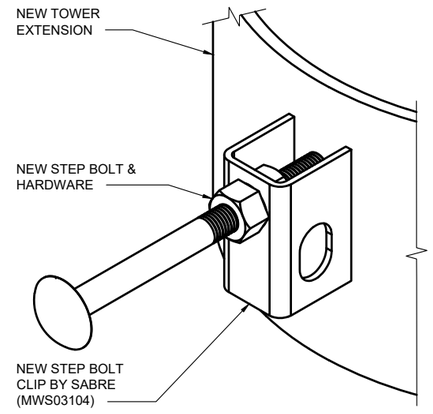


STEP BOLT CLIP WELD DETAIL

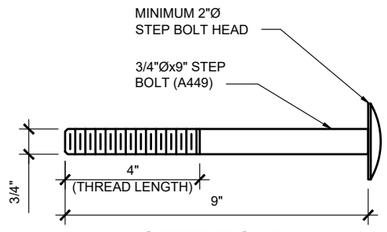


STEP BOLT ORIENTATION

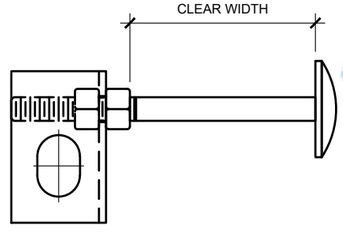
NOTES:
1. TYP. OF 2 PLACES ONLY BELOW PORT HOLE.



(A) STEP BOLT CLIP INSTALLATION DETAIL

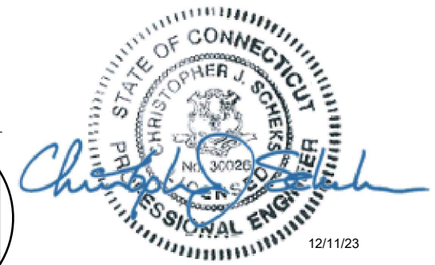


STEP BOLT



STEP BOLT DETAIL

NOTES:
1. THE GC SHALL ENSURE THAT THE NEW WIRE ROPE DOES NOT MAKE CONTACT WITH THE TOWER STEEL, MOUNTS, FEEDLINES OR EQUIPMENT. THE WIRE ROPE SHALL BE INSTALLED IN THE MOST DIRECT ROUTE POSSIBLE; IF THIS REQUIRES CONFINING THE WIRE ROPE, THE GC SHALL INSTALL ADDITIONAL ANCHOR POINTS AS NEEDED ABOVE AND BELOW EACH OBSTRUCTION SUCH THAT THERE IS A MAXIMUM 4' SPACING BETWEEN ANCHOR POINTS.
2. STEP BOLT CLIP WELDS ARE SUBJECT TO AWS D1.1 AND MUST BE INSPECTED BY A CWI. REFER TO DOCUMENT "ENG-STD-10069 GC CWI REQUIREMENT STANDARD" FOR CWI REQUIREMENTS.
3. STEP BOLT CLIPS SHALL BE SHOP WELDED.
4. STEP BOLT CLIPS SHALL BE WELDED IN PLACE PRIOR TO HOT DIP GALVANIZING THE WELDMENT.
5. CONTRACTOR SHALL USE ALL NEW STEP BOLTS AND HARDWARE.
6. CENTER TO CENTER STAGGERED SPACING SHOULD BE MATCHED TO EXISTING FIELD CONDITIONS. STAGGERED SPACING SHALL BE A MINIMUM OF 10" AND MAXIMUM OF 16", IN THE VERTICAL DIRECTION.
7. HORIZONTAL SPREAD IS NOT TO EXCEED 24".
8. STEP BOLT MATERIAL SHALL MEET THE REQUIREMENTS OF ASTM A449 AND SHALL BE TESTED AS FINISHED STEP BOLTS AT TEST FREQUENCY P (PIECE TESTING) OF ASTM A673 TO MEET MINIMUM ABSORBED ENERGY REQUIREMENT AT -20 DEGREES F [-29 DEGREES C] OF 15 FT-LBS [20 J] AVERAGE FOR 3 SPECIMENS AND A MINIMUM OF 12 FT-LBS [16 J] FOR ANY 1 SPECIMEN IN ACCORDANCE WITH ASTM A370.
9. STEP BOLTS SHALL BE INSTALLED USING DOUBLE NUTS. A STEP BOLT INSTALLED IN A STEP BOLT CLIP SHALL BE TURNED WITH THE OUTER NUT LOOSE UNTIL THE END OF THE STEP BOLT MAKES CONTACT WITH THE SUPPORTING MEMBER. THE OUTER STEP BOLT NUT SHALL THEN BE TIGHTENED TO A SNUG TIGHT CONDITION AND PRETENSIONED BY ROTATING THE OUTER NUT 1/3 TURN.
10. THE DEFAULT STEP BOLT CLIP SHALL BE USED WHERE POSSIBLE ON NEW REINFORCING ELEMENTS. IF FIT-UP PROHIBITS ITS USE, THE ALTERNATIVE STEP BOLT CLIP OR NEXGEN2 STEP BOLT ADAPTER SHALL BE USED IN THESE LOCATIONS.



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S-06

ATTACHMENT 5

MOUNT STRUCTURAL ANALYSIS REPORT
MONOPOLE - Rev.2

FORESITE LLC
•Architects •Engineers •Surveyors
Complete A&E services for wireless telecommunications industry

Prepared for:

dish WIRELESS

5701 South Santa Fe Drive
Littleton, CO 80120

Site ID: BOBOS01210A
Address:
387 SHORE ROAD
OLD LYME, CT 06371

Date: 04/03/2024
Submitted by:
Foresite LLC.
462 Walnut Street, Suite 1
Newton, MA 02460
Phone: 617-5273031

Date: 4/3/2024

To: Dish Wireless LLC
5701 South Santa Fe Drive
Littleton, CO 80120

Subject: **Mount Structural Analysis Report – Rev.2**

Dish Wireless LLC Designation: **Site ID:** BOBOS01210A

EFI Designation: **Project Number:** 049.04254 - 2375009

Site Data: **387 Shore Road, Old Lyme, CT 06371**
Latitude 41.296505°, Longitude -72.259687°

EFI Global, Inc. is pleased to submit this **"Mount Structural Analysis Report – Rev.2"** to determine the structural capacity of the antenna mounts utilized by Dish Wireless LLC at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by Dish Wireless LLC under the following load case we have determined the mounts to have:

Proposed Equipment **Adequate Capacity (76.3%)**
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with TIA-222-H Standard and the 2022 Connecticut State Building Code (2021 IBC).

We at *EFI Global, Inc.* 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.

Sincerely,
EFI Global, Inc.
License No: PEC0001245

4/3/2024

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN 27057
LICENSED
PROFESSIONAL ENGINEER

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

EFI Global, Inc.
1117 Perimeter Center West, Suite E500, Atlanta GA 30338 - Tel: (470) 990-6593

1) ANALYSIS CRITERIA

The analysis was performed for the proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

Table 1 – Loading and Analysis Criteria

Rad Center	87’
Structure Type	Monopole
Exposure Category	C
Ultimate Wind Speed	130 mph
Ultimate Ice Loading	1.00” with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Proposed and Final Appurtenance Configuration

Qty	Model
3	Commscope FFVV-65B-R2 – Antennas
3	Samsung RF4450t-71A – RRUs*
3	Samsung RF4451d-70A – RRUs*
1	Raycap RDIDC-9181-PF-48 – Junction Box*
1	Sabre Industries Low Profile Monopole T-Arm Mount (P/N: C10114331-12788)

***To be mounted below the antennas.**

Table 1.2 – Assumed Material Properties

Member Type	ASTM Material Designation	Fy (ksi)	Fu (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B - 46	46	58
Round HSS	A500 Gr. B - 42	42	58
Others (UNO)	A572 Gr. 50	50	65

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
Mount Change Request Email	ForeSite, LLC	03/15/2024
RFDS	Dish Wireless, LLC	08/01/2023
Structural Analysis Report	GPD Engineering and Architecture	08/28/2015

2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix.

2.2) Analysis Conditions and Assumptions

1) The mount was built and installed in accordance with the manufacturer's specifications.
2) The mount has been maintained and will be maintained in accordance with the manufacturer's specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
3) The configuration of antennas is as specified in "1) Analysis Criteria".
4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
8) Member sizes per available mount specifications and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
9) 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.

EFI Global, Inc. (EFI), must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Standoff Tube	31.8	Pass
Antenna Mount Pipes	76.3	Pass

T-Arm Mount: The proposed T-Arm mount has **adequate** capacity for the proposed changes by Dish Wireless LLC. For the code specified load combinations and as a maximum, the mount members are stressed to **76.3%** of their structural capacity.

Note: EFI Global, Inc. has assumed that Sabre Industries Low Profile Monopole T-Arm Mount (P/N: C10114331-12788) will be installed at this site prior to the equipment installation proposed in this analysis. The analysis also assumes the following:

- **The antenna RAD Center is at the mount centerline at @ 87' A.G.L. (above grade level).**
- **(3) 120" long 2.0 SCH.80 mount pipes should be connected to the T-Arm.**
- **Auxiliary equipment is assumed to be installed 12" below bottom of antenna.**
- **It is assumed that the diameter of the extended monopole is within the range of 10" to 40" at mount attachment location.**

APPENDIX

INPUT LOADS
ANALYSIS OUTPUT

EFI Global, Inc.
1117 Perimeter Center West, Suite E500, Atlanta GA 30338 - Tel: (470) 990-6593

CLIENT: Foresite LLC

PROJECT: BOBOS01210A

SUBJECT: Antenna Loads - TIA 222 H Standard

Tower Height	90.00	ft	Type of Mount	Platform
Ultimate Wind Speed, V	130	mph		
Basic Wind Speed w/ Ice, V_i	50	mph		
Maintanence Load Factor, L_{FM}	0.0533	Load Factor for Maint. Load Cases (Basic Wind Speed=30 mph)		
Ultimate Ice Thickness, t_i	1	inches		

Table 2-3 Importance Factors

Structure Classification	Wind Load Without Ice	Wind Load With Ice	Ice Thickness	Earthquake
II	1	1	1	1

Table 2-4 Exposure Category Coefficients

Exposure Category	Zg	α	Kzmin	Ke	m
C	900	9.5	0.85	1	0.6

Ground elevation factor, Ke

Zs 37.27 **ft**

Ke 1.00

Table 2-5 Topographic Categories

Kzt 1.000

Figure 2-2 Rooftop Wind Speed-Up Factor

Ks 1.00

Table 2-2 Wind Directionality Factor, Kd

Structure Type	Kd	
Monopole	0.95	DOES NOT CHANGE

Gust Effect Factor Gh

Structure Type	Gh	
Monopole	1.00	DOES NOT CHANGE

Shielding Factor, Ka

Structure Type	Ka	
Monopole	0.90	DOES NOT CHANGE

Seismic Factors

Ss	0.196	
S1	0.053	
Fa	1.6	
Fv	2.4	
R	2	Truss or Pole

CLIENT: Foresite LLC

PROJECT: BOBOS01210A

SUBJECT: Antenna Loads - TIA 222 H Standard

Rad Center 87.00 ft

Antenna AND Mount Without Ice

Mounting Pole	Height (ft)	Model Number	#	Weight (lbs)	H (in)	*W (in)	D (in)	Ka	**A_N (ft2)	***A_T (ft2)	Aspect (FRONT)	Aspect (SIDE)	Ca (FRONT)	Ca (SIDE)	K_z	q_z (psf)	Pounds: Wind Load (Front)	Wind Load (Side)	Dead Load	Total Wind Load (Front)	Total Wind Load (Side)	Total Dead Load	Lateral Load (Seismic)	Vertical Load (Seismic)
Pos.2	87.00	Commscope FFVV-65B-R2	1	70.8	72.0	19.6	7.8	0.90	9.80	3.90	3.67	9.23	1.25	1.47	1.229	50.4	557.1	261.0	70.8					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				279	131	36	3	1
Pos.3 Under Antennas		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0	116	188	178	13	7
	87.00	Raycap RDIDC-9181-PF-48	1	21.9	19.0	16.2	9.6	0.90	2.13	1.27	1.17	1.97	1.20	1.20	1.229	50.4	116.3	69.2	21.85					
	87.00	Samsung RF4450t-71A	1	94.6	16.5	N/A	11.0	0.90	-	1.26	-	1.50	-	1.20	1.229	50.4	0.0	68.7	94.58					
	87.00	Samsung RF4451d-70A	1	61.3	15.0	N/A	8.9	0.90	-	0.93	-	1.69	-	1.20	1.229	50.4	0.0	50.5	61.3					
		Empty		0.0	-	-	-	0.90	-	-	-	-	-	-	-	-	0.0	0.0	0					
																				59	95	89	6	4

* Enter N/A in the W column for front sheilded apurtanances.

** A_N is the product of H and W

*** A_T is the product of H and D

DL 249

Mount	Height (ft)	Member	*L (in)		D (in)	Weight (lb/ft)	*** Ca	K_z	q_z (psf)	Wind Load (PLF)	Lateral Load (Seismic)	Vertical Load (Seismic)
	87.00	3 STD Pipe	0.00	3.50	0.00		-	-	-	-	-	-
	87.00	2.5 STD Pipe	0.00	2.88	0.00		-	-	-	-	-	-
	87.00	2.0 STD Pipe	12.00	2.38	0.00		1.20	1.229	45.4	11	-	-
	87.00	1/2" SR	0.00	0.50	0.00		-	-	-	-	-	-
	87.00	(L6.6x4.46)	0.00	6.60	2.50		-	-	-	-	-	-
	87.00	(L2x2)	0.00	2.00	2.00		-	-	-	-	-	-
	87.00	(L2X2)	0.00	2.00	2.00		-	-	-	-	-	-
	87.00	PL2.375X0.5	0.00	2.38	0.50		-	-	-	-	-	-
	87.00	PL6.5x3/8	0.00	6.50	0.38		-	-	-	-	-	-
	87.00	HSS3X3X2	12.00	3.00	3.00		2.00	1.229	45.4	23	-	-
	87.00	Double Angle (LL2.5x2.5x3x3)	0.00	5.00	2.50		-	-	-	-	-	-
	87.00	Channel (C3.38x2.06)	0.00	3.38	5.00		-	-	-	-	-	-
	87.00	Channel (2.75x2)	0.00	2.75	2.00		-	-	-	-	-	-

* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** Ca will equal 1.2 for round members and 2.0 for flat members

CLIENT: Foresite LLC

PROJECT: BOBOS01210A

SUBJECT: Antenna Loads - TIA 222 H Standard

ti (in) 1.101794 Kiz 1.1017943 reduction 0.14793

Antenna AND Mount With Ice

Mounting Pole	Height (ft)	Model Number	#	H (in)	W (in)	D (in)	Ka	*A_N (ft2)	*A_T (ft2)	*Volume Ice (ft3)	*Weight Ice (lbs)	**Ca (FRONT)	**Ca (SIDE)	Kz	q_z (psf)	Pounds: Ice Wind Load (Front)	Ice Wind Load (Side)	Combined Wind Load (Front)	Combined Wind Load (Side)	Ice Dead Load	**Total Wind Load (Front)	**Total Wind Load (Side)	Total Ice Load
Pos.2	**87.00**	Commscope FFVV-65B-R2	1	72.0	19.6	7.8	0.90	1.44	1.25	3.00	167.79	0.72	0.81	1.229	7.5	6.9	6.8	89.4	45.4	168	89	45	168
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					45	**23**	**84**
Pos.3		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0	20	34	145
Under Antennas	**87.00**	Raycap RDIDC-9181-PF-48	1	19.0	16.2	9.6	0.90	0.57	0.47	0.96	53.56	0.70	0.70	1.229	7.5	2.7	2.2	19.9	12.5	54			
	87.00	Samsung RF4450t-71A	1	16.5	15.0	11.0	0.90	-	0.45	0.88	49.45	0.70	0.70	1.229	7.5	0.0	2.1	0.0	12.3	49			
	87.00	Samsung RF4451d-70A	1	15.0	15.0	8.9	0.90	-	0.40	0.74	41.60	0.70	0.70	1.229	7.5	0.0	1.9	0.0	9.3	42			
		Empty		-	-	-	0.90	-	-	-	0.00	-	-	-	-	0.0	0.0	0.0	0.0	0			
																					10	**18**	**73**

* A_N ,A_T, Volume Ice and Weight Ice are calculated per unit

** Ca will equal 1.2 for all ice load calculations

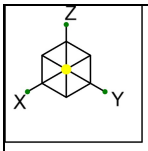
Mount	Height (ft)	Member	*L (in)	**W (in)	D (in)	***A_N (ft2)	Volume Ice (ft3)	Weight Ice (lbs)	****Ca (FRONT)	Kz	q_z (psf)	PLF: Ice Wind Load (Front)	Combined Wind Load (Front)	Ice Dead Load
	87.00	3 STD Pipe	0.00	3.50	0.00	-	-	-	-	-	-	-	-	-
	87.00	2.5 STD Pipe	0.00	2.88	0.00	-	-	-	-	-	-	-	-	-
	87.00	2.0 STD Pipe	12.00	2.38	0.00	0.25	0.08	4.68	1.20	1.229	6.7	2.0	3.6	5
	87.00	1/2" SR	0.00	0.50	0.00	-	-	-	-	-	-	-	-	-
	87.00	(L6.6x4.46)	0.00	6.60	2.50	-	-	-	-	-	-	-	-	-
	87.00	(L2x2)	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	87.00	(L2X2)	0.00	2.00	2.00	-	-	-	-	-	-	-	-	-
	87.00	PL2.375X0.5	0.00	2.38	0.50	-	-	-	-	-	-	-	-	-
	87.00	PL6.5x3/8	0.00	6.50	0.38	-	-	-	-	-	-	-	-	-
	87.00	HSS3X3X2	12.00	3.00	3.00	0.26	0.16	8.96	1.20	1.229	6.7	2.1	5.5	9
	87.00	Double Angle (LL2.5x2.5x3x3)	0.00	5.00	2.50	-	-	-	-	-	-	-	-	-
	87.00	Channel (C3.38x2.06)	0.00	3.38	5.00	-	-	-	-	-	-	-	-	-
	87.00	Channel (2.75x2)	0.00	2.75	2.00	-	-	-	-	-	-	-	-	-

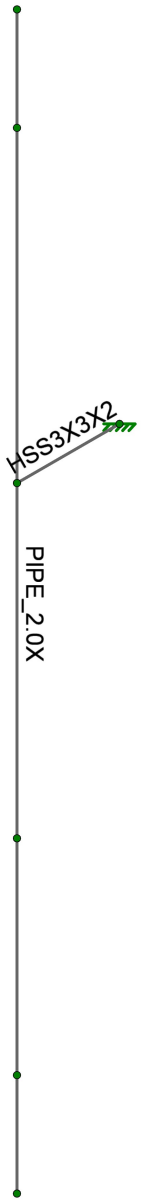
* The dimension L is the longest dimension of the member

** The dimension W is the height or width of the member that resists wind load

*** A_N is the area of ice built up on the LW plane

**** Ca will equal 1.2 for all ice load calculations





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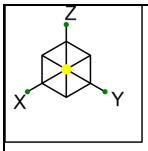

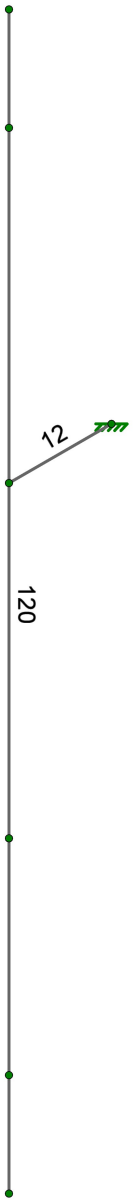

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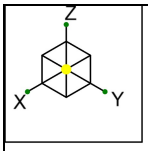

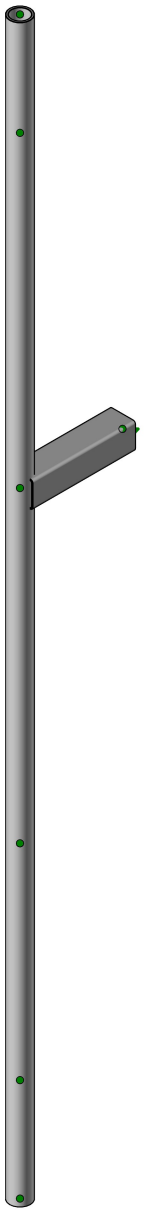

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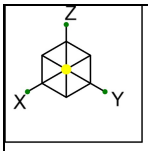

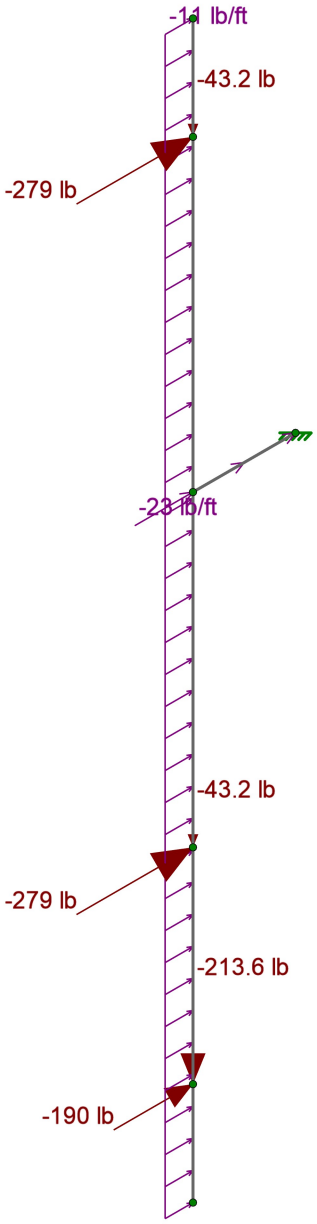

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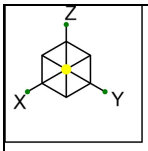

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.75-.90
.50-.75
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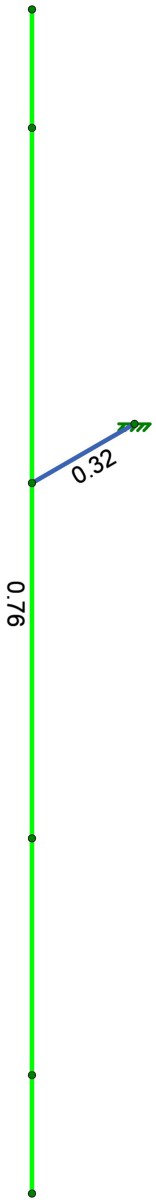

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Envelope Only Solution

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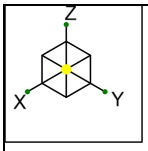

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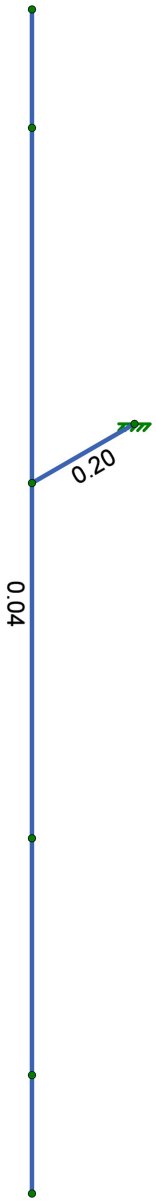
0.-.50



Member Shear Checks Displayed (Enveloped)
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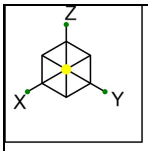

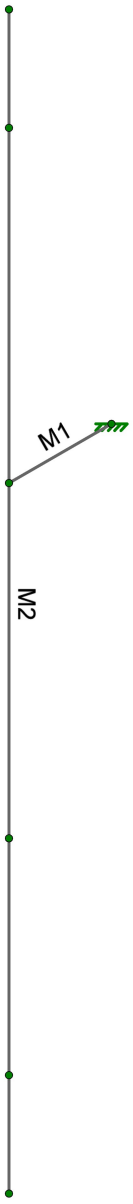

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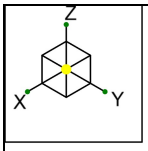

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Model Settings

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes
Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3
Single	No
Multiple (Optimum)	Yes
Maximum	No

Global Axis corresponding to vertical direction	Z
Convert Existing Data	Yes
Default Global Plane for z-axis	XY
Plate Local Axis Orientation	Global

Hot Rolled Steel	AISC 15th (360-16): LRFD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	None
Cold Formed Steel	None
Stiffness Adjustment	Yes (Iterative)
Wood	None
Temperature	< 100F
Concrete	None
Masonry	None
Aluminum	None
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	None
Stiffness Adjustment	Yes (Iterative)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	Yes
List forces which were ignored for design in the Detail Report	Yes

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No
Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other

Model Settings (Continued)

Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes
S_1 (g)	1
SD_1 (g)	1
SD_s (g)	1
T_L (sec)	5
T Z (sec)	
T X (sec)	
C_tZ	0.02
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

Project Grid Lines

No Data to Print...

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	0.3	0.65	0.49	65	1.1	80	1.1
9	A500 GR.C	29000	11154	0.3	0.65	0.49	46	1.6	60	1.2
10	A529 Gr. 50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
11	A1011-33Ksi	29000	11154	0.3	0.65	0.49	33	1.5	58	1.2
12	A1011 36 Ksi	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
13	A1018 50 Ksi	29000	11154	0.3	0.65	0.49	50	1.5	65	1.2

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N2	N1	HSS3X3X2	Beam	Tube	A500 Gr.B Rect	Typical
2	M2	N3	N4	PIPE_2.0X	Beam	HSS Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	Col-Wall Vert Release	Physical	Deflection Ratio Options	Seismic DR
1	M1		Yes	Default	None
2	M2		Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Channel Conn.	a [in]	Function
1	M1	HSS3X3X2	12	Lbyy	N/A	N/A	Lateral
2	M2	PIPE_2.0X	120	Lbyy	N/A	N/A	Lateral

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	12	0	0	
3	N3	12	0	48	
4	N4	12	0	-72	
5	N5	12	0	36	
6	N6	12	0	-36	
7	N7	12	0	-60	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed
1	DEAD LOAD	None	-1	4	
2	DEAD LOAD ICE	None		4	2
3	WIND LOAD (NO ICE) FRONT	None		4	2
4	WIND LOAD (NO ICE) SIDE	None		4	2
5	WIND LOAD (ICE) FRONT	None		4	2
6	WIND LOAD (ICE) SIDE	None		4	2
7	LIVE LOAD1	None		1	
8	LIVE LOAD2	None			
9	LIVE LOAD3	None			
10	MAINTENANCE LOAD1	None		1	
11	MAINTENANCE LOAD2	None			
12	MAINTENANCE LOAD3	None			
13	MAINTENANCE LOAD4	None			

Node Loads and Enforced Displacements (BLC 1 : DEAD LOAD)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N5	L	Z	-36
2	N6	L	Z	-36
3	N7	L	Z	-89
4	N7	L	Z	-89

Node Loads and Enforced Displacements (BLC 2 : DEAD LOAD ICE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N5	L	Z	-84
2	N6	L	Z	-84
3	N7	L	Z	-73
4	N7	L	Z	-73

Node Loads and Enforced Displacements (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N5	L	X	-279
2	N6	L	X	-279
3	N7	L	X	-95
4	N7	L	X	-95

Node Loads and Enforced Displacements (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N5	L	Y	-131
2	N6	L	Y	-131
3	N7	L	Y	-59
4	N7	L	Y	-59

Node Loads and Enforced Displacements (BLC 5 : WIND LOAD (ICE) FRONT)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N5	L	X	-45
2	N6	L	X	-45
3	N7	L	X	-18
4	N7	L	X	-18

Node Loads and Enforced Displacements (BLC 6 : WIND LOAD (ICE) SIDE)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N5	L	Y	-23
2	N6	L	Y	-23
3	N7	L	Y	-10
4	N7	L	Y	-10

Node Loads and Enforced Displacements (BLC 7 : LIVE LOAD1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N4	L	Z	-250

Node Loads and Enforced Displacements (BLC 10 : MAINTENANCE LOAD1)

	Node Label	L, D, M	Direction	Magnitude [(lb, k-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N2	L	Z	-250

Member Point Loads

No Data to Print...

Member Distributed Loads (BLC 2 : DEAD LOAD ICE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M2	Z	-5	-5	0	%100
2	M1	Z	-9	-9	0	%100

Member Distributed Loads (BLC 3 : WIND LOAD (NO ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M2	X	-11	-11	0	%100
2	M1	X	-23	-23	0	%100

Member Distributed Loads (BLC 4 : WIND LOAD (NO ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M2	Y	-11	-11	0	%100
2	M1	Y	-23	-23	0	%100

Member Distributed Loads (BLC 5 : WIND LOAD (ICE) FRONT)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M2	X	-3.6	-3.6	0	%100
2	M1	X	-5.5	-5.5	0	%100

Member Distributed Loads (BLC 6 : WIND LOAD (ICE) SIDE)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, k-ft/in]	End Magnitude [lb/ft, F, psf, k-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M2	Y	-3.6	-3.6	0	%100
2	M1	Y	-5.5	-5.5	0	%100

Member Area Loads

No Data to Print...

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DL + WL (NO ICE) 0 Degree	Yes	Y	1	1.2			3	1		
2	DL + WL (NO ICE) 30 Degree	Yes	Y	1	1.2			3	0.866	4	0.5
3	DL + WL (NO ICE) 60 Degree	Yes	Y	1	1.2			3	0.5	4	0.866
4	DL + WL (NO ICE) 90 Degree	Yes	Y	1	1.2					4	1
5	DL + WL (NO ICE) 120 Degree	Yes	Y	1	1.2			3	-0.5	4	0.866
6	DL + WL (NO ICE) 150 Degree	Yes	Y	1	1.2			3	-0.866	4	0.5
7	DL + WL (NO ICE) 180 Degree	Yes	Y	1	1.2			3	-1		
8	DL + WL (NO ICE) 210 Degree	Yes	Y	1	1.2			3	-0.866	4	-0.5
9	DL + WL (NO ICE) 240 Degree	Yes	Y	1	1.2			3	-0.5	4	-0.866
10	DL + WL (NO ICE) 270 Degree	Yes	Y	1	1.2					4	-1
11	DL + WL (NO ICE) 300 Degree	Yes	Y	1	1.2			3	0.5	4	-0.866
12	DL + WL (NO ICE) 330 Degree	Yes	Y	1	1.2			3	0.866	4	-0.5
13	DL + DL ICE + WL (ICE) 0 Degree	Yes	Y	1	1.2	2	1	5	1		
14	DL + DL ICE + WL (ICE) 30 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	0.5
15	DL + DL ICE + WL (ICE) 60 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	0.866
16	DL + DL ICE + WL (ICE) 90 Degree	Yes	Y	1	1.2	2	1			6	1
17	DL + DL ICE + WL (ICE) 120 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	0.866
18	DL + DL ICE + WL (ICE) 150 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	0.5
19	DL + DL ICE + WL (ICE) 180 Degree	Yes	Y	1	1.2	2	1	5	-1		
20	DL + DL ICE + WL (ICE) 210 Degree	Yes	Y	1	1.2	2	1	5	-0.866	6	-0.5
21	DL + DL ICE + WL (ICE) 240 Degree	Yes	Y	1	1.2	2	1	5	-0.5	6	-0.866
22	DL + DL ICE + WL (ICE) 270 Degree	Yes	Y	1	1.2	2	1			6	-1
23	DL + DL ICE + WL (ICE) 300 Degree	Yes	Y	1	1.2	2	1	5	0.5	6	-0.866
24	DL + DL ICE + WL (ICE) 330 Degree	Yes	Y	1	1.2	2	1	5	0.866	6	-0.5
25	DEAD LOAD + LIVE LOAD1	Yes	Y	1	1.2					7	1.5
26	DEAD LOAD + LIVE LOAD2	Yes	Y	1	1.2					8	1.5
27	DEAD LOAD + LIVE LOAD3	Yes	Y	1	1.2					9	1.5
28	DL + MAIN L1+30MPH WL FRONT	Yes	Y	1	1.2	10	1.5	3	0.053		
29	DL + MAIN L2+30MPH WL FRONT	Yes	Y	1	1.2	11	1.5	3	0.053		
30	DL + MAIN L3+30MPH WL FRONT	Yes	Y	1	1.2	12	1.5	3	0.053		
31	DL + MAIN L4+30MPH WL FRONT	Yes	Y	1	1.2	13	1.5	3	0.053		
32	DL + MAIN L1+30MPH WL SIDE	Yes	Y	1	1.2	10	1.5	4	0.053		
33	DL + MAIN L2+30MPH WL SIDE	Yes	Y	1	1.2	11	1.5	4	0.053		
34	DL + MAIN L3+30MPH WL SIDE	Yes	Y	1	1.2	12	1.5	4	0.053		
35	DL + MAIN L4+30MPH WL SIDE	Yes	Y	1	1.2	13	1.5	4	0.053		
36	DL + MAIN L1+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	10	1.5	3	-0.053		
37	DL + MAIN L2+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	11	1.5	3	-0.053		
38	DL + MAIN L3+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	12	1.5	3	-0.053		
39	DL + MAIN L4+30MPH WL FRONT (REVERSED)	Yes	Y	1	1.2	13	1.5	3	-0.053		
40	DL + MAIN L1+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	10	1.5	4	-0.053		
41	DL + MAIN L2+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	11	1.5	4	-0.053		
42	DL + MAIN L3+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	12	1.5	4	-0.053		
43	DL + MAIN L4+30MPH WL SIDE (REVERSED)	Yes	Y	1	1.2	13	1.5	4	-0.053		

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	881	1	513	4	737.876	36	0.68	4	0.668	7	0.501	4
2		min	-881	7	-513	10	362.876	1	-0.68	10	-1.389	1	-0.501	10
3	Totals:	max	881	1	513	4	737.876	36						
4		min	-881	7	-513	10	362.876	1						

Envelope Node Displacements

	Node Label		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	0	7	0	10	0	1	0	10	0	1	0	10
2		min	0	1	0	4	0	36	0	4	0	7	0	4
3	N2	max	0	7	0.008	10	0.016	7	3.09e-3	10	4.212e-3	1	8.677e-4	10
4		min	0	1	-0.008	4	-0.027	1	-3.09e-3	4	-2.959e-3	7	-8.677e-4	4
5	N3	max	0.231	7	0.051	10	0.016	7	2.216e-3	4	7.352e-3	7	8.677e-4	10
6		min	-0.171	1	-0.051	4	-0.027	1	-2.216e-3	10	-6.097e-3	1	-8.677e-4	4
7	N4	max	1.838	7	1.213	10	0.015	7	2.116e-2	10	3.379e-2	1	8.677e-4	10
8		min	-1.926	1	-1.213	4	-0.028	1	-2.116e-2	4	-3.257e-2	7	-8.677e-4	4
9	N5	max	0.143	7	0.025	10	0.016	7	2.202e-3	4	7.339e-3	7	8.677e-4	10
10		min	-0.097	1	-0.025	4	-0.027	1	-2.202e-3	10	-6.083e-3	1	-8.677e-4	4
11	N6	max	0.69	7	0.468	10	0.016	7	1.908e-2	10	3.068e-2	1	8.677e-4	10
12		min	-0.735	1	-0.468	4	-0.027	1	-1.908e-2	4	-2.945e-2	7	-8.677e-4	4
13	N7	max	1.447	7	0.959	10	0.015	7	2.114e-2	10	3.378e-2	1	8.677e-4	10
14		min	-1.521	1	-0.959	4	-0.028	1	-2.114e-2	4	-3.255e-2	7	-8.677e-4	4

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	HSS3X3X2	0.318	12	12	0.204	12	z	10	53440.596	53820	4.83	4.83	1.131	H1-1b
2	M2	PIPE_2.0X	0.763	48.75	7	0.04	48.75		7	12974.268	44100	2.531	2.531	1	H1-1b

ATTACHMENT 6

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

Site ID: BOBOS01210A

387 Shore Road
Old Lyme, CT 06371

December 19, 2023

Fox Hill Telecom Project Number: 231084

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.21 %**

FOX HILL TELECOM

December 19, 2023

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBOS01210A**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **387 Shore Road, Old Lyme, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 600 MHz band is approximately 400 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the Dish Wireless antenna facility located at **387 Shore Road, Old Lyme, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40

Table 1: Channel Data Table

The following **Dish** antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71) frequency band and the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66). This is based on feedback from Dish regarding anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Commscope FFVV-65B-R2	87
B	1	Commscope FFVV-65B-R2	87
C	1	Commscope FFVV-65B-R2	87

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	5.19
						Sector A Composite MPE%	**5.19**
Antenna B1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	5.19
						Sector B Composite MPE%	**5.19**
Antenna C1	Commscope FFVV-65B-R2	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	12.15 / 15.95 / 16.25	12	566	17,079.80	5.19
						Sector C Composite MPE%	**5.19**

Table 3: Dish Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
Dish – Max Per Sector Value	**5.19 %**
T-Mobile	6.02 %
Site Total MPE %:	**11.21 %**

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	5.19 %
Dish Sector B Total:	5.19 %
Dish Sector C Total:	5.19 %
Site Total:	11.21 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, all three sectors have the same configuration yielding the same results for all three sectors.

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	1,008.96	87	13.72	n71 (600 MHz)	400	3.43%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,574.20	87	8.80	n70 (AWS-4 / 1995-2020)	1000	0.88%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,686.79	87	8.80	n66 (AWS-4 / 2180-2200)	1000	0.88%
						Total:	**5.19 %**

Table 6: Dish Maximum Sector MPE Power Values

Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	5.19 %
Sector B:	5.19 %
Sector C:	5.19 %
Dish Maximum Total (per sector):	5.19 %
Site Total:	11.21 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite emissions value for this site, assuming all carriers present, is **11.21 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

ATTACHMENT 7

May 23, 2024

VIA USPS CERTIFIED MAIL/
RETURN RECEIPT REQUESTED

South Lyme Station LLC
PO Box 182
South Lyme, CT 06376

RE: Proposed Modification to Existing Wireless Telecommunications Facility at 387 Shore Road, Old Lyme, Connecticut

To Whom It May Concern:

I am writing to you on behalf of Dish Wireless LLC ("Dish"). Dish intends to file with the Connecticut Siting Council ("Council") a petition for declaratory ruling ("Petition") that a Certificate of Environmental Compatibility and Public Need is not required.

The Petition will provide details of the Existing Facility modification and explain why it will have no significant adverse environmental effect. Dish proposes to extend the height of the existing Monopole tower by 10-feet, to a total height of approximately 90-feet above ground level (AGL).

This letter serves as notice to you as an abutting property owner pursuant to § 16-50j-40 of the Regulations of Connecticut State Agencies. Dish will file the Petition on or about May 30, 2024 and will request that the Council place the Petition on some future agenda.

You may review the Petition at the office of the Council, which is located at Ten Franklin Square, New Britain, Connecticut, 06051, or at the Office of the City Clerk at the Old Lyme Town Hall. All inquiries should be addressed to Council or to the undersigned.

Sincerely,

Victoria Masse
Northeast Site Solutions
Agent for Dish Wireless
5 Melrose Drive, Farmington CT 06032

UNITED STATES POSTAL SERVICE.

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

05/24/2024 09:03 AM

Product	Qty	Unit Price	Price
First-Class Mail® Letter	1		$0.68
South Lyme, CT 06376			
Weight: 0 lb 0.40 oz			
Estimated Delivery Date			
Tue 05/28/2024			
Certified Mail®			$4.40
Tracking #:			
70200640000176613696			
Return Receipt			$3.65
Tracking #:			
9590 9402 8425 3156 4677 88			
Total			$8.73
First-Class Mail® Letter	1		$0.68
Washington, DC 20001			
Weight: 0 lb 0.40 oz			
Estimated Delivery Date			
Tue 05/28/2024			
Certified Mail®			$4.40
Tracking #:			
70200640000176613702			
Return Receipt			$3.65
Tracking #:			
9590 9402 8425 3156 4677 71			
Total			$8.73
First-Class Mail® Letter	1		$0.68
Old Lyme, CT 06371			
Weight: 0 lb 0.40 oz			
Estimated Delivery Date			
Tue 05/28/2024			
Certified Mail®			$4.40
Tracking #:			
70200640000176613719			
Return Receipt			$3.65
Tracking #:			
9590 9402 8425 3156 4677 57			
Total			$8.73
First-Class Mail® Letter	1		$0.68
Atlanta, GA 30339			
Weight: 0 lb 0.40 oz			
Estimated Delivery Date			
Wed 05/29/2024			
Certified Mail®			$4.40
Tracking #:			
70200640000176613726			
Return Receipt			$3.65
Tracking #:			
9590 9402 8425 3156 4677 64			
Total			$8.73
First-Class Mail® Letter	1		$0.68
North Reading, MA 01864			
Weight: 0 lb 0.40 oz			
Estimated Delivery Date			
Tue 05/28/2024			
Certified Mail®			$4.40
Tracking #:			
70200640000176613733			
Return Receipt			$3.65
Tracking #:			
9590 9402 8425 3156 4677 40			
Total			$8.73

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Sent To: Blue Sky Towers LLC

Street and Apt. No., or PO Box No.: 352 Park Street, Suite 106

City, State, ZIP+4®: North Reading, MA 01864

PS Form 3800, April 2015 PSN 7530-02-000-9047 — See Reverse for Instructions

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Sent To: Blue Sky Towers LLC

Street and Apt. No., or PO Box No.: 100 Circle, 75 Parkway

City, State, ZIP+4®: Atlanta, GA 30339

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7020 0640 0001 7661 3696

Sent To: South Lyme Station LLC

Street and Apt. No., or PO Box No.: P.O. Box 182

City, State, ZIP+4®: South Lyme CT 06376

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City, State, ZIP+4®: Washington DC 20001

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☐ Adult Signature Required	$0.00
☐ Adult Signature Restricted Delivery	$
Postage	$0.68
Total Postage and Fees	

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7020 0640 0001 7661 3719

Sent To: Michael J. Cohen

Street and Apt. No., or PO Box No.: 1 Washington Ave

City, State, ZIP+4®: Old Lyme, CT 06371

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Prepaid Mail Atlanta, GA 30339 Weight: 0 lb 13.10 oz Acceptance Date: Fri 05/24/2024 Tracking #: 9405 5036 9930 0689 6833 33	1		$0.00
Prepaid Mail North Reading, MA 01864 Weight: 0 lb 13.00 oz Acceptance Date: Fri 05/24/2024 Tracking #: 9405 5036 9930 0689 7186 46	1		$0.00
Prepaid Mail Old Lyme, CT 06371 Weight: 0 lb 13.50 oz Acceptance Date: Fri 05/24/2024 Tracking #: 9405 5036 9930 0689 6833 26	1		$0.00
Prepaid Mail Old Lyme, CT 06371 Weight: 0 lb 13.10 oz Acceptance Date: Fri 05/24/2024 Tracking #: 9405 5036 9930 0689 6833 19	1		$0.00