

STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

IN RE: :  
: :  
A PETITION FOR A DECLARATORY : PETITION NO. \_\_\_\_  
RULING ON THE NEED TO OBTAIN A :  
SITING COUNCIL CERTIFICATE FOR THE :  
PROPOSED MODIFICATION OF AN :  
EXISTING WIRELESS :  
TELECOMMUNICATIONS FACILITY AT :  
315 OLD HARTFORD ROAD, : JUNE 21, 2022  
COLCHESTER, CONNECTICUT :

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

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), DISH Wireless, LLC (“DISH”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) for the modification of an existing wireless telecommunications facility at 315 Old Hartford Road in Colchester, Connecticut (the “Existing Facility”).

II. Existing Facility

The Existing Facility is located on an approximately 8-acre parcel that is owned by the 315 Colchester Realty LLC. The Facility consists of a 60-foot monopole tower and associated compound, which is owned by Crown Castle, and currently includes the telecommunications equipment of another wireless carrier. **Attachment 1** contains the owner’s authorization permitting DISH to file this Petition. The Facility was originally approved by the Connecticut Siting Council, Petition No. 605 on February 11, 2003, as documented in **Attachment 2**.

III. DISH Facility

DISH’s proposed facility is illustrated on the plans submitted as **Attachment 3**. DISH proposes the shared use of the Existing Facility to provide FCC licensed services. DISH will install three install three (3) 600/1900 MHz 5G antennas and six (6) RRUs on a new platform mount installed at the centerline height of approximately 40’ AGL.

DISH has confirmed that the Existing Facility is capable of supporting the addition of DISH’s

antennas and tower mounted equipment, as documented in the tower Structural Analysis Report annexed hereto as **Attachment 4**, and once new mounts are installed as documented in the Mount Analysis Report annexed hereto as **Attachment 5**.

DISH's 5' x 7' lease area is located immediately to the West of the tower. In order to fully enclose its ground equipment, DISH will install a 11'-0" x 8'-0" fence extension. The new section of fence will match the existing compound fence. Within its lease area, DISH will install a 5' x 7' steel platform for its ground equipment, supported by four (4) 12" x 12" footpads at grade.

Installation of DISH's facility will cost approximately \$48,000 and will take approximately two (2) weeks to complete. Construction will occur during normal business hours, or as allowed by the tower and/or property owner.

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

##### 1. Physical Environmental Effects

The attachment of DISH's antennas to the existing tower, and the installation of radio and electrical equipment within the expanded compound will not involve a significant alteration to the physical and environmental characteristics of the Property. No native trees will need to be removed and no on-site or off-site wetlands or watercourses will be impacted by the proposed facility expansion.

##### 2. Visual Effects

Given the height of the existing tower, 60' AGL, which has existing antennas installed on it, DISH's proposed antenna installation at a centerline height of approximately 40' AGL would have a minimal visual impact. The proposed compound expansion will impact only a portion of the existing fenced perimeter and will also have a minimal visual impact.

##### 3. FCC Compliance

Radio frequency ("RF") emissions resulting from DISH's shared use 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 EBI Consulting. This report confirms that the modified facility will operate well within the RF emission standards established by the FCC.

#### V. Notice to the City, Property Owner and Abutting Landowners

On June 21, 2022, a copy of this Petition was sent to Andreas Bisbikos, First Selectman and Ariel Lago, Zoning Enforcement Officer for the Town of Colchester. 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. Included in Attachment 7 is a sample abutter's letter and the list of those abutting landowners who were sent notice.

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 installation of a temporary tower 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  
(860) 209-4690  
denise@northeastsitesolutions.com

Attachments

Cc: Andreas Bisbikos, First Selectman  
Town of Colchester  
127 Norwich Avenue  
Colchester, CT 06415

Ariel Lago, Zoning Enforcement Officer  
Town of Colchester  
127 Norwich Avenue  
Colchester, CT 06415

315 Colchester Realty LLC - Property Owner  
425 Gold Star Hwy  
Groton, CT 06340

Crown Castle – Tower Owner

# ATTACHMENT 1



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

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

## **Crown Castle Letter of Authorization**

### **CT - CONNECTICUT SITING COUNCIL**

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

**Re: Tower Share Application**  
**Crown Castle telecommunications site at:**  
**315 OLD HARTFORD ROAD, COLCHESTER, CT 06415**

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

**Crown Site ID/Name: 842860/COLCHESTER NORTH CENTRAL**  
**Customer Site ID: BOBOS00888A/**  
**Site Address: 315 OLD HARTFORD ROAD, COLCHESTER, CT 06415**

Crown Castle

By:  \_\_\_\_\_ Date: 6/17/2022  
Richard Zajac  
Site Acquisition Specialist



# Town of Colchester, CT

Property Report

Map Block Lot

09-00/012-000

PID 880

Building # 1

Section # 1

Account

C0058100

## Property Information

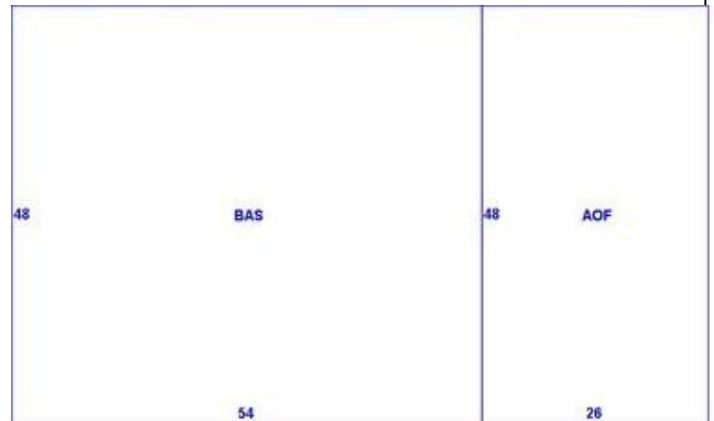
Property Location	315 OLD HARTFORD RD
Owner	315 COLCHESTER REALTY LLC
Co-Owner	na
Mailing Address	425 GOLD STAR HWY GROTON CT 06340
Land Use	3320 Auto Repr
Land Class	C
Zoning Code	I
Census Tract	

Neighborhood	
Acreage	8.03
Utilities	UNKNOWN
Lot Setting/Desc	UNKNOWN UNKNOWN
Additional Info	

## Photo



## Sketch



## Primary Construction Details

Year Built	1967
Stories	1
Building Style	Service Shop
Building Use	Serv Station
Building Condition	
Interior Floors 1	Concrete Slab
Interior Floors 2	NA
Total Rooms	
Basement Garages	
Occupancy	1.00
Building Grade	

Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Bath Style	
Kitchen Style	
Roof Style	Flat
Roof Cover	T&G/Rubber
AC Type	Wall Unit
Fireplaces	0

Exterior Walls	Concr/Cinder
Exterior Walls 2	NA
Interior Walls	Minimum
Interior Walls 2	NA
Heating Type	Forced Air-Duc
Heating Fuel	Oil
Sq. Ft. Basement	
Fin BSMT Quality	
Extra Kitchens	



Town of Colchester, CT

Property Report

Map Block Lot

09-00/012-000

PID 880

Building # 1

Section # 1

Account

C0058100

Valuation Summary (Assessed value = 70% of Appraised Value)

Table with 6 columns: Item, Appraised, Assessed, Subarea Type, Gross Area (sq ft), Living Area (sq ft). Rows include Buildings, Extras, Improvements, Outbuildings, Land, and Total.

Sub Areas

Outbuilding and Extra Features

Table with 2 columns: Type, Description. Rows include Mezzanine-Unfn, Paving Asphalt, Lights (2).

Table with 3 columns: Subarea Type, Gross Area (sq ft), Living Area (sq ft). Includes Total Area row with value 3840.

Sales History

Table with 4 columns: Owner of Record, Book/ Page, Sale Date, Sale Price. Lists various sales transactions.

# Town of Colchester

Geographic Information System (GIS)



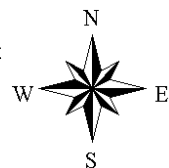
Date Printed: 6/16/2022



### MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Colchester and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 200 feet





# **ATTACHMENT 2**

Petition No. 605  
AT&T Wireless PCS LLC  
Colchester, Connecticut  
Staff Report  
February 11, 2003

On February 3, 2003, Gerald Heffernan of the Connecticut Siting Council (Council) and Robert Erling of the Council staff met Christopher Fisher of AT&T Wireless, Bryan R. Lazuka of Site Acquisition Consultants and Christopher K. Daddi of Dewberry-Goodkind, Inc., for a field review of this petition. AT&T is petitioning the Council for a declaratory ruling that the proposed replacement of an existing 60-foot lattice tower with a 60-foot monopole tower would not have a significant adverse environmental impact, and therefore would not require a Certificate of Environmental Compatibility and Public Need.

The existing lattice tower is adjacent to a commercial garage used by the Laidlaw Bus Company. The existing tower holds several antennas for bus communications. This tower does not have the structural capacity to support AT&T's proposed six-panel antennas. The proposed replacement monopole would be located approximately 10 feet from the existing tower and will be capable of holding both the existing whip and yagi antennas used by the bus company and AT&T's antennas, which would be installed at the 57.5-foot level of this tower. AT&T would install two equipment cabinets 10-foot 3¼-inch by 6-foot concrete pads near the base of the proposed replacement tower. The tower and equipment cabinets would be surrounded by a 6-foot chain link fence.

The replacement tower would be installed in an area which is currently cleared. Surrounding property uses include a garage and car wash, a recreational field and a State Department of Transportation garage. There are no homes in the immediate area.

Operation of the proposed AT&T antennas combined with those of the bus company would not result in a radio frequency power density in excess of State of federal standards at the base of the proposed tower.

The use of this site would allow AT&T to close a coverage gap which now exists on Routes 2, 16, and 85 between existing AT&T tower sites in Colchester.

# **ATTACHMENT 3**



DISH Wireless L.L.C. SITE ID:  
**BOBOS00888A**

DISH Wireless L.L.C. SITE ADDRESS:  
**315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415**

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:	
<ul style="list-style-type: none"> <li>• INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT</li> <li>• INSTALL PROPOSED JUMPERS</li> <li>• INSTALL (6) PROPOSED RRUs (2 PER SECTOR)</li> <li>• INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)</li> <li>• INSTALL (1) PROPOSED HYBRID CABLE</li> <li>• INSTALL (3) DOUBLE Z-BRACKETS (1 PER SECTOR)</li> <li>• REMOVED EXISTING ANTENNA MOUNTS</li> </ul>	
GROUND SCOPE OF WORK:	
<ul style="list-style-type: none"> <li>• INSTALL (1) PROPOSED METAL PLATFORM</li> <li>• INSTALL (1) PROPOSED ICE BRIDGE</li> <li>• INSTALL (1) PROPOSED PPC CABINET</li> <li>• INSTALL (1) PROPOSED EQUIPMENT CABINET</li> <li>• INSTALL (1) PROPOSED TELCO CONDUIT</li> <li>• INSTALL (1) PROPOSED TELCO-FIBER BOX</li> <li>• INSTALL (1) PROPOSED GPS UNIT</li> <li>• INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)</li> <li>• INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)</li> <li>• INSTALL (1) PROPOSED METER SOCKET</li> <li>• INSTALL PROPOSED FENCE EXPANSION</li> <li>• INSTALL PROPOSED 8'-0" GATE</li> </ul>	

SITE INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: 315 COLCHESTER REALTY LLC ADDRESS: 425 GOLD STAR HWY GROTON, CT 06340	APPLICANT: DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER TYPE: MONOPOLE	TOWER OWNER: CROWN CASTLE USA INC. 2000 CORPORATE DR. CANONSBURG, PA 15317 (877) 486-9377
TOWER CO SITE ID: 842860	SITE DESIGNER: NB+C ENGINEERING SERVICES, LLC 6095 MARSHALEE DRIVE, SUITE 300 ELKRIDGE, MD 21075 (410) 712-7092
TOWER APP NUMBER: 572909	SITE ACQUISITION: CORWIN DIXON CORWIN.DIXON@CROWNCastle.COM
COUNTY: NEW LONDON	CONSTRUCTION MANAGER: JAVIER SOTO JAVIER.SOTO@DISH.COM
LATITUDE (NAD 83): 41° 34' 49.69" N 41.580469 N	RF ENGINEER: ARVIN SEBASTIAN ARVIN.SEBASTIAN@DISH.COM
LONGITUDE (NAD 83): -72° 21' 0.07" W -72.350019 W	
ZONING JURISDICTION: NEW LONDON COUNTY	
ZONING DISTRICT: I - INDUSTRIAL	
PARCEL NUMBER: 28-09-00-012-000	
OCCUPANCY GROUP: U	
CONSTRUCTION TYPE: II-B	
POWER COMPANY: NORTHEAST UTILITIES	
TELEPHONE COMPANY: FRONTIER	



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



NB+C ENGINEERING SERVICES, LLC.  
6095 MARSHALEE DRIVE, SUITE 300  
ELKRIDGE, MD 21075  
(410) 712-7092



06/10/2022  
KRUPAKARAN KOLANDAIVELU, P.E.  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
LICENSE #PEN.0028997

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DRAWN BY: BPC	CHECKED BY: BRN	APPROVED BY: TA
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RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	11/12/2021	ISSUED FOR CONSTRUCTION
1	02/17/2022	ISSUED FOR CONSTRUCTION
2	06/08/2022	ISSUED FOR CONSTRUCTION
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A&E PROJECT NUMBER  
**842860**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
**315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415**

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**



**UNDERGROUND SERVICE ALERT CBYD 811**  
**UTILITY NOTIFICATION CENTER OF CONNECTICUT**  
(800) 922-4455  
[WWW.CBYD.COM](http://WWW.CBYD.COM)

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

**GENERAL NOTES**

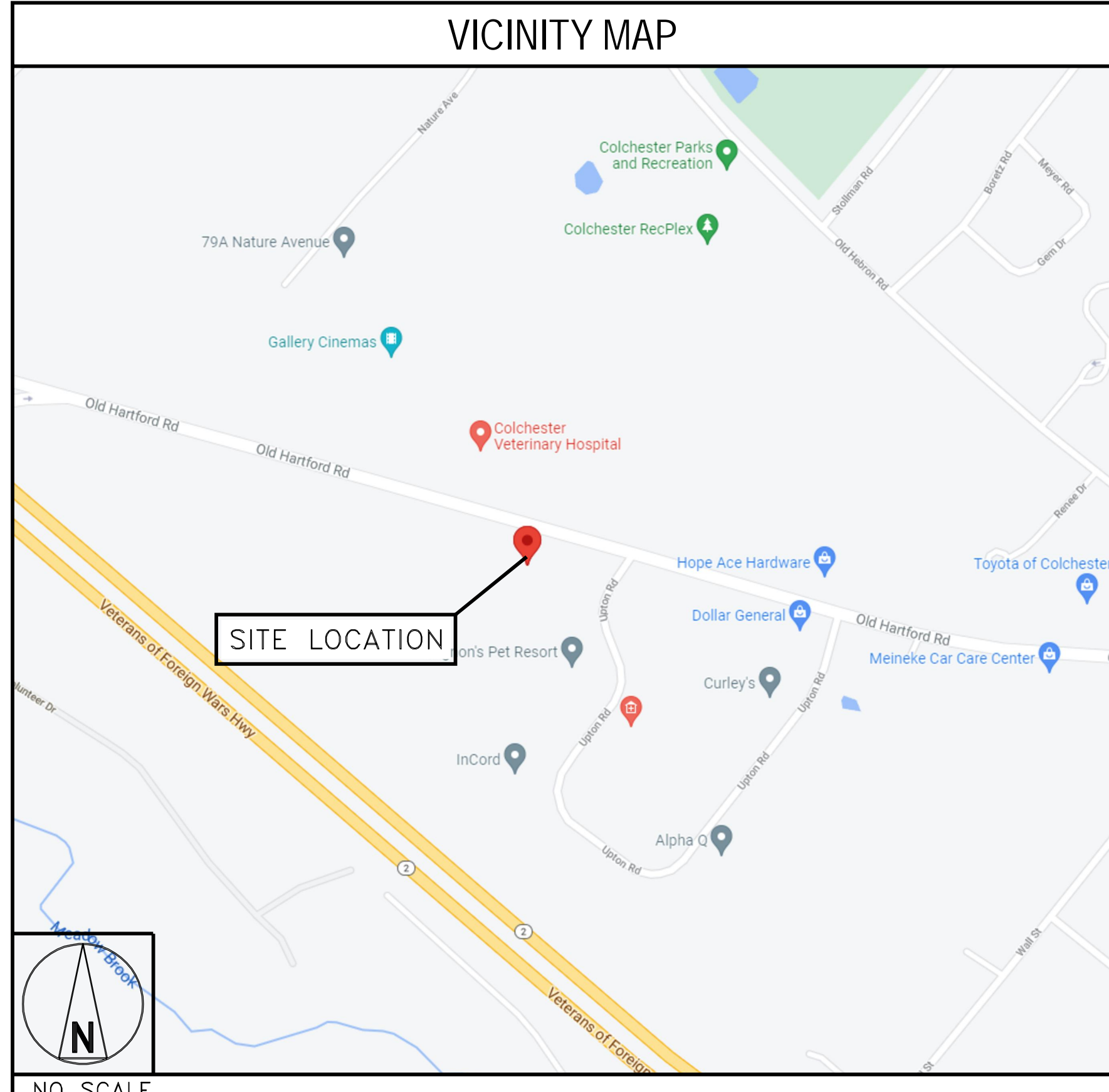
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE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

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

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

**DIRECTIONS**

DIRECTIONS FROM HARTFORD-BRAINARD AIRPORT:  
START OUT GOING NORTHWEST ON LINDBERGH DR. TURN LEFT ONTO MAXIM RD.  
MERGE ONTO US-5 N/CT-15 N. TAKE THE US-5 N/MAIN STREET EXIT, EXIT 90.  
TAKE EXIT 17. TURN LEFT ONTO MILL HILL RD. TURN SLIGHT RIGHT ONTO OLD HARTFORD RD. 315 OLD HARTFORD RD IS ON THE RIGHT. SITE IN REAR.

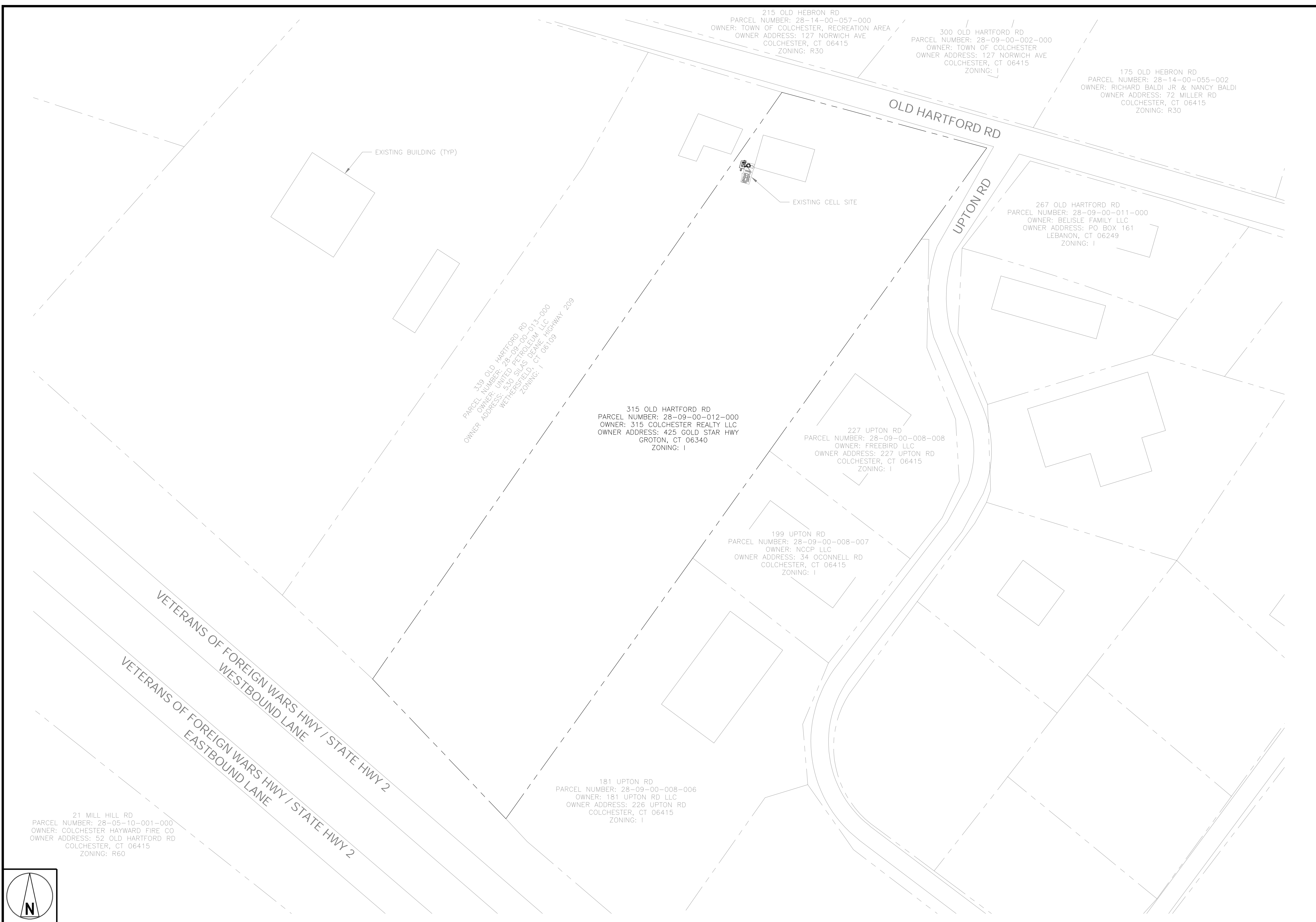


**CONNECTICUT CODE OF COMPLIANCE**

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

SHEET INDEX	
SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
Z-1	ABUTTER MAP
Z-1	WETLANDS MAP
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



NB+C ENGINEERING SERVICES, L.L.C.  
6095 MARSHALEE DRIVE, SUITE 300  
ELKRIDGE, MD 21075  
(410) 712-7092



06/10/2022  
KRUPAKARAN KOLANDAIVELU, P.E.  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
LICENSE #PEN.0028997

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DRAWN BY:	CHECKED BY:	APPROVED BY:
BPC	BRN	TA

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

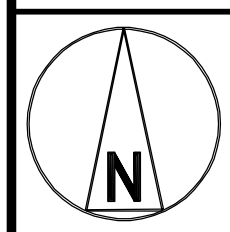
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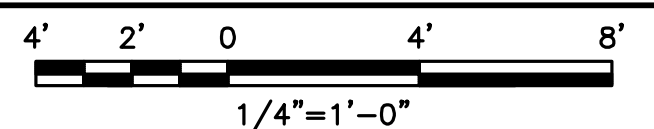
DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
**315 OLD HARTFORD ROAD**  
**COLCHESTER, CT 06415**

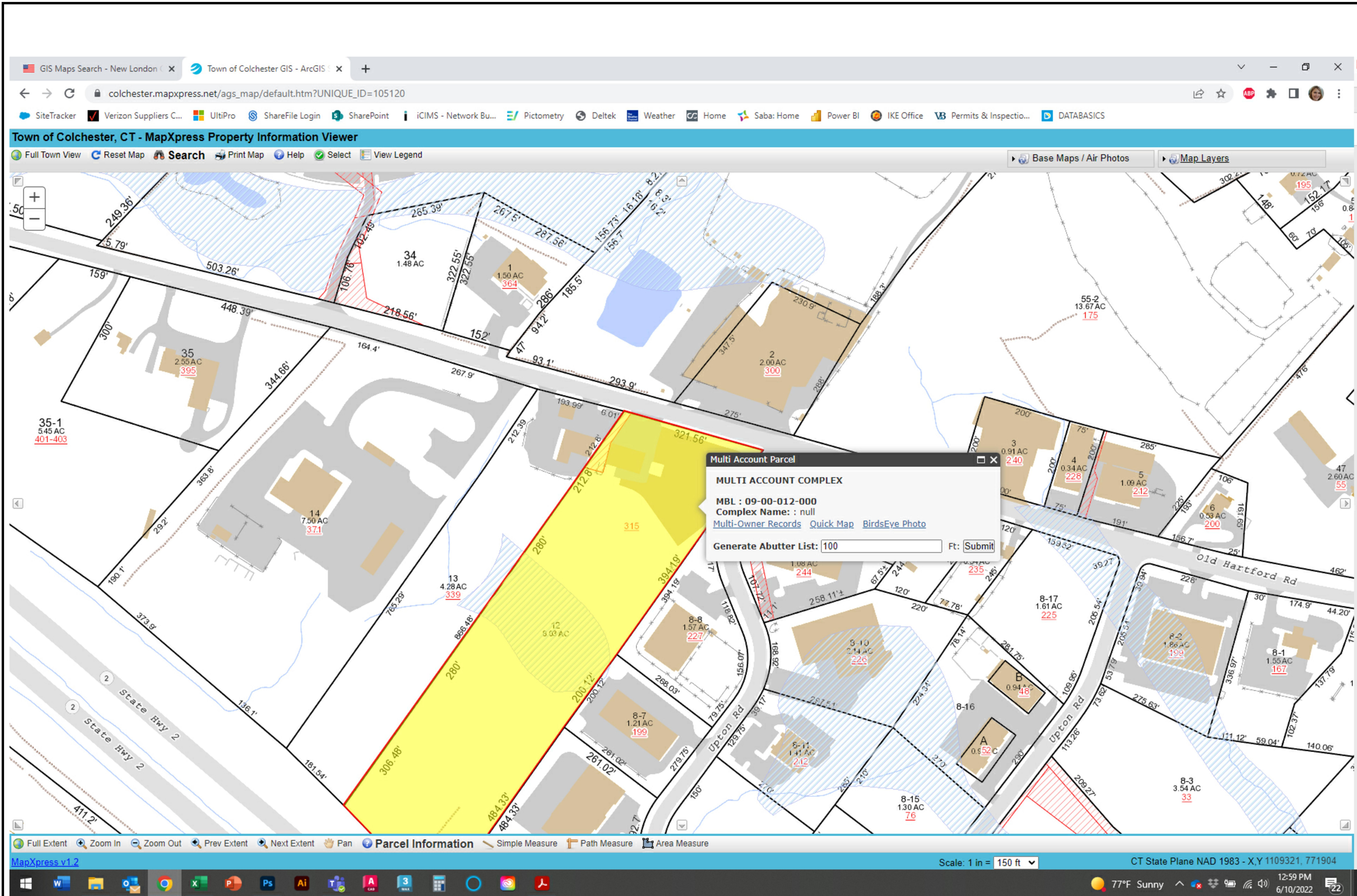
SHEET TITLE  
**OVERALL AND ENLARGED**  
**SITE PLAN**

SHEET NUMBER  
**A-1**



ABUTTER MAP





Multi Account Parcel

**MULTI ACCOUNT COMPLEX**

MBL : 09-00-012-000  
 Complex Name : null  
[Multi-Owner Records](#) [Quick Map](#) [BirdsEye Photo](#)

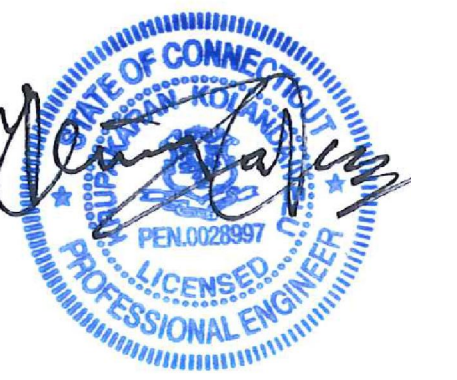
Generate Abutter List:  Ft:



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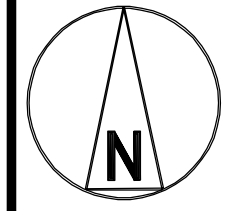
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SHEET NUMBER  
**A-1**



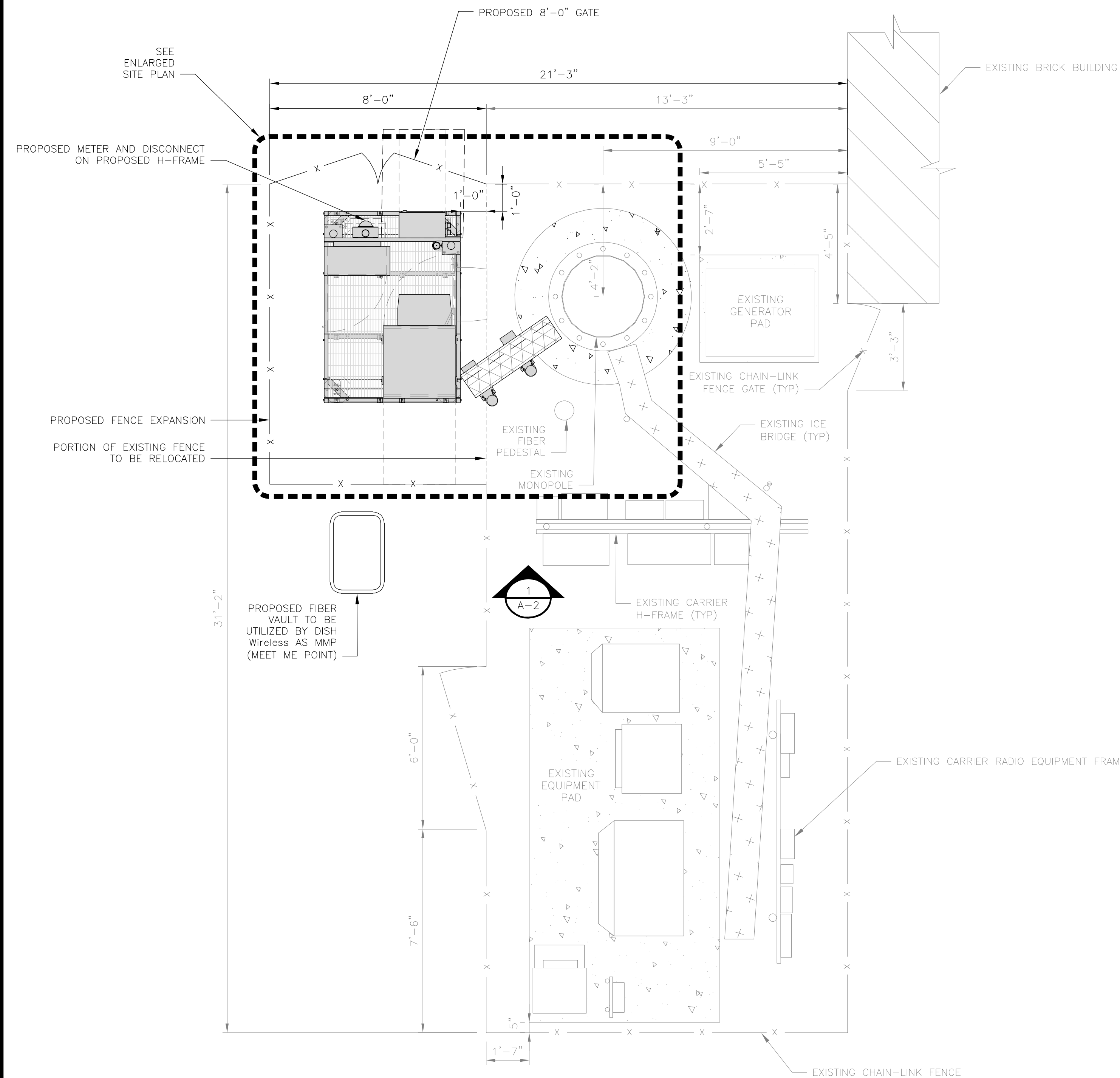
WETLANDS MAP

NO SCALE

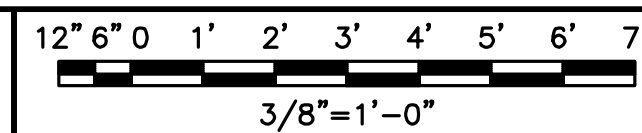
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**NOTES**

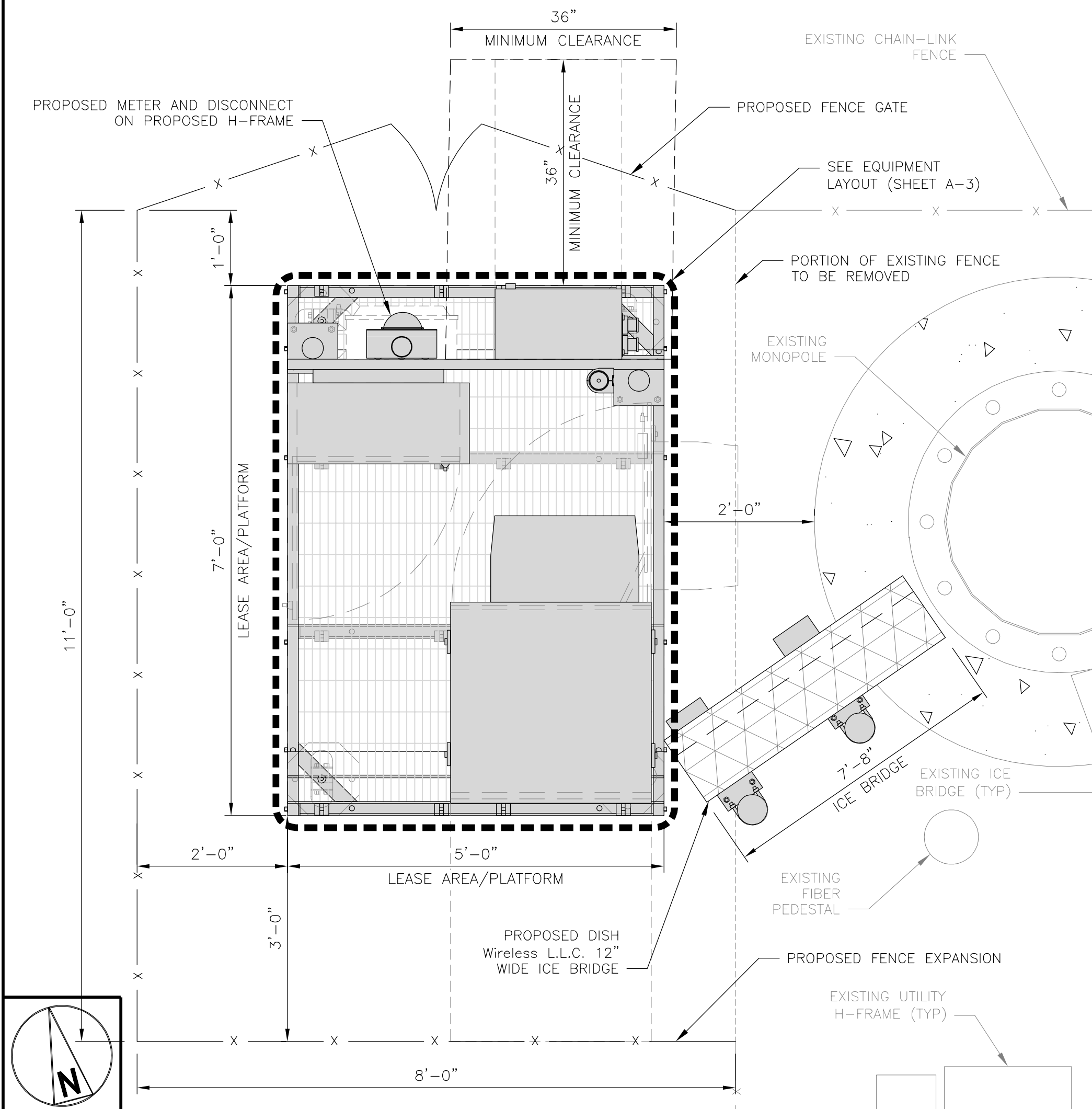
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



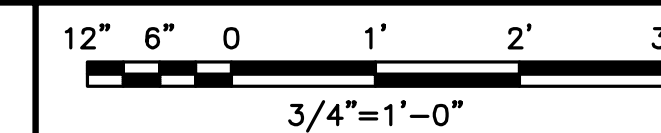
OVERALL SITE PLAN



1



ENLARGED SITE PLAN



2



AERIAL VIEW

3

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**NB+C**  
TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.  
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06/10/2022

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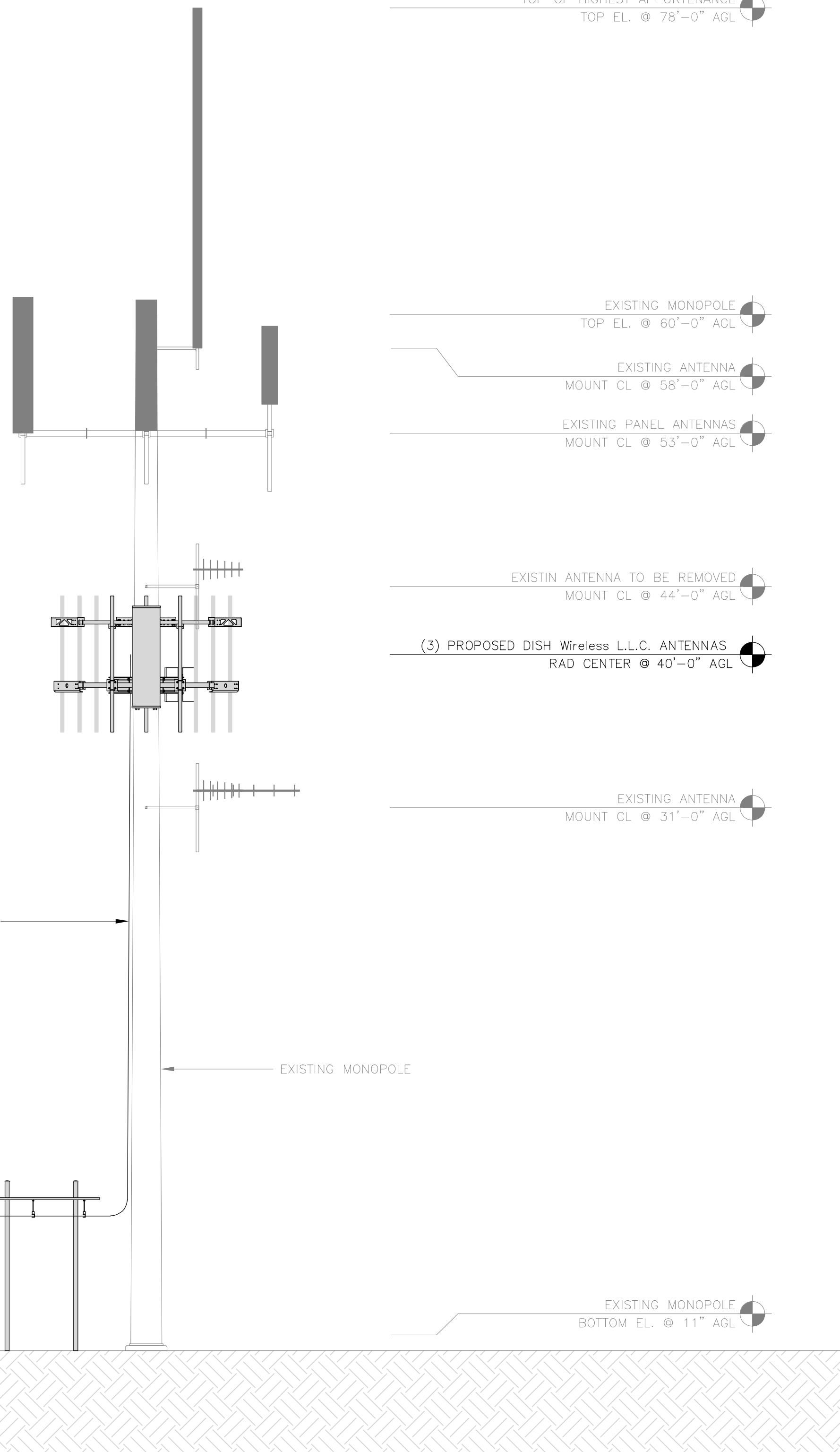
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SITE PLAN**

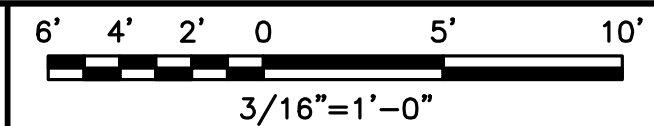
SHEET NUMBER  
**A-1**

**NOTES**

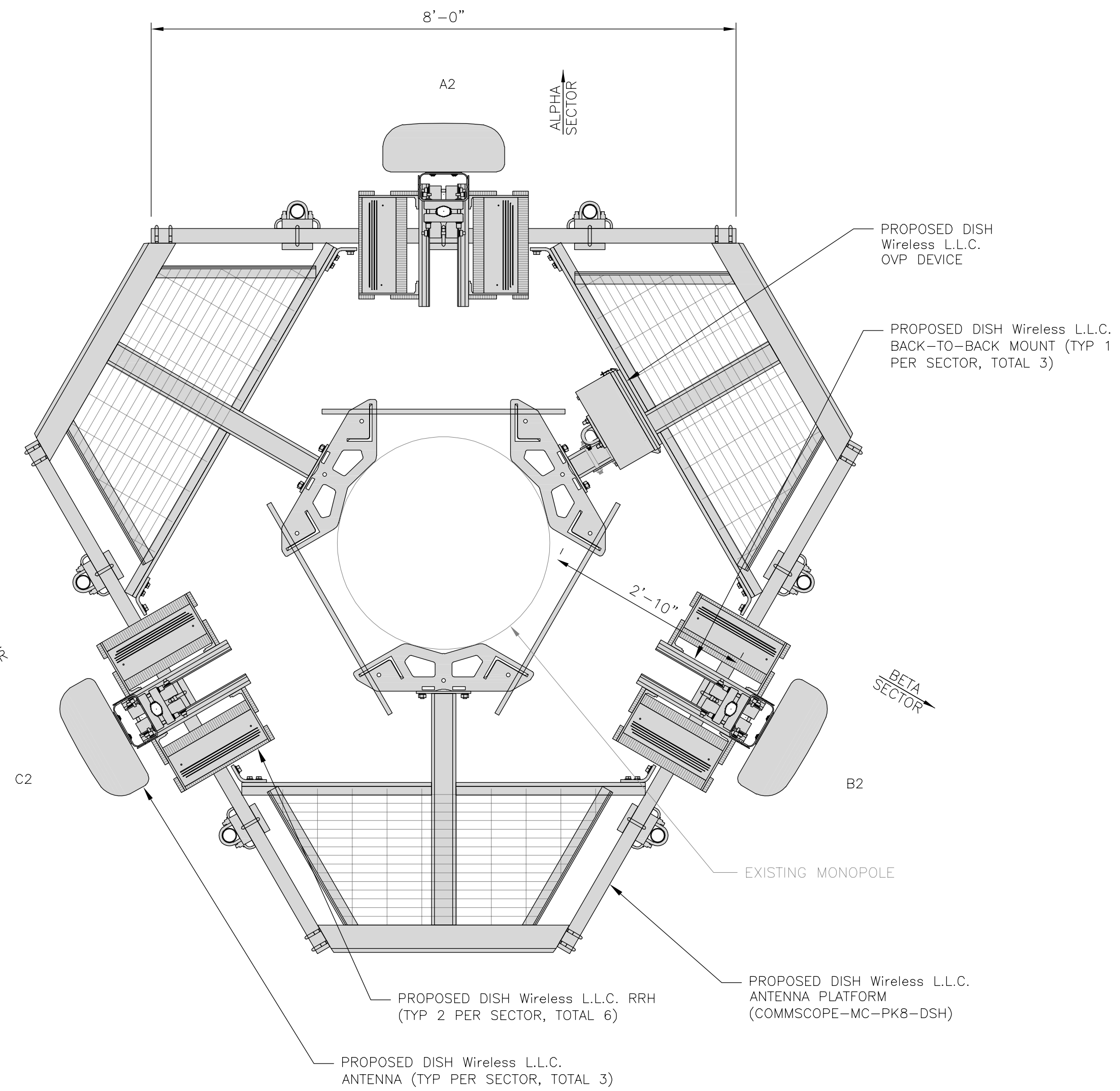
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



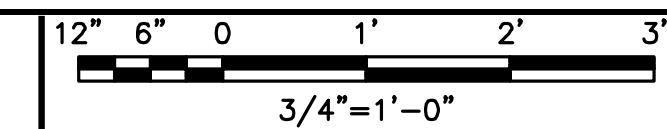
**PROPOSED NORTH ELEVATION**



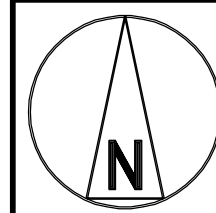
1



**ANTENNA LAYOUT**



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	
A1	--	--	--	--	--	(1) HIGH-CAPACITY 1.375" DIA. HYBRID CABLE (79' LONG)	FUJITSU - TA08025-B604	5G	A2	RAYCAP - RDIDC-9181 -PF-48
A2	PROPOSED	JMA - MX08FRO665-21	5G	0°	40'-0"		FUJITSU - TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU - TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	JMA - MX08FRO665-21	5G	120°	40'-0"		FUJITSU - TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU - TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	JMA - MX08FRO665-21	5G	240°	40'-0"		FUJITSU - TA08025-B605	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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



NB+C ENGINEERING SERVICES, LLC.  
6095 MARSHALEE DRIVE, SUITE 300  
ELKRIDGE, MD 21075  
(410) 712-7092



06/10/2022  
KRUPAKARAN KOLANDAIVELU, P.E.  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
LICENSE #PEN.0028997

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DRAWN BY: BPC  
CHECKED BY: BRN  
APPROVED BY: TA

RFDS REV #: ---

**CONSTRUCTION DOCUMENTS**

**SUBMITTALS**

REV	DATE	DESCRIPTION
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3	06/10/2022	ISSUED FOR CONSTRUCTION

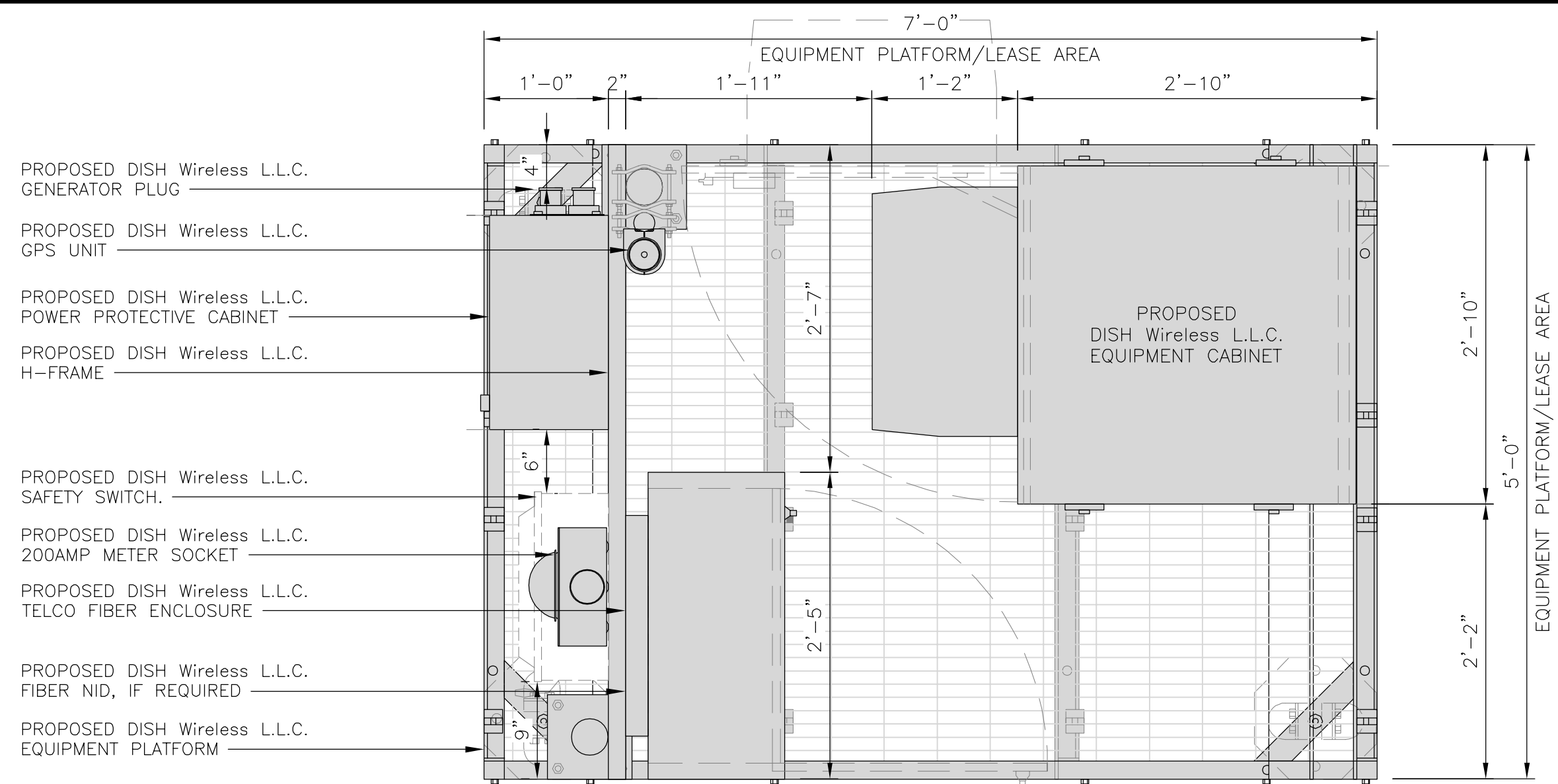
**A&E PROJECT NUMBER**  
**842860**

**DISH Wireless L.L.C. PROJECT INFORMATION**  
**BOBOS00888A**  
**315 OLD HARTFORD ROAD COLCHESTER, CT 06415**

**SHEET TITLE**  
**ELEVATION, ANTENNA LAYOUT AND SCHEDULE**

**SHEET NUMBER**  
**A-2**



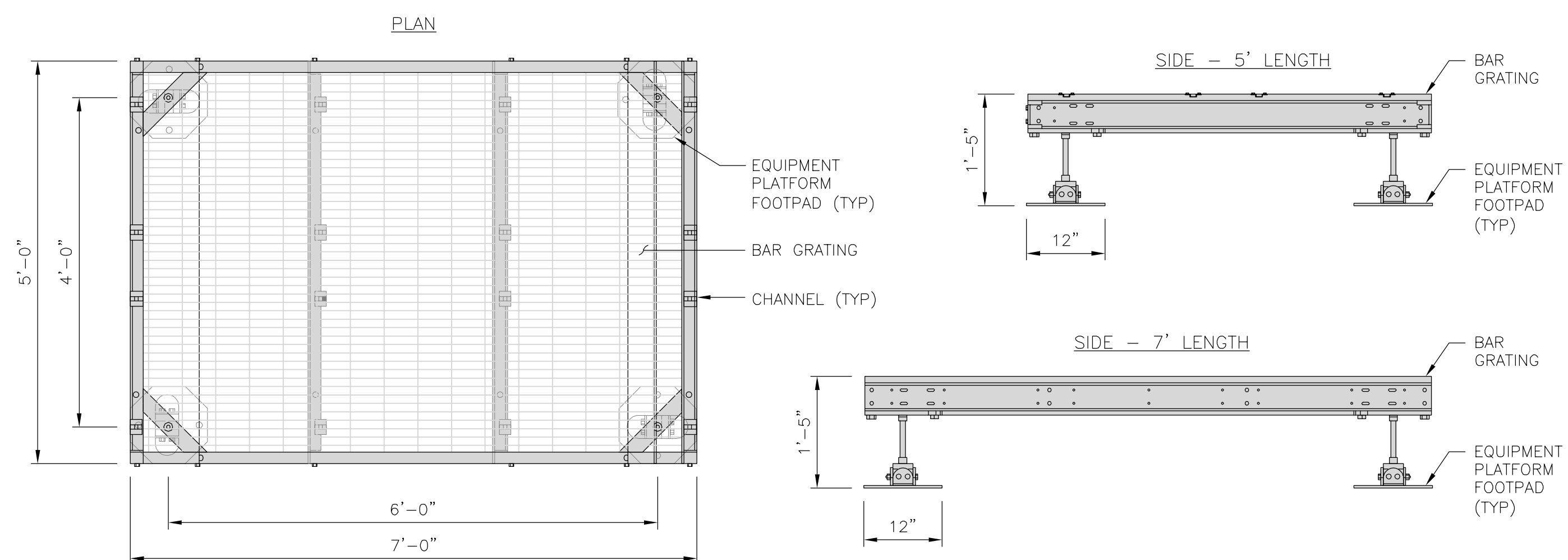


PLATFORM EQUIPMENT PLAN

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

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

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

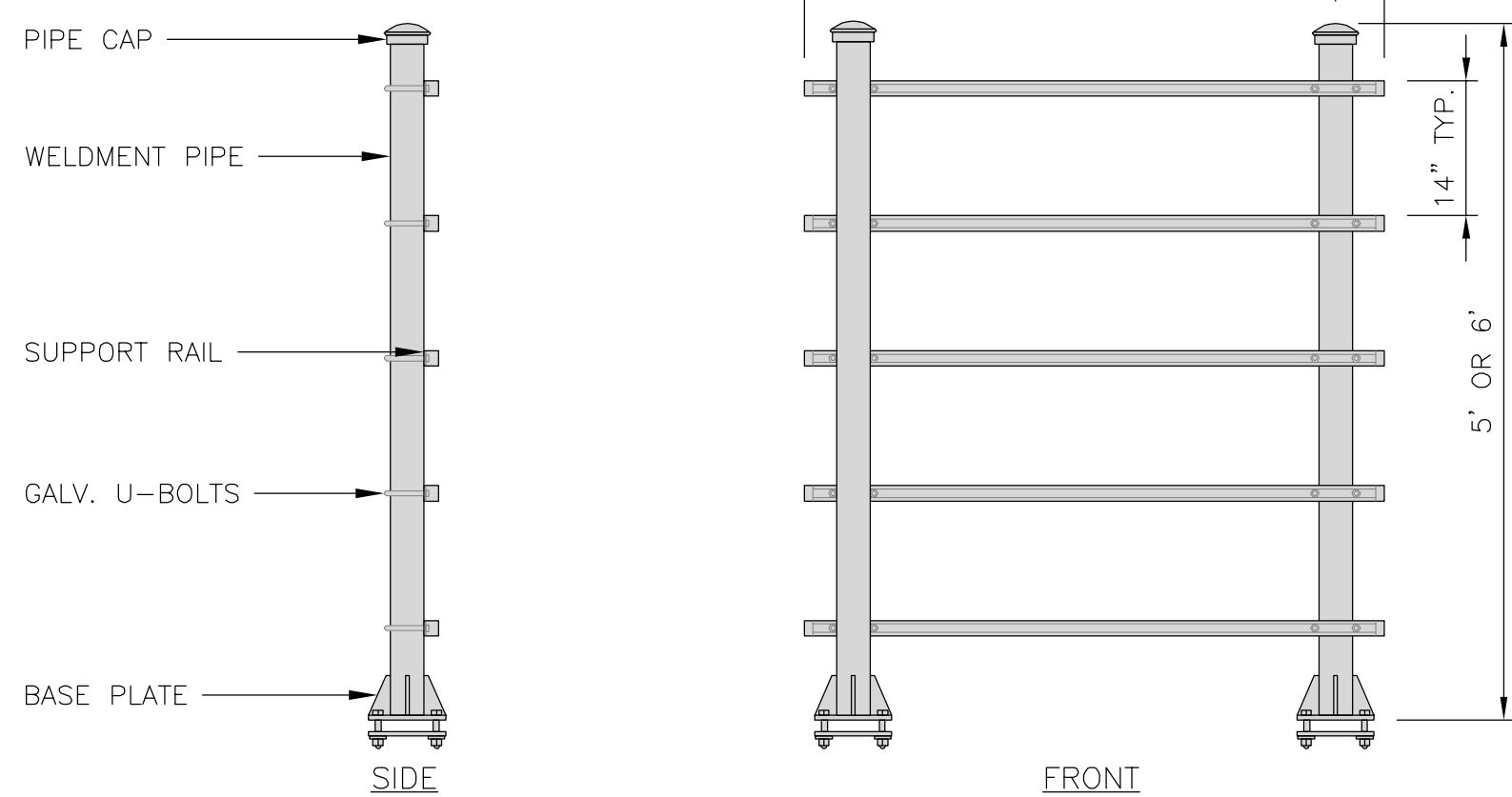


PLATFORM DETAIL

NO SCALE 2

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

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



H-FRAME DETAIL

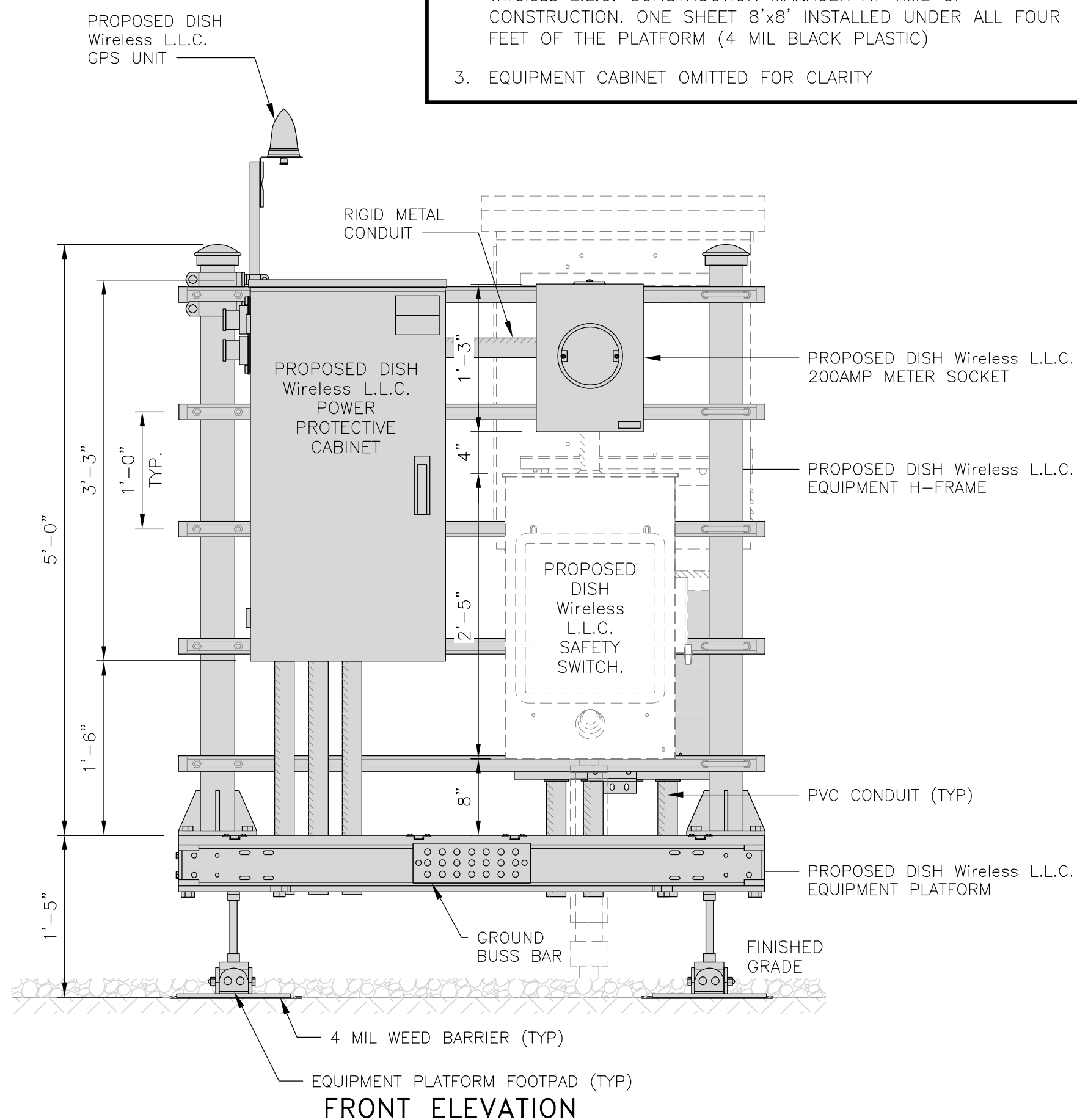
NO SCALE 3

NOT USED

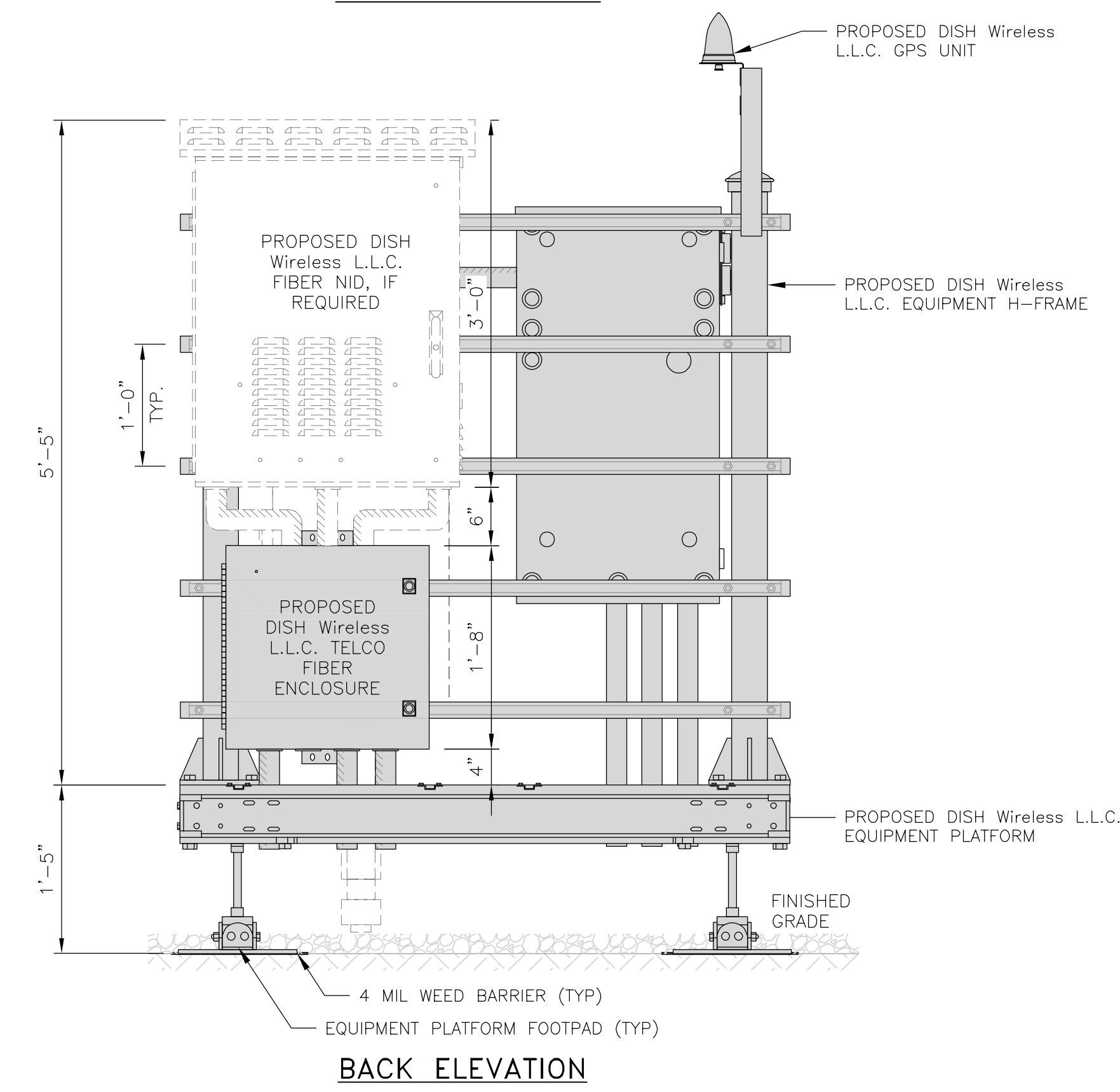
NO SCALE 4

NOTES

- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- 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)
- EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

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

H-FRAME EQUIPMENT ELEVATION

NO SCALE 5



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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ELKRIDGE, MD 21075  
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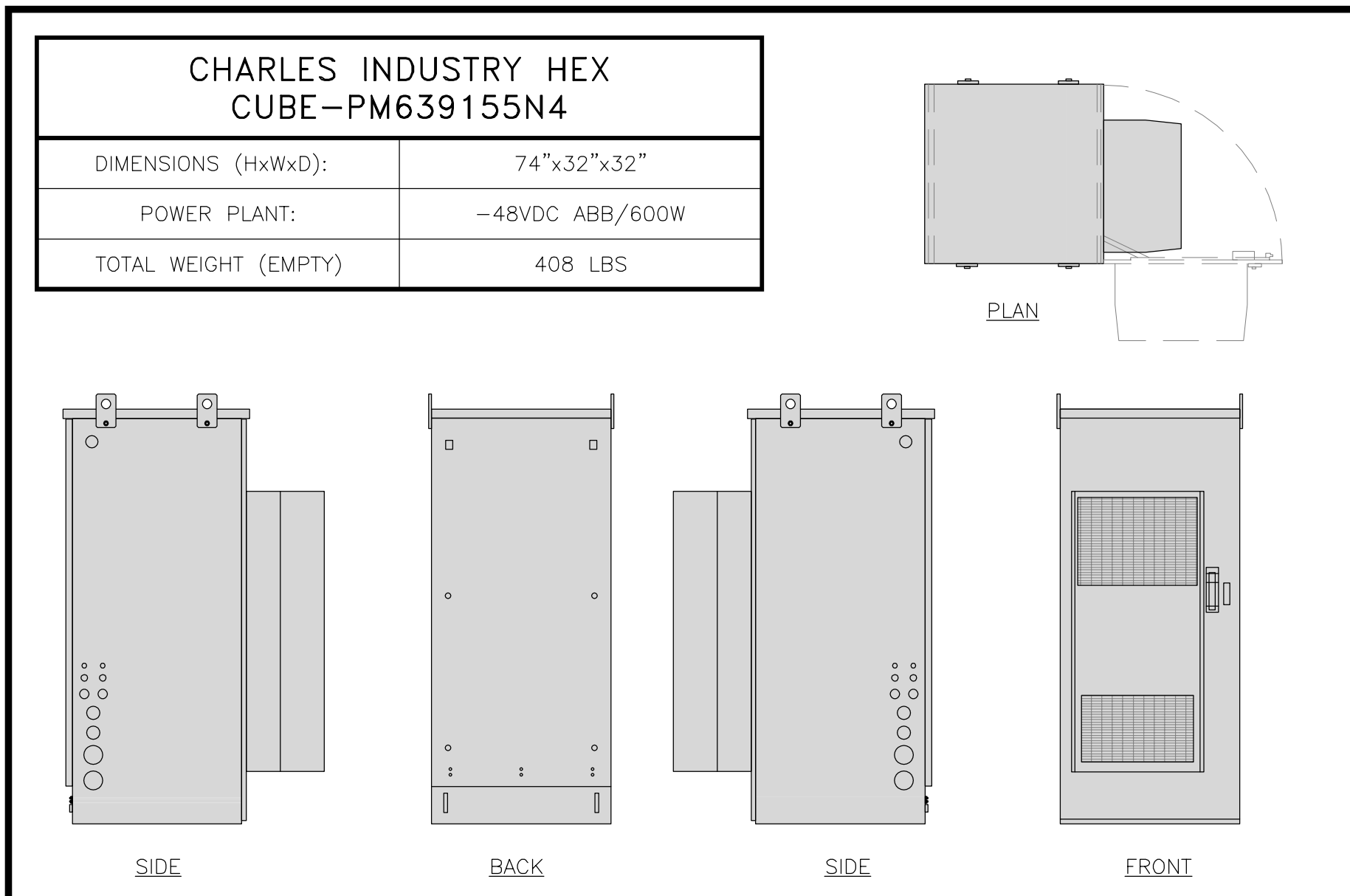
A&E PROJECT NUMBER  
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DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

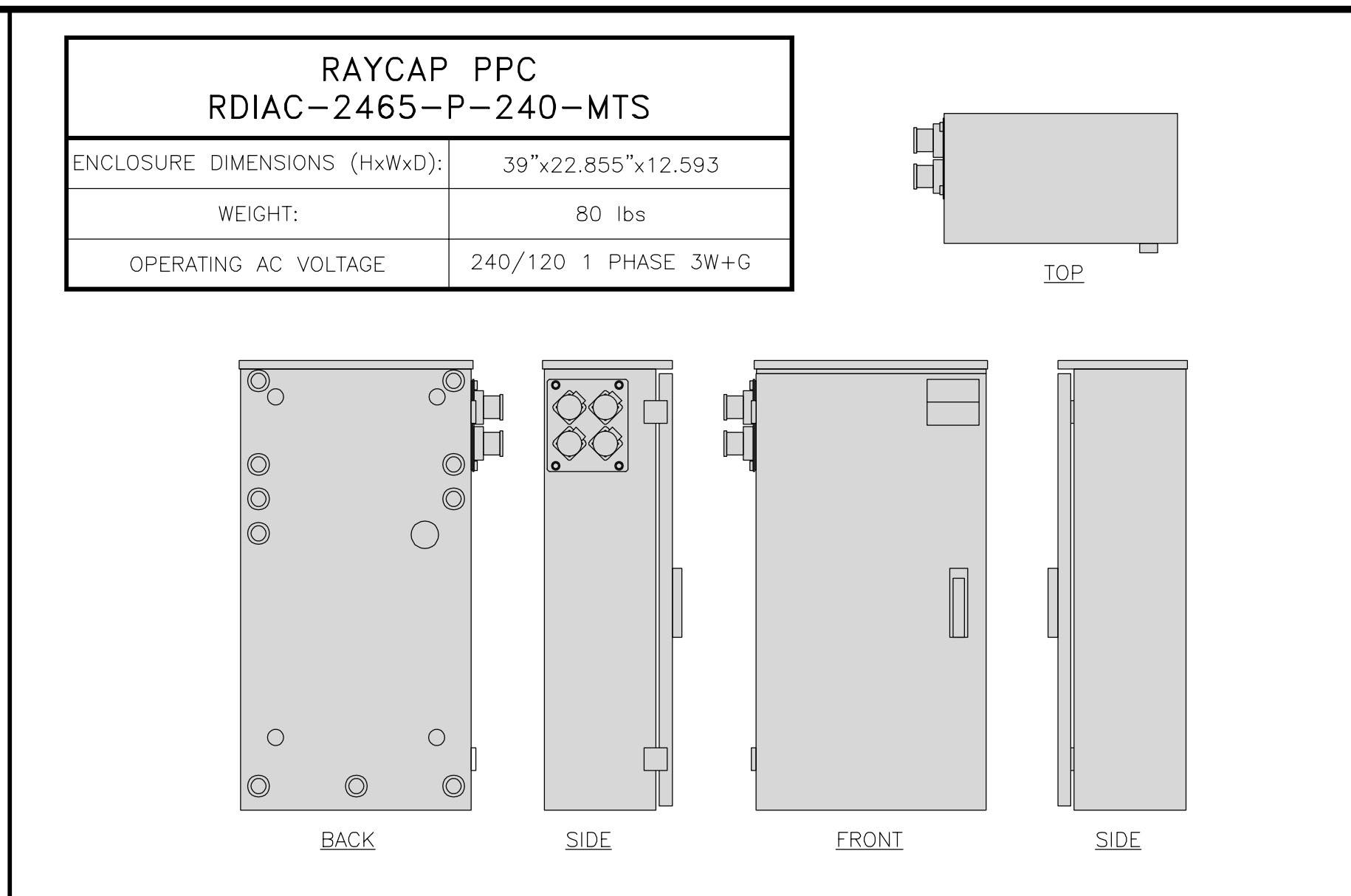
SHEET TITLE  
**EQUIPMENT PLATFORM AND  
H-FRAME DETAILS**

SHEET NUMBER

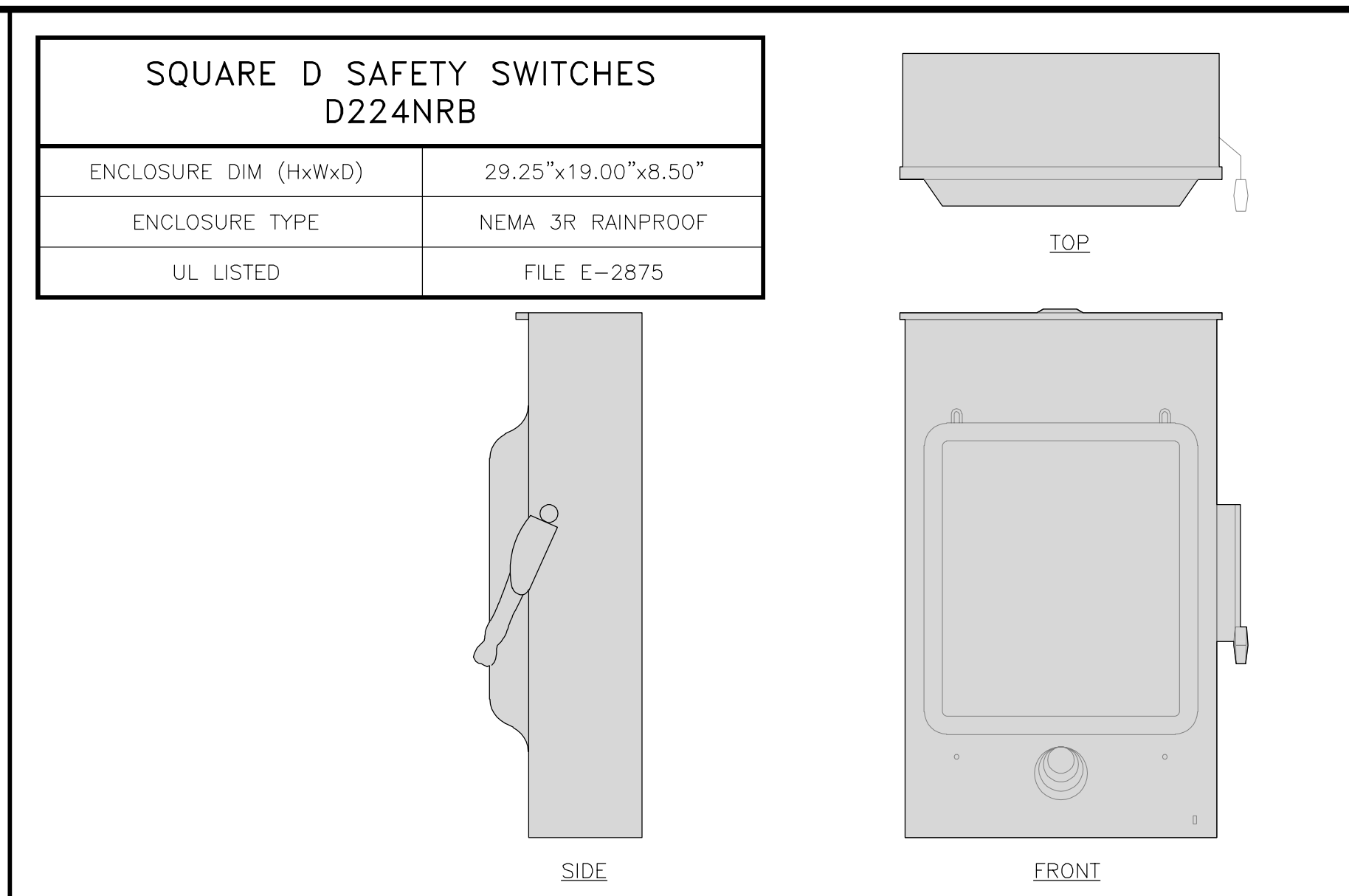
**A-3**



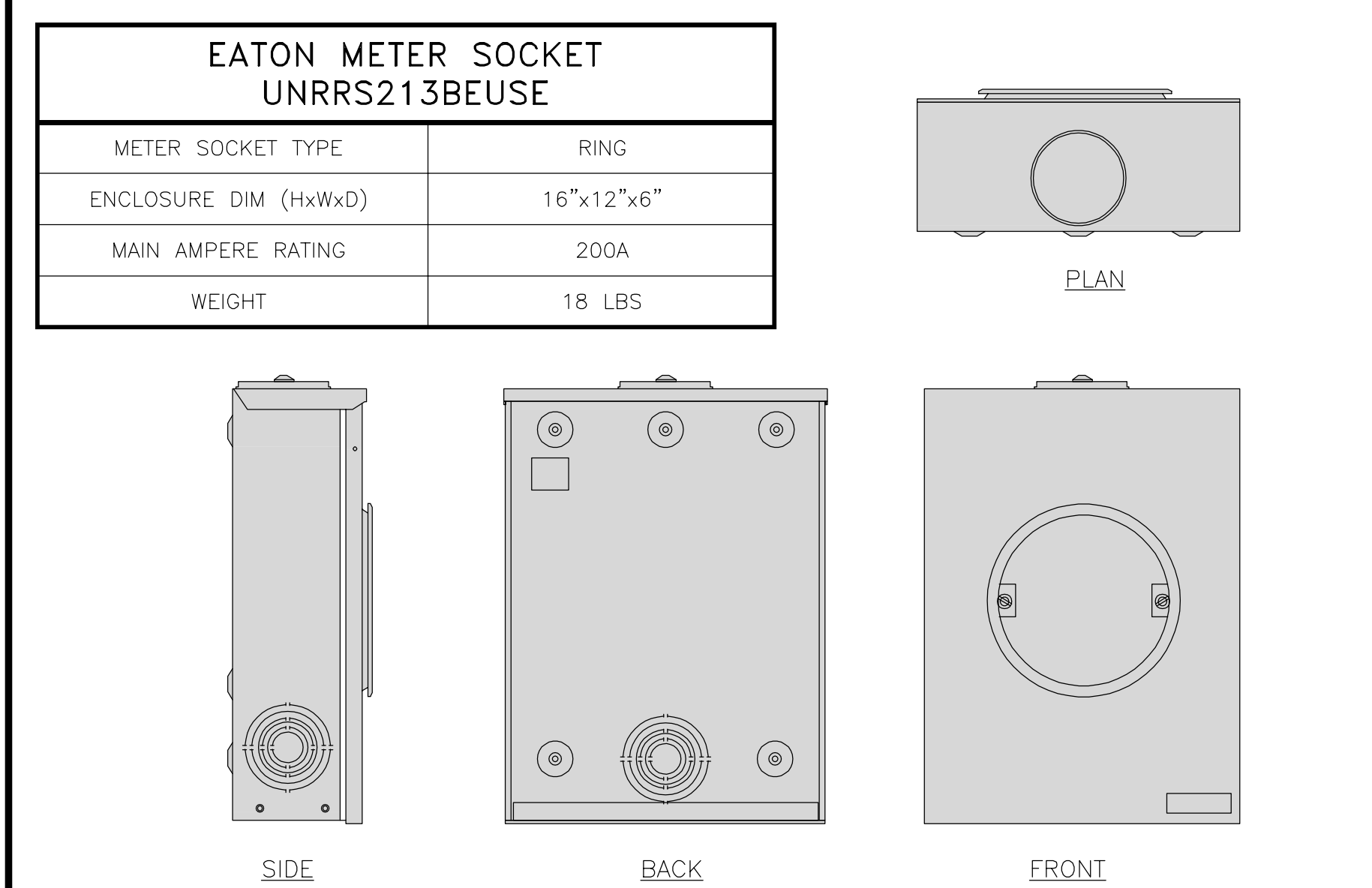
CABINET DETAIL NO SCALE 1



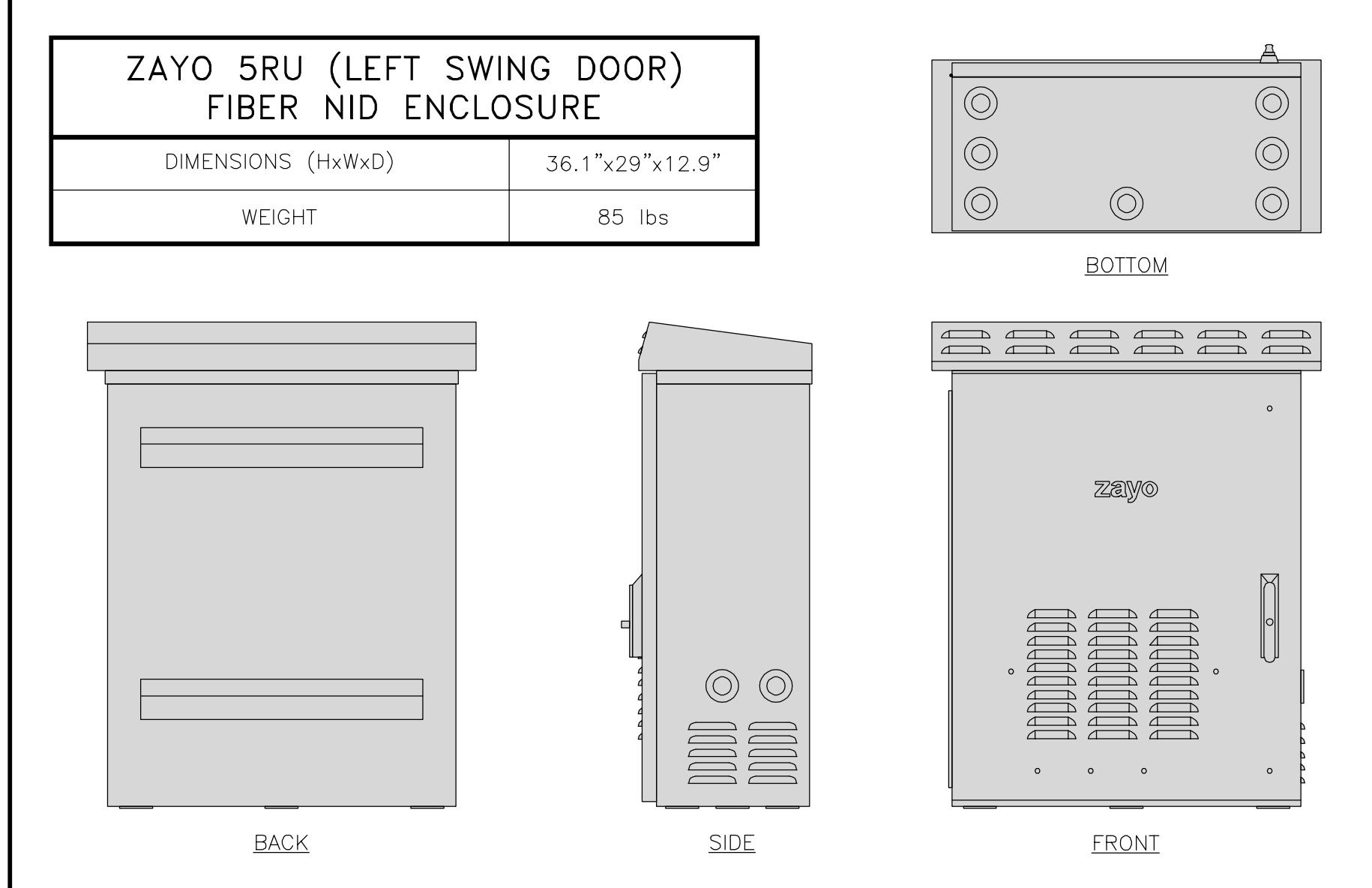
POWER PROTECTION CABINET (PPC) DETAIL NO SCALE 2



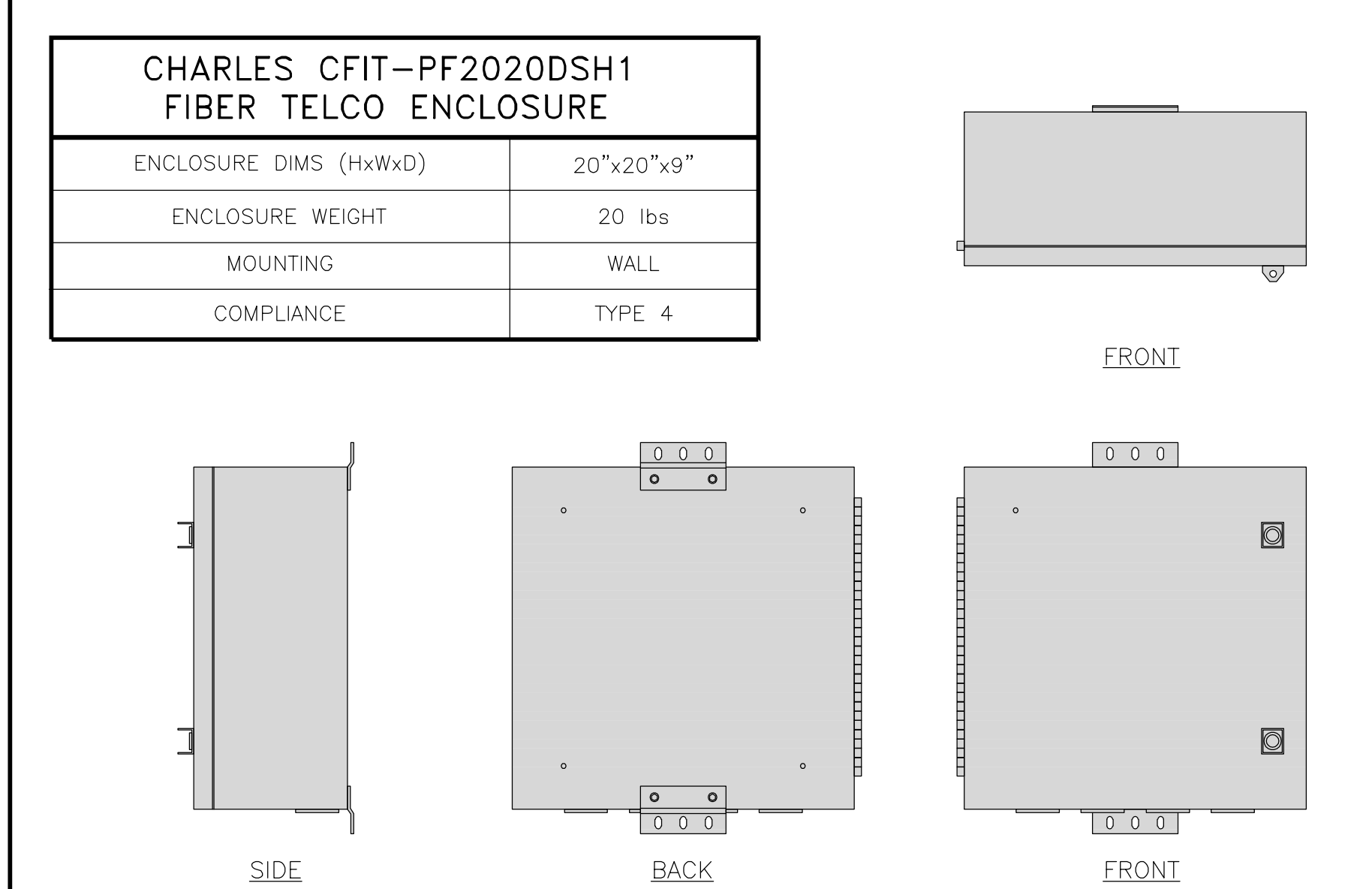
SAFETY SWITCH DETAIL NO SCALE 3



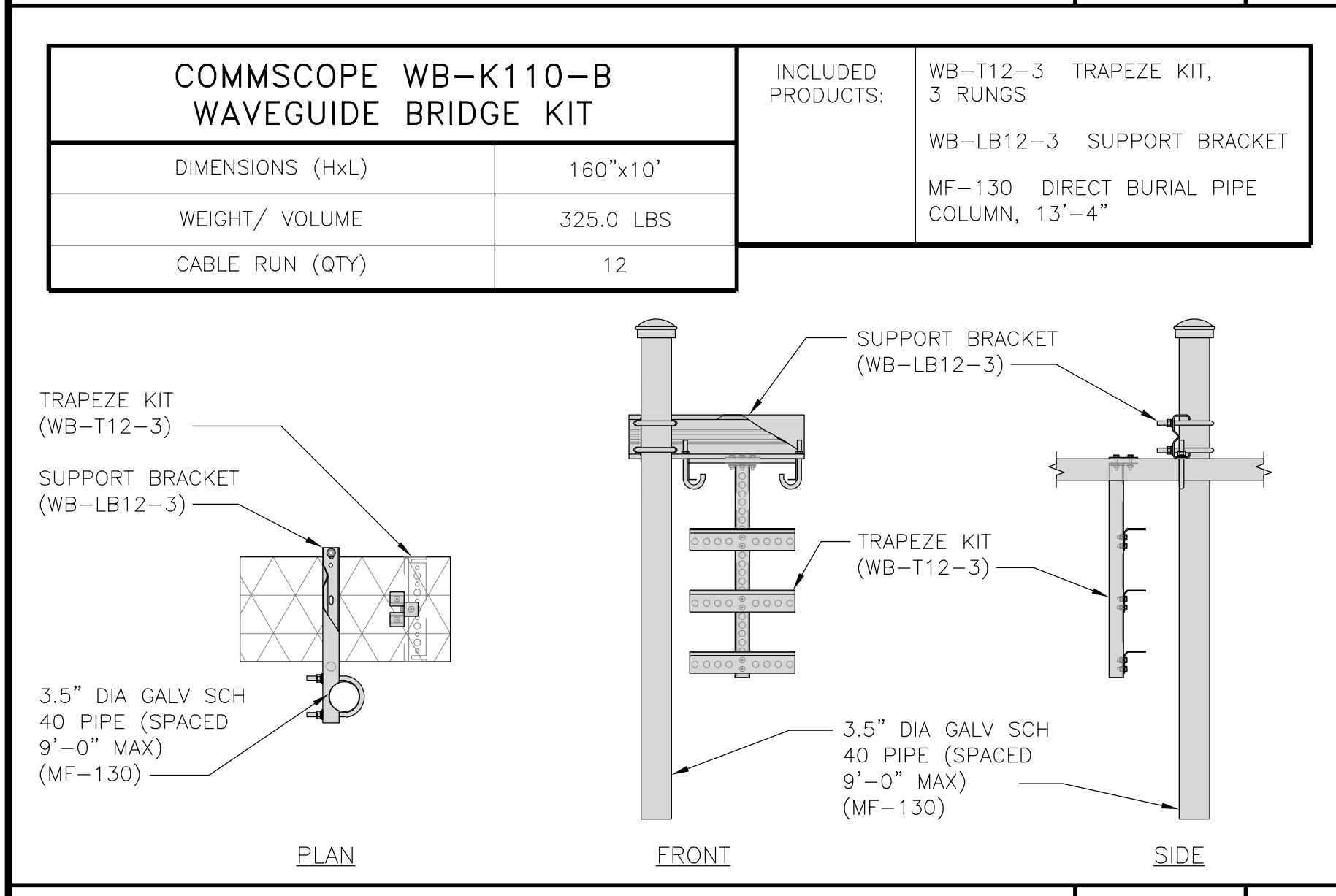
METER SOCKET DETAIL NO SCALE 4



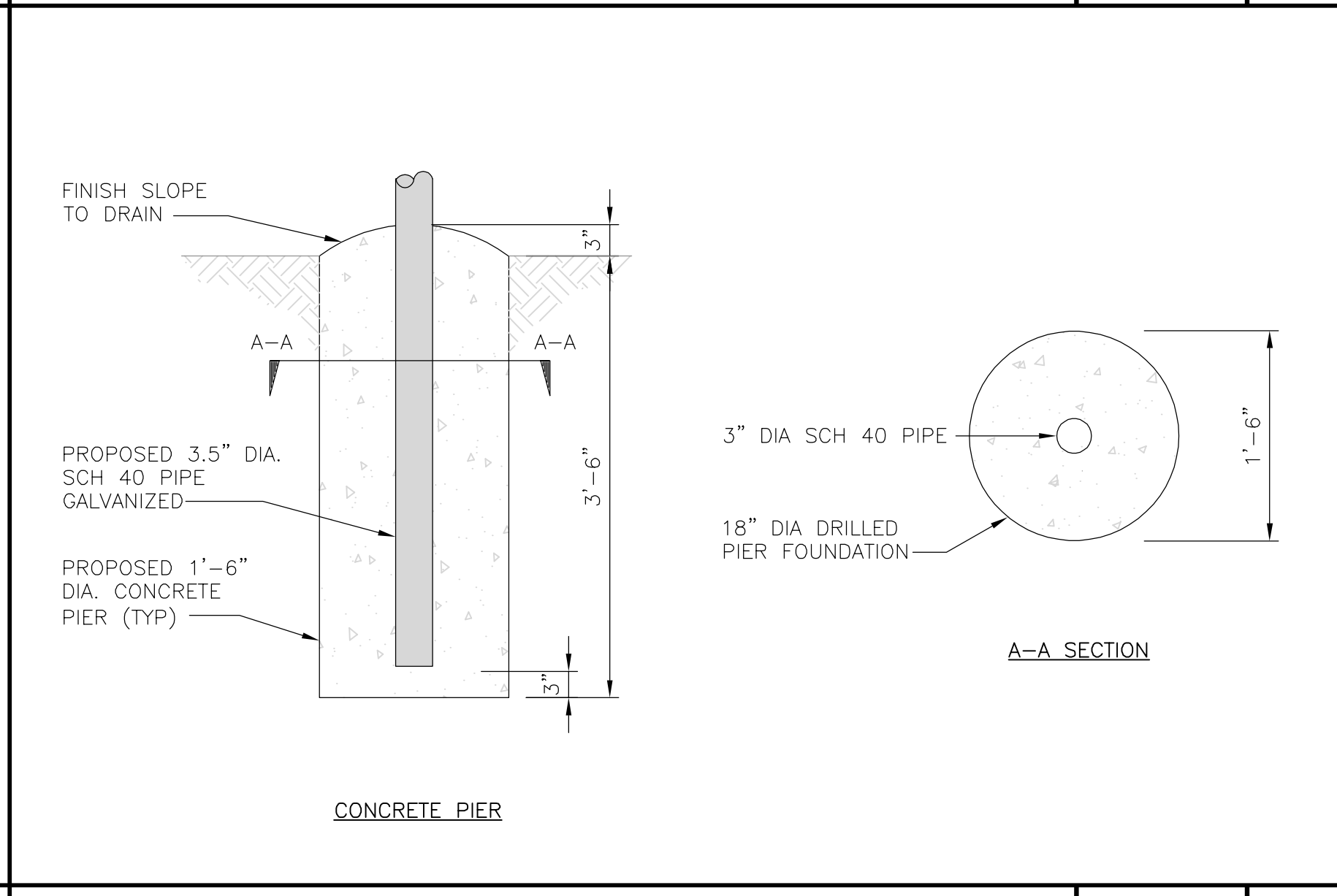
FIBER NID ENCLOSURE DETAIL NO SCALE 5



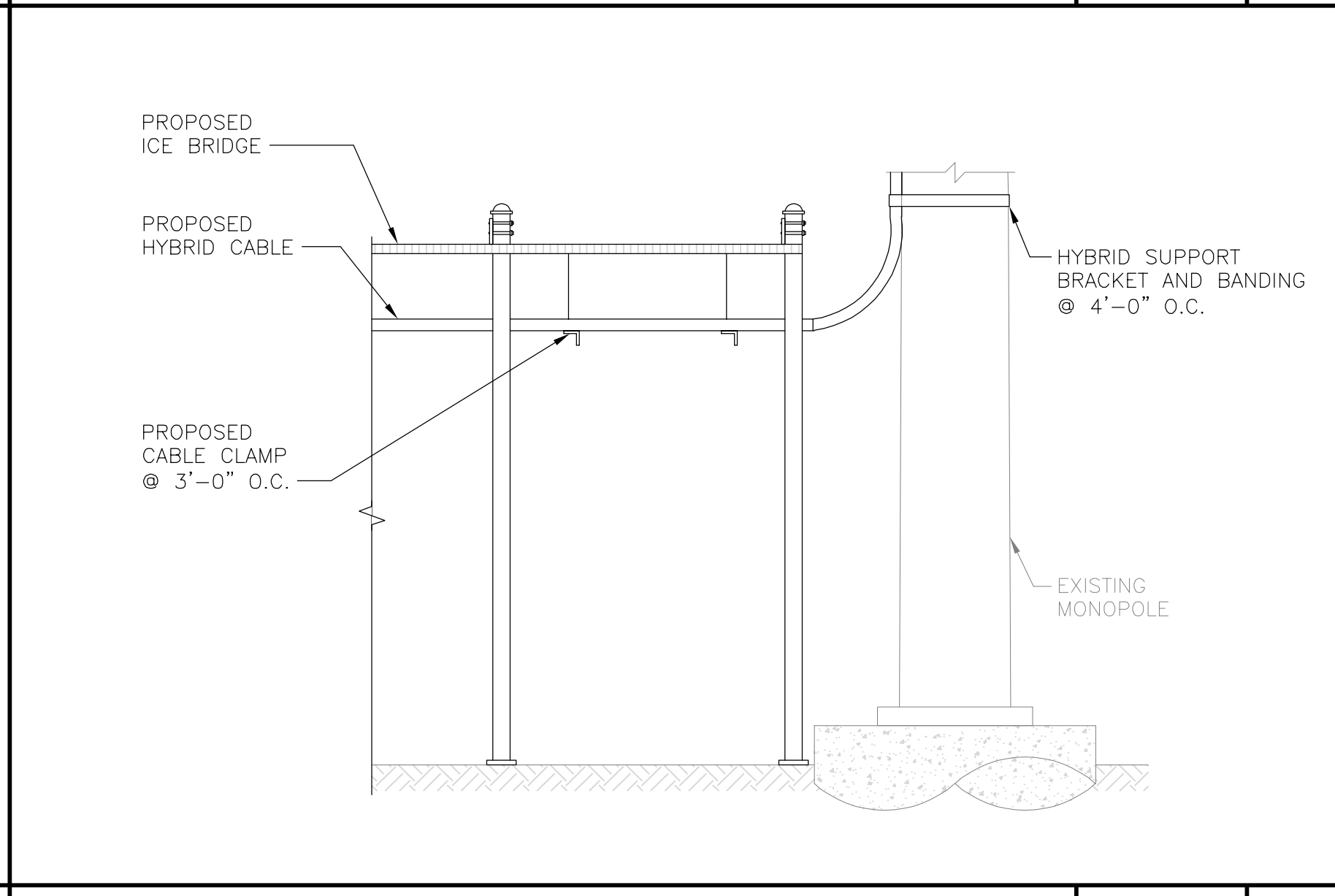
FIBER TELCO ENCLOSURE DETAIL NO SCALE 6



ICE BRIDGE DETAIL NO SCALE 7



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL NO SCALE 8



HYBRID CABLE RUN NO SCALE 9

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

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06/10/2022  
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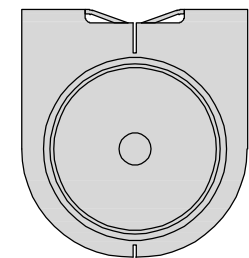
A&E PROJECT NUMBER  
**842860**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

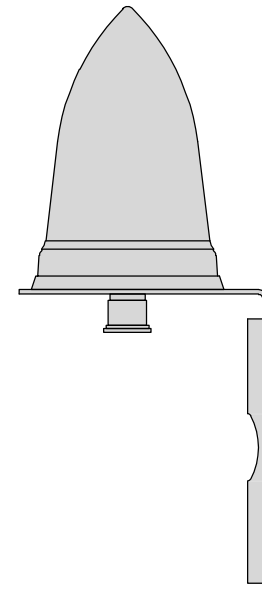
SHEET TITLE  
**EQUIPMENT DETAILS**

SHEET NUMBER  
**A-4**

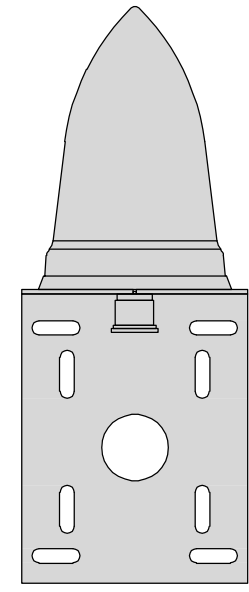
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



TOP



BACK



SIDE

GPS DETAIL

NO SCALE

1

DESC	QTY	
SITE ID #:	BOBOS00888A	
TWR TYPE:	MONOPOLE	
HYBRID BEND RADIUS	30"	The preparer must determine the lengths below.
RAD CENTER (ft)	40.0	This is the RAD center for the antennas on towers. For a rooftop, this is the total length of all vertical sections of the hybrid.
ICE BRIDGE HEIGHT (ft)	10.0	This is the height of the bridge coverings.
ICE BRIDGE LENGTH (ft)	8.0	This is the length of the total ice bridge coverings, if more than one ice bridge is used or total horizontal lengths of hybrid if this is inside a building.
LENGTH ACROSS PLATFORM (ft)	6.0	This is the length from the cabinet to the first bend up the ice bridge or inside a radio room.
LENGTH FROM TOWER TOP TO OVP (ft)	6.0	This is the horizontal length from the tower to the OVP at the antenna level or the total horizontal lengths of hybrid on a building or large self supporting tower.
VERTICAL LENGTH OF HYBRID INTO TOWER TOP OVP (ft)	3.0	This is the vertical length of hybrid that comes out to the tower top OVP to the beginning of the first bend that is going into the monopole port.
	LENGTH (ft)	
Additional Excess Hybrid to be added (To be determined by preparer)	0	
<b>Total Hybrid Length to Order (Rounded up to nearest whole number)</b>	<b>79</b>	

HYBRID CABLE CALCULATOR

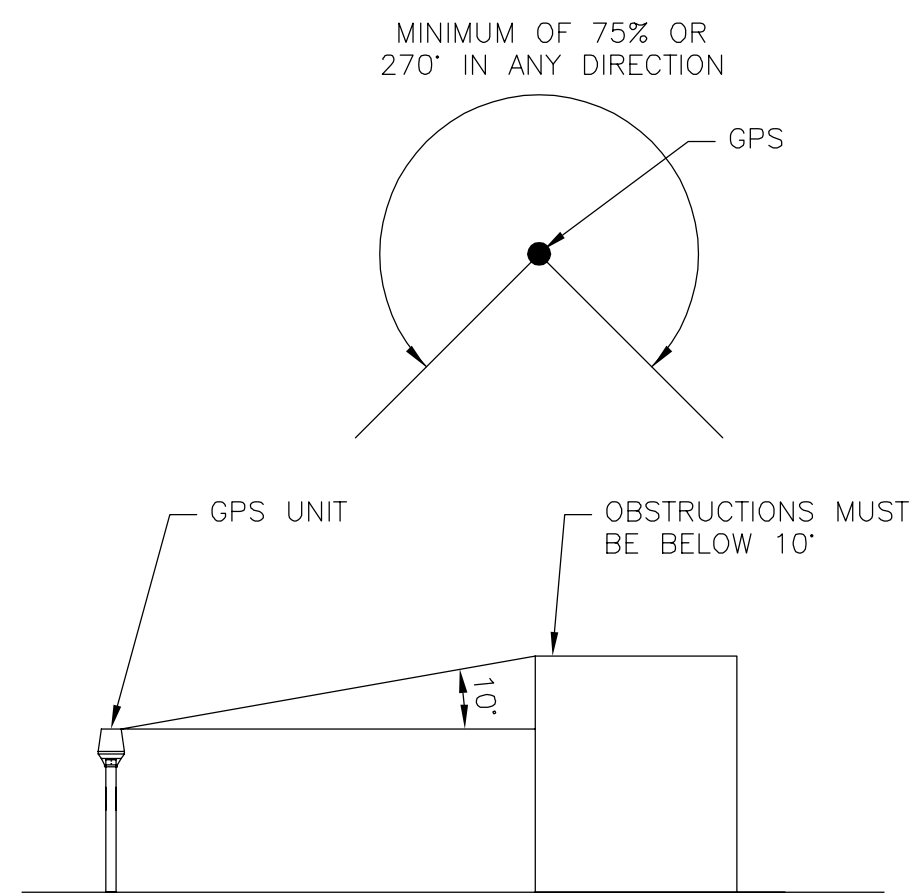
NO SCALE

4

GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE

2



GPS MINIMUM SKY VIEW REQUIREMENTS

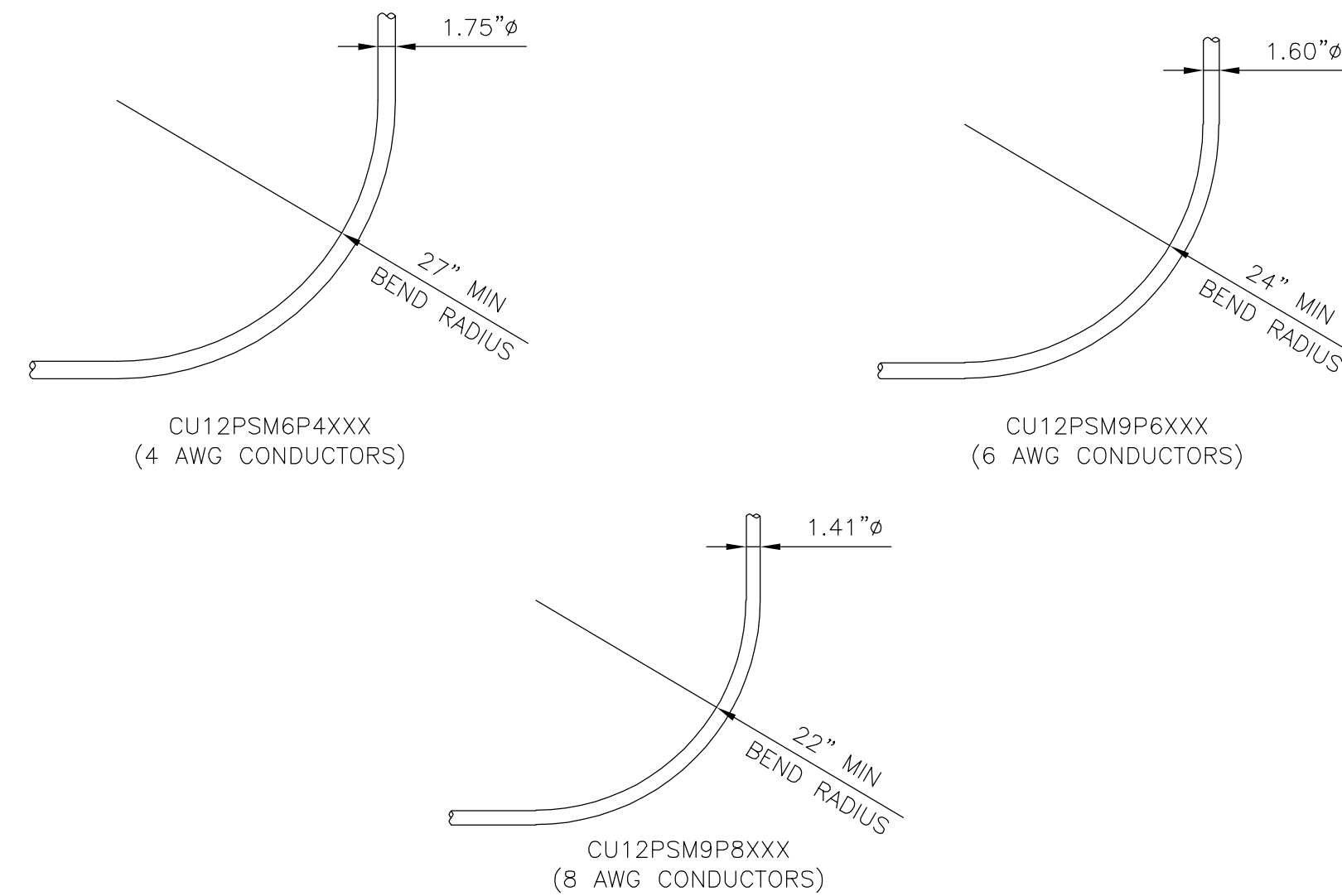
NO SCALE

2

CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES

NO SCALE

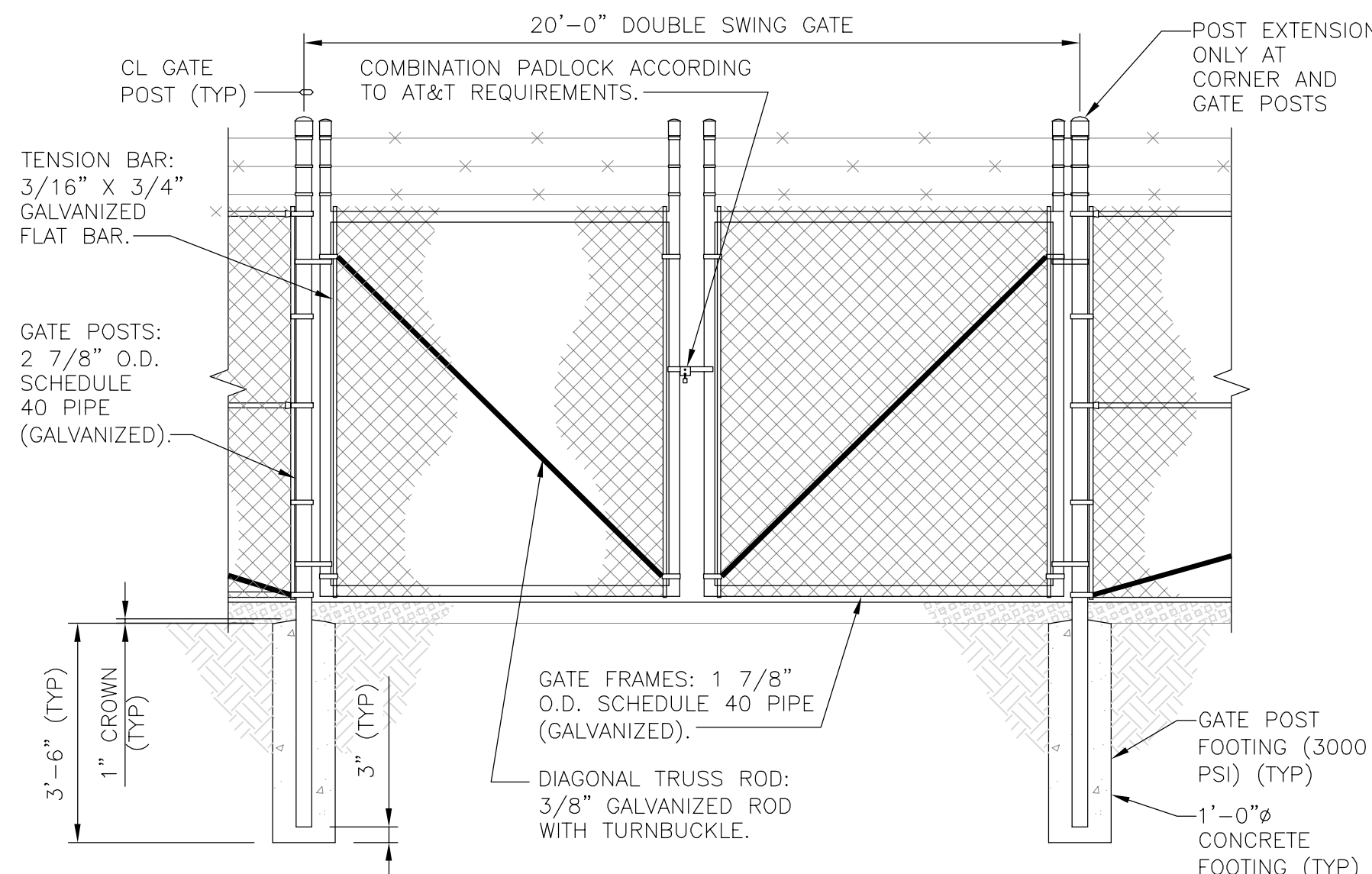
3



CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES

NO SCALE

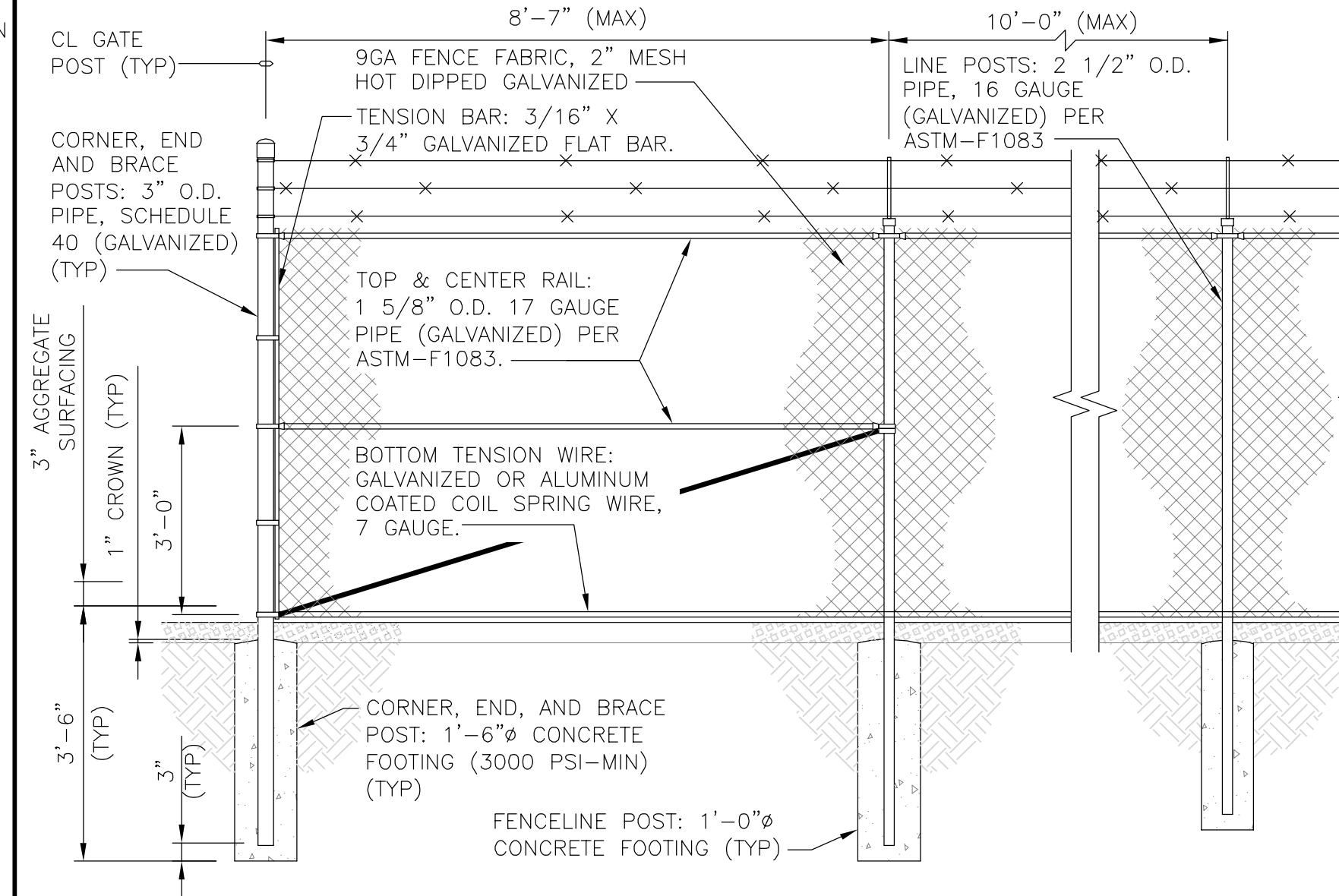
3



TYPICAL GATE ELEVATION DETAIL

NO SCALE

5



TYPICAL FENCE 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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**NB+C**  
TOTALLY COMMITTED.

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A&E PROJECT NUMBER

842860

DISH Wireless L.L.C.  
PROJECT INFORMATION

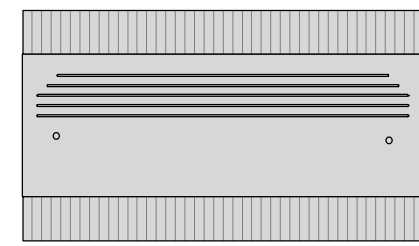
BOBOS00888A  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

SHEET TITLE  
EQUIPMENT DETAILS

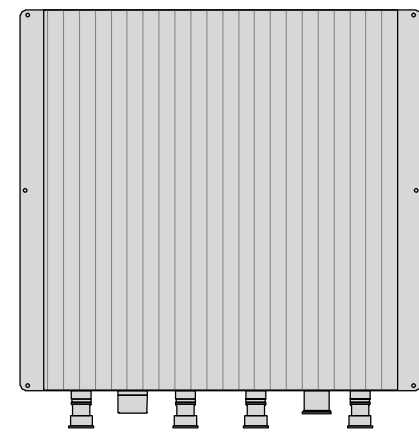
SHEET NUMBER

A-5

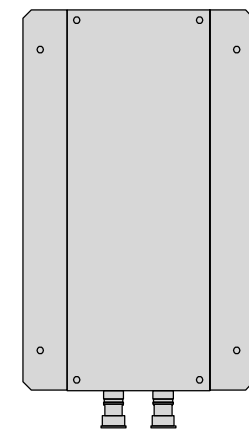
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



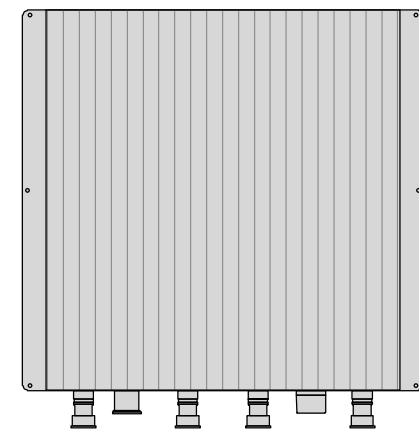
PLAN



BACK



SIDE



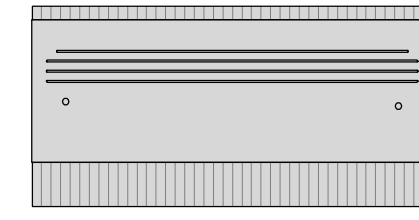
FRONT

RRH DETAIL

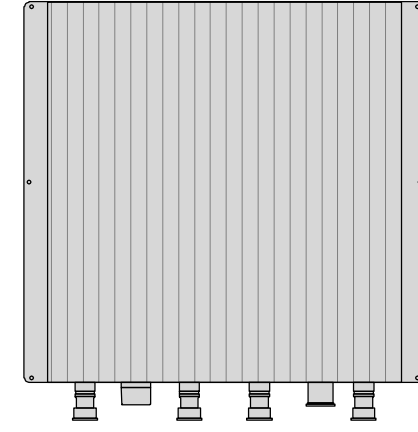
NO SCALE

1

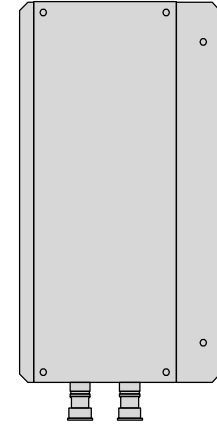
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



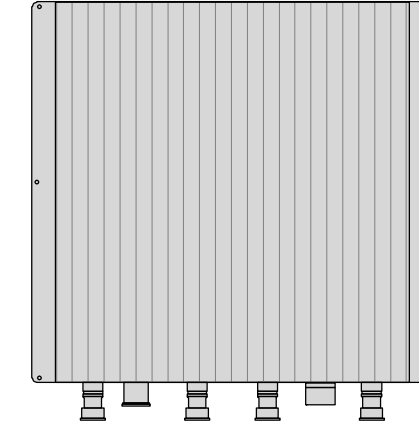
PLAN



BACK



SIDE



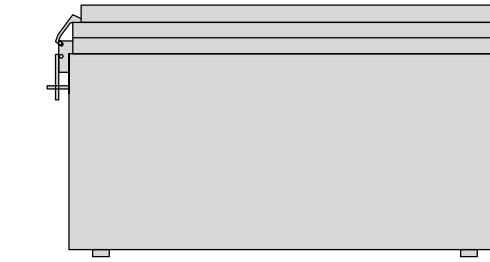
FRONT

RRH DETAIL

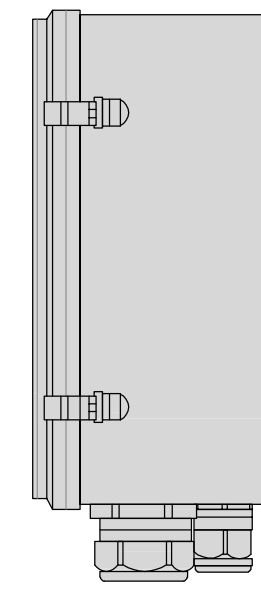
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2

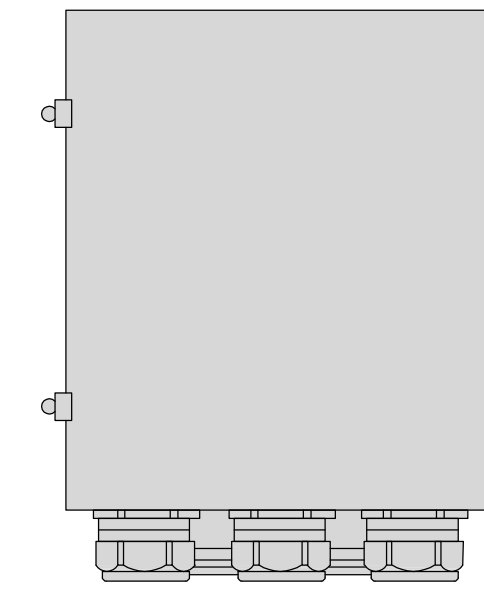
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



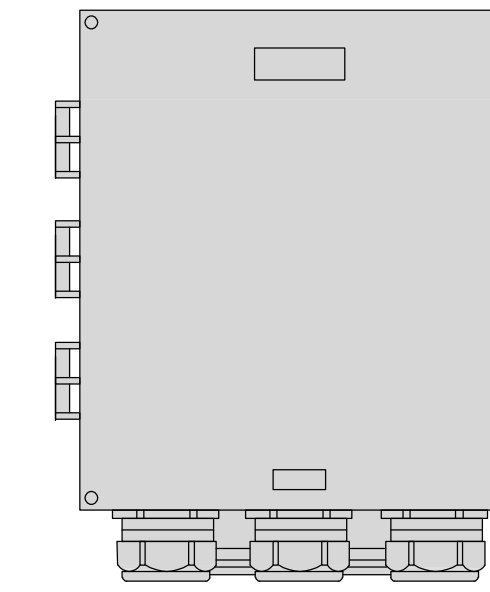
PLAN



SIDE



BACK



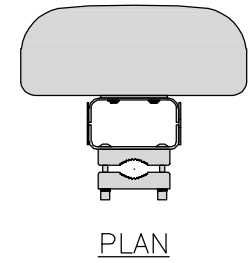
FRONT

SURGE SUPPRESSION DETAIL (OVP)

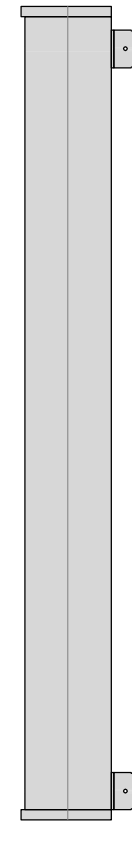
NO SCALE

3

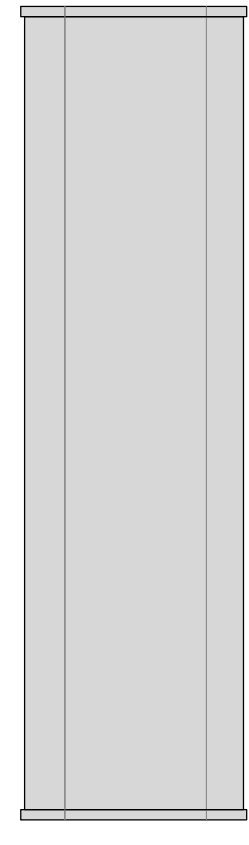
JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN



SIDE



FRONT

ANTENNA DETAIL

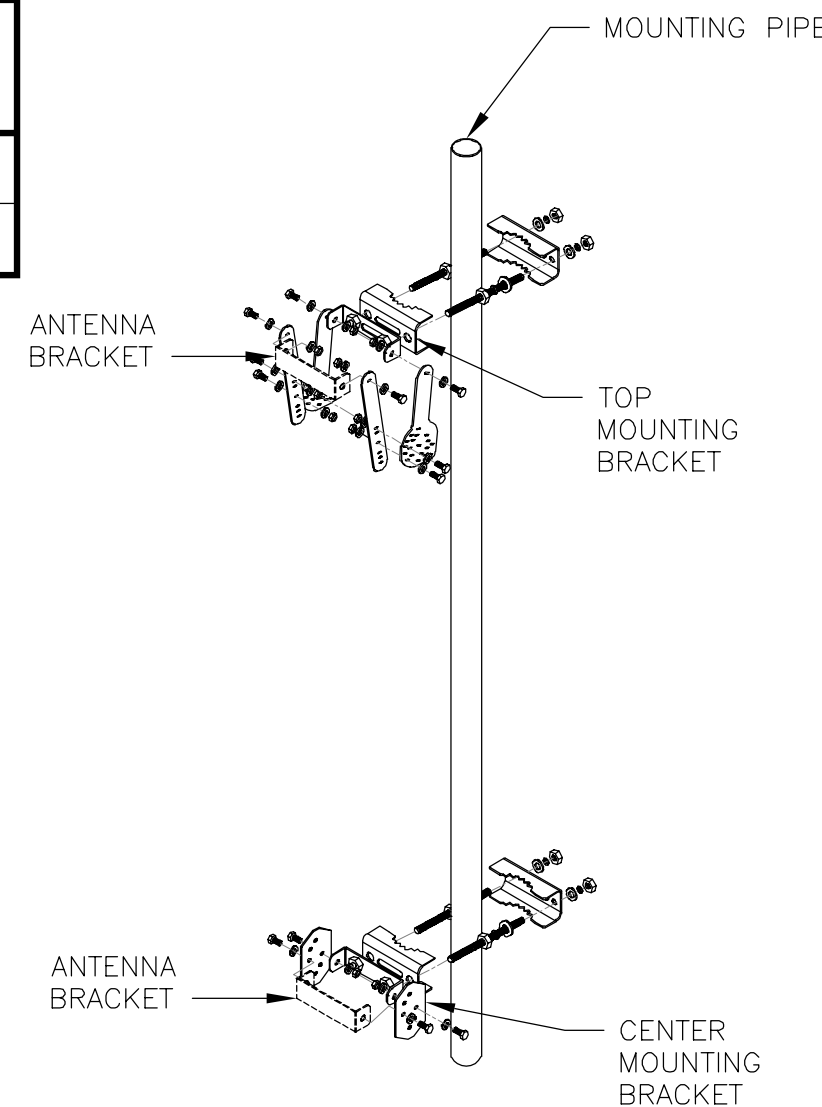
NO SCALE

4

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

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

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



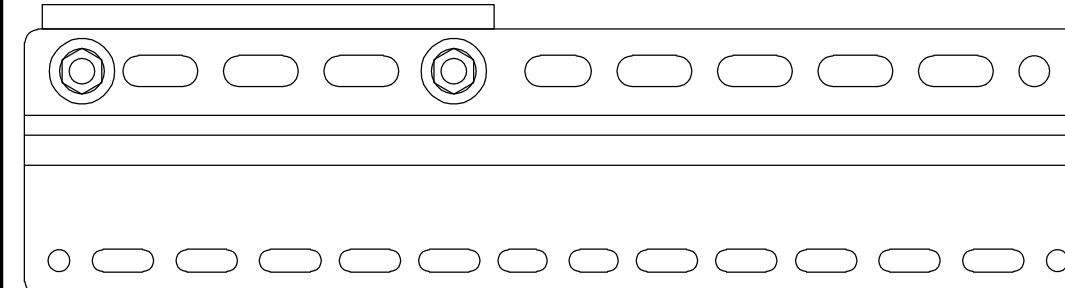
ANTENNA BRACKET DETAIL

NO SCALE

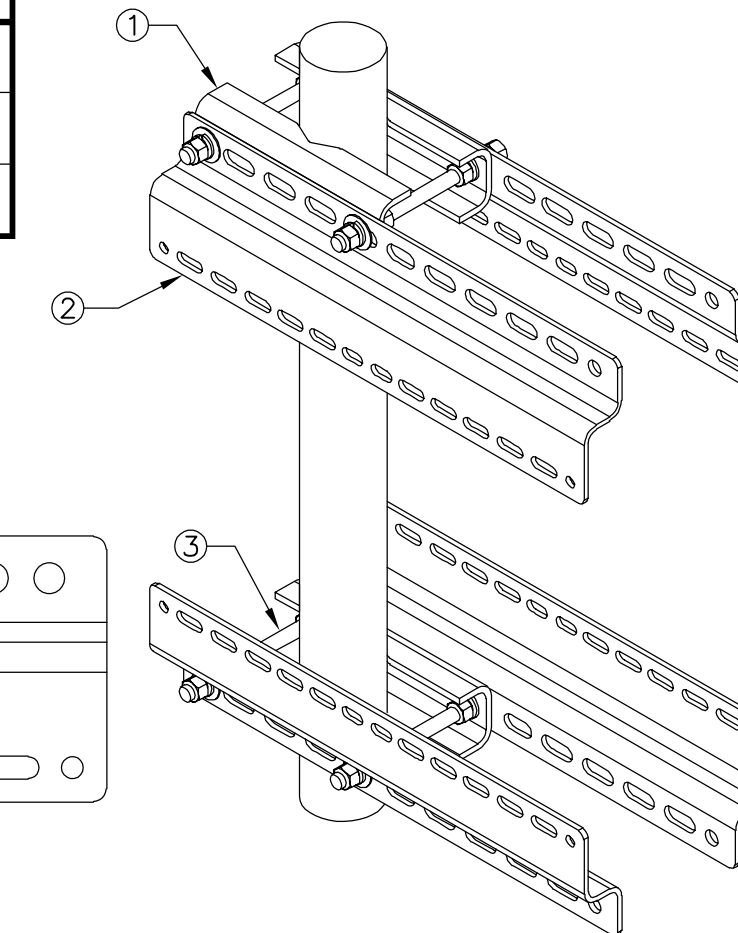
5

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



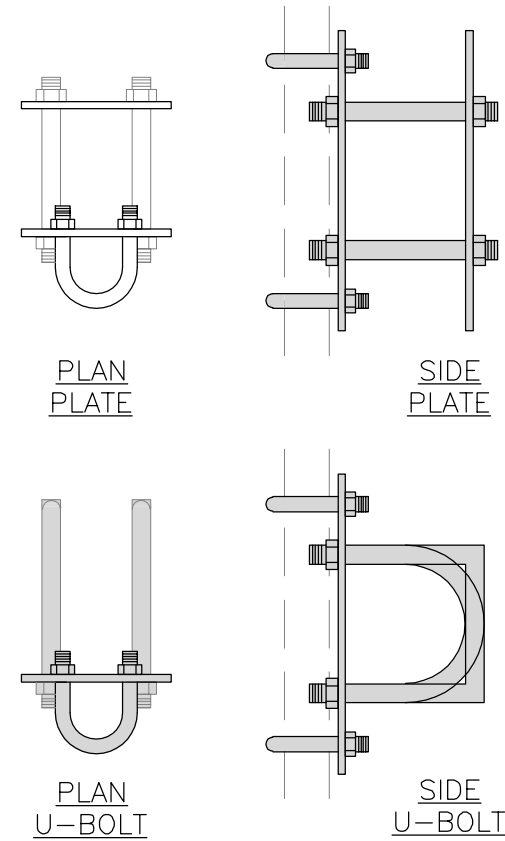
RRH MOUNT DETAIL

NO SCALE

6

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

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



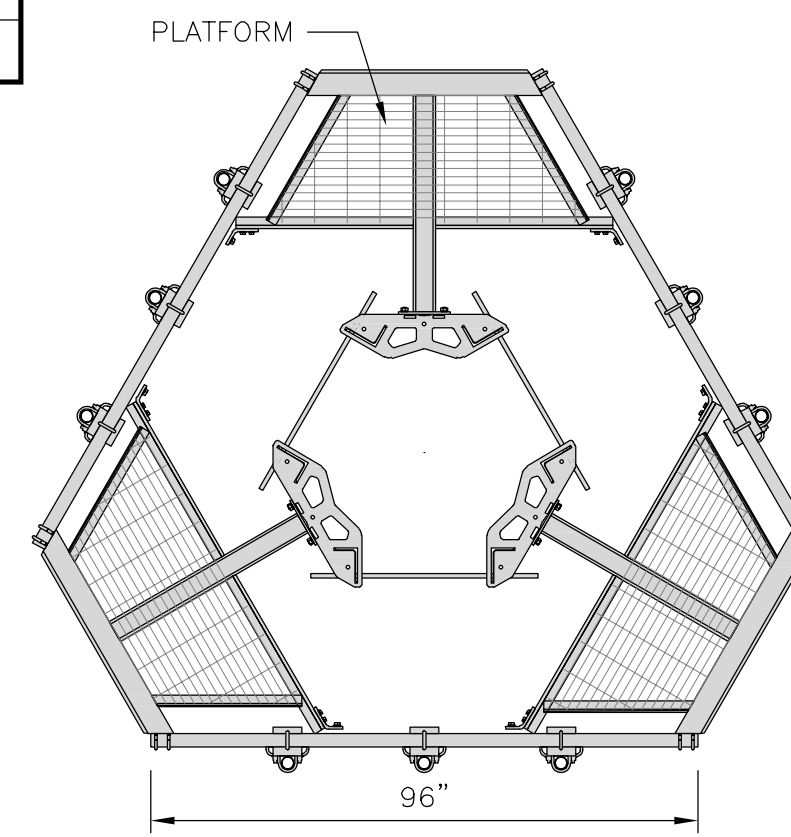
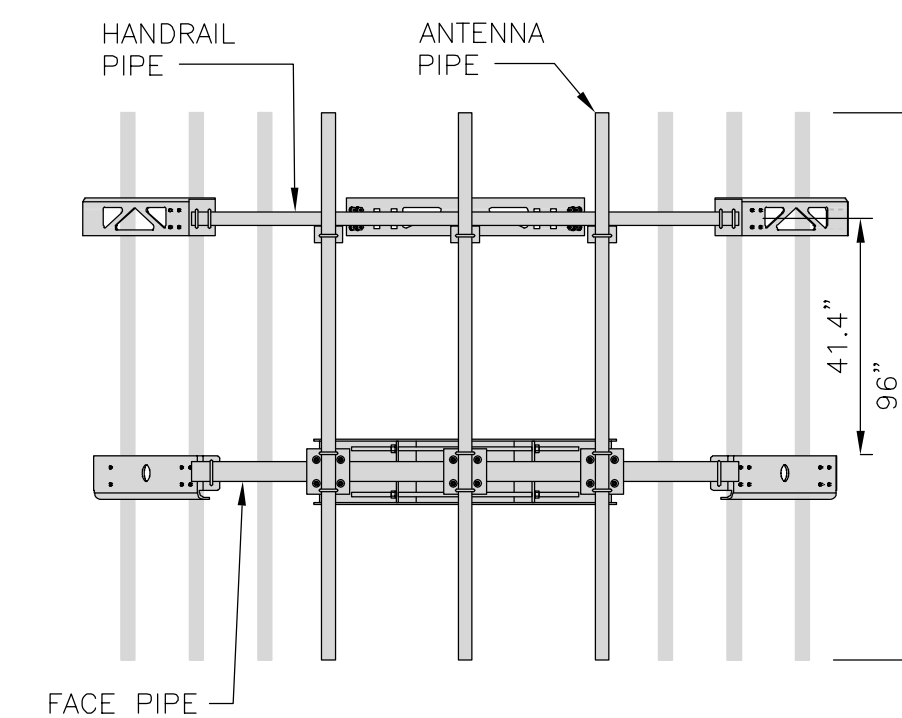
RRH/OVP MOUNT DETAIL

NO SCALE

7

COMMSCOPE MC-PK8-DSH	
FACE WIDTH	96"
WEIGHT	1373.08 lbs
NOTE: 15" TO 38" O.D.	

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



ANTENNA PLATFORM DETAIL

NO SCALE

8

NOT USED

NO SCALE

9

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**NB+C**  
TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, L.L.C.  
6095 MARSHALEE DRIVE, SUITE 300  
ELKRIDGE, MD 21075  
(410) 712-7092



06/10/2022

KRUPAKARAN KOLANDAIVELU, P.E.  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
LICENSE #PEN.0028997

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DRAWN BY: CHECKED BY: APPROVED BY:

BPC BRN TA

RFDS REV #: ---

CONSTRUCTION  
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
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A&E PROJECT NUMBER

842860

DISH Wireless L.L.C.  
PROJECT INFORMATION

BOBOS00888A  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

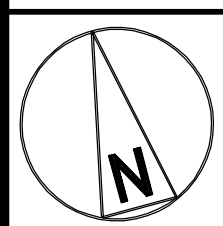
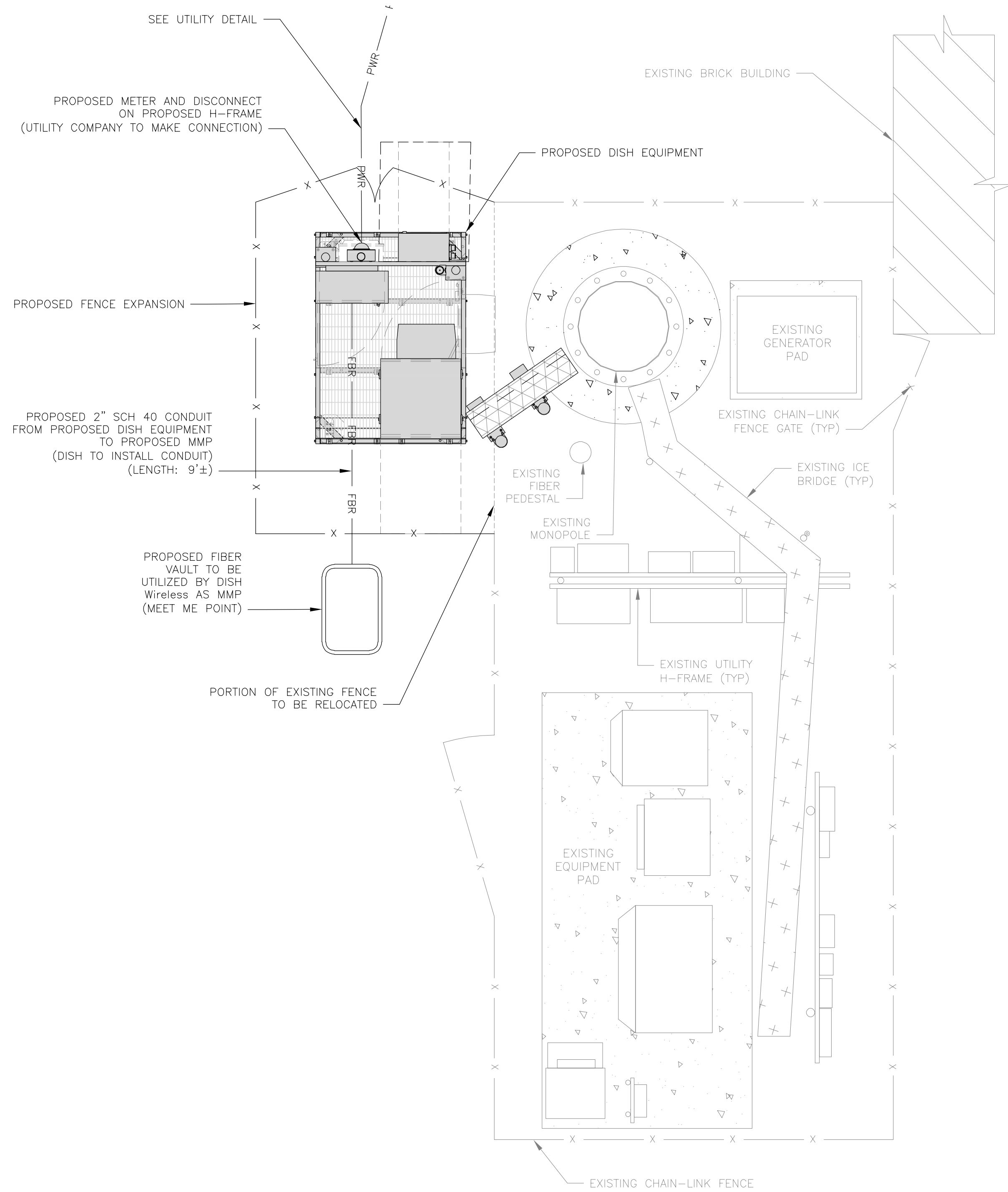
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EQUIPMENT DETAILS

SHEET NUMBER

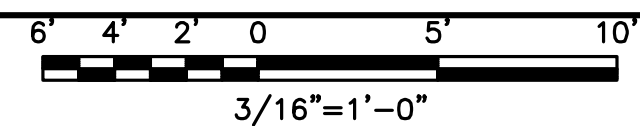
A-6

**EASEMENT RIGHTS**

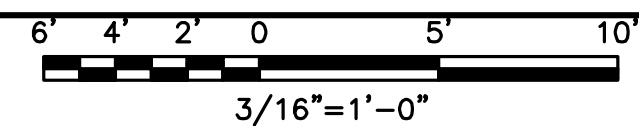
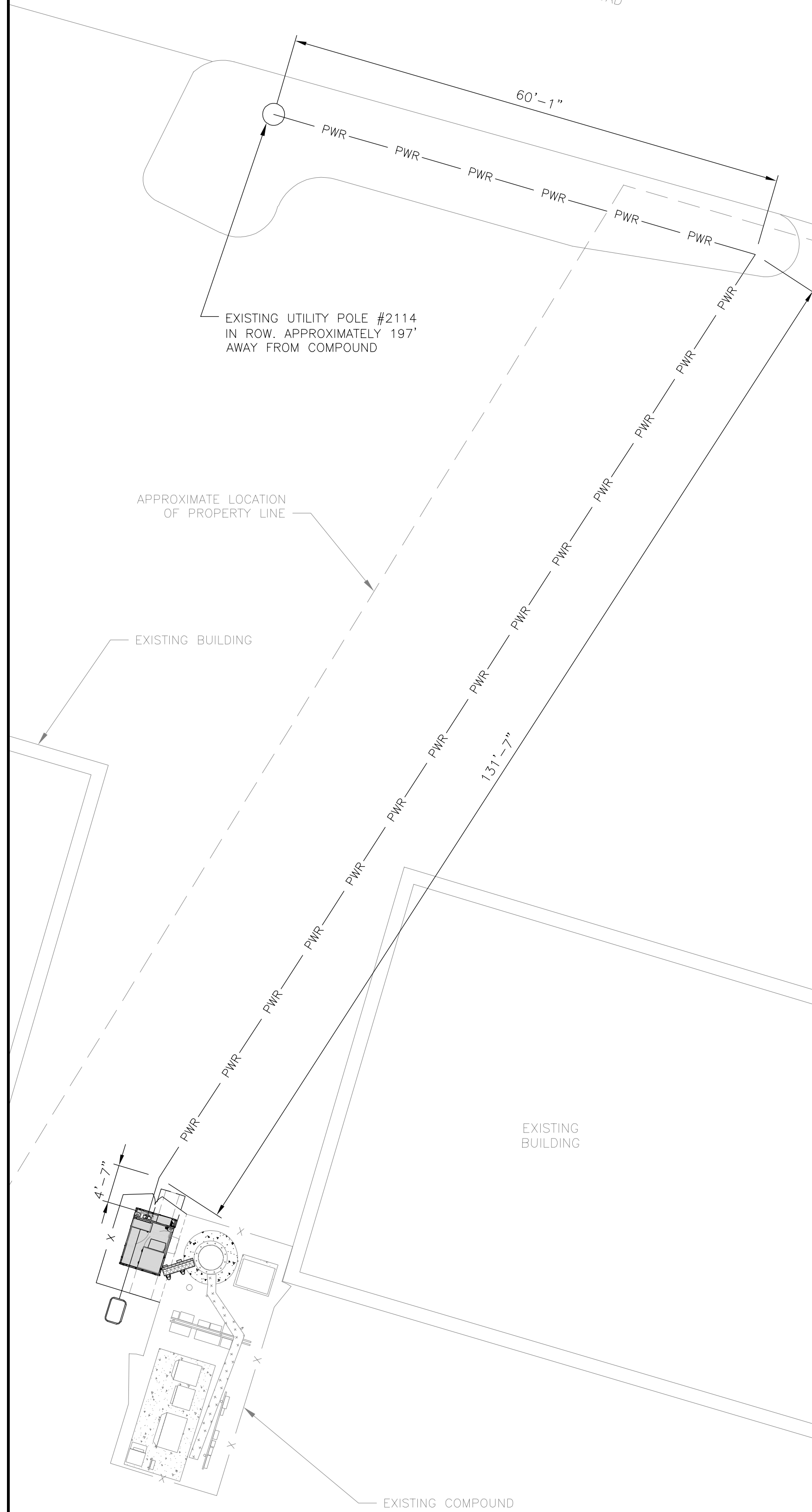
1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN SPECIFIED UTILITY EASEMENT AREA. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 REPRESENT PLANNED ROUTING BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO A SURVEY, EXHIBITS, METES AND BOUNDS OF THE UTILITY EASEMENT, FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH THE "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 AND SAID VARIANCE IS NOT NOTED ON CDS, PLEASE NOTIFY CROWN CASTLE REAL ESTATE AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN



1



2

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

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



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RFDS REV #: ---

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A&E PROJECT NUMBER  
**842860**

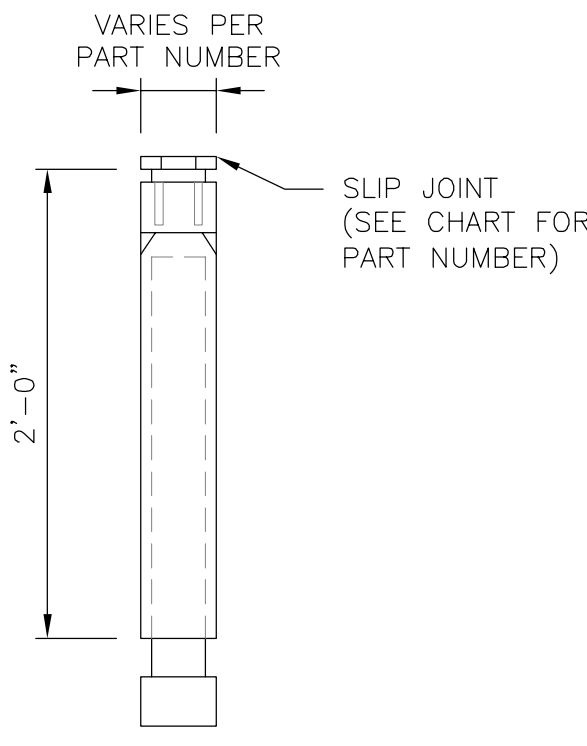
DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

SHEET TITLE  
**ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES**

SHEET NUMBER  
**E-1**

**CARLON EXPANSION FITTINGS**

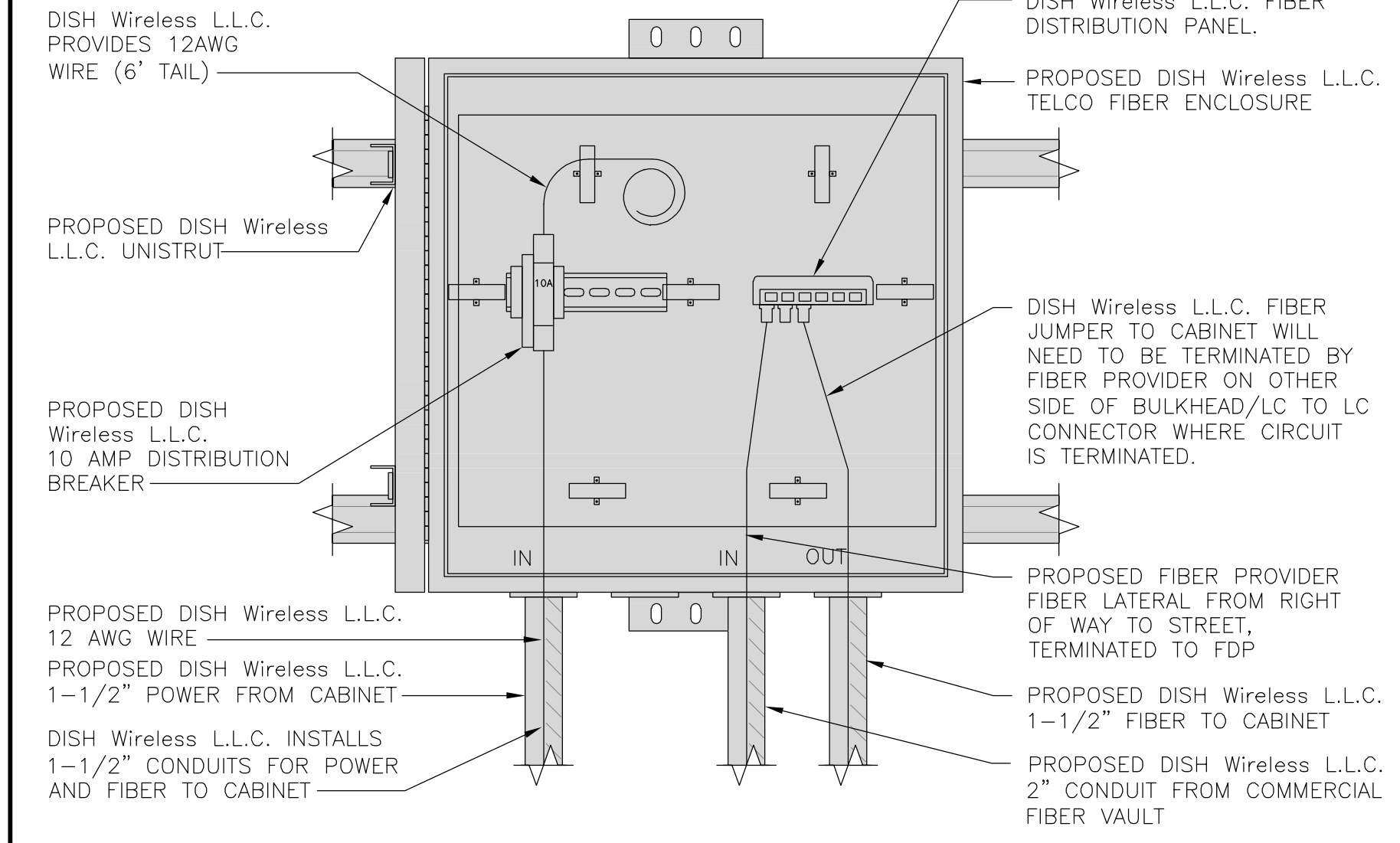
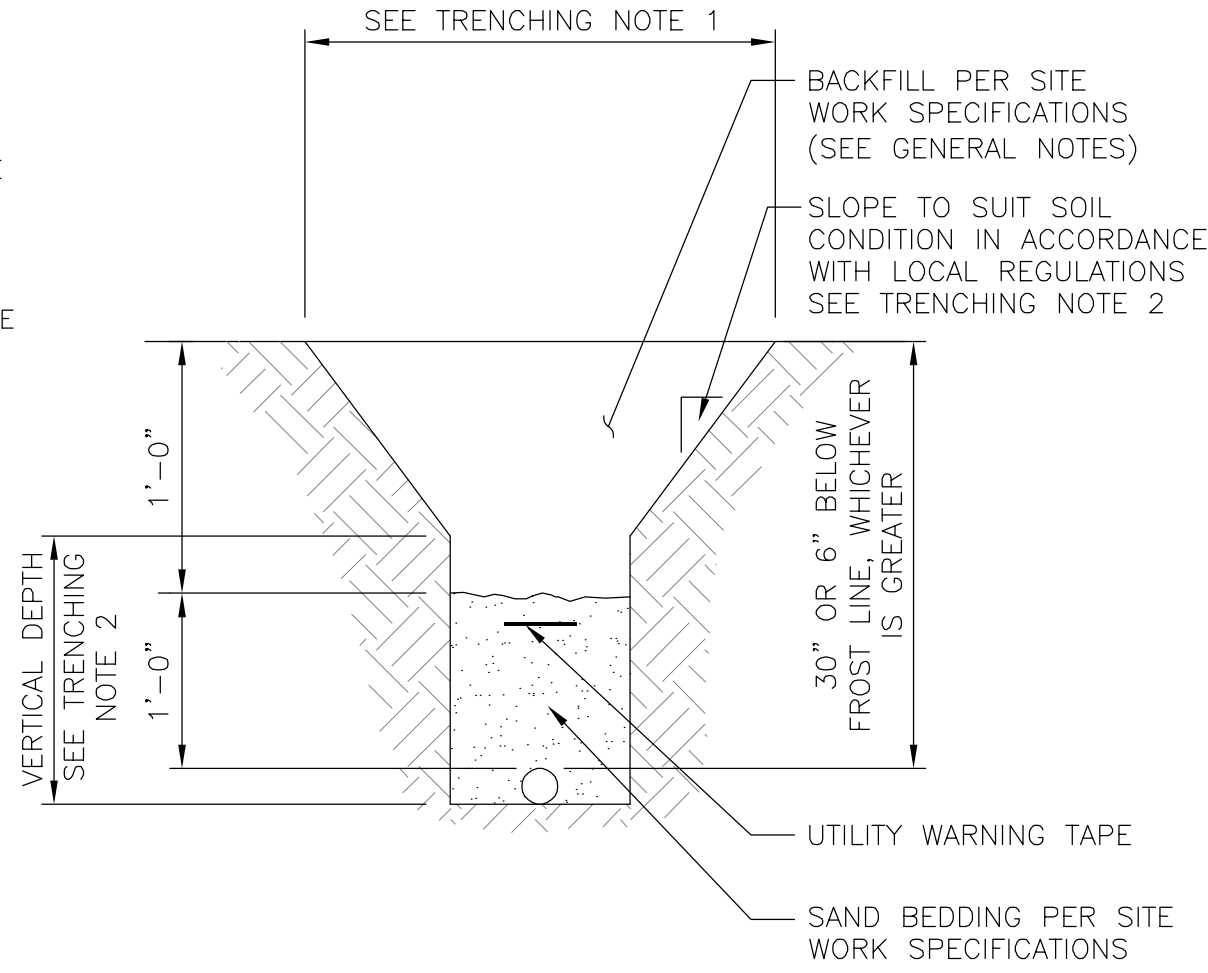
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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

**TRENCHING NOTES**

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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.



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EXPANSION JOINT DETAIL

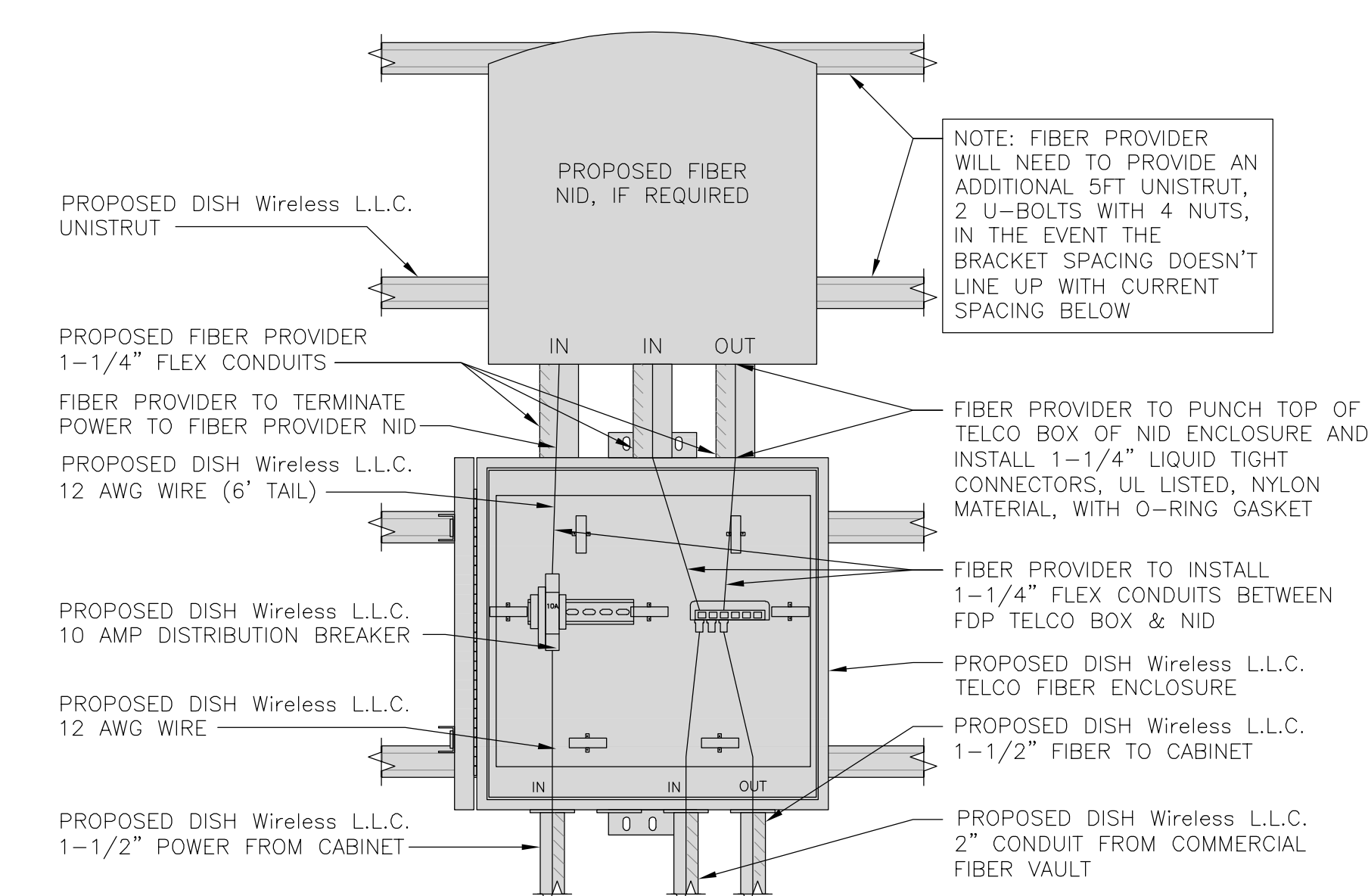
NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL

NO SCALE 2

DARK TELCO BOX – INTERIOR WIRING LAYOUT

NO SCALE 3



NOTE: FIBER PROVIDER WILL NEED TO PROVIDE AN ADDITIONAL 5FT UNISTRUT, 2 U-BOLTS WITH 4 NUTS, IN THE EVENT THE BRACKET SPACING DOESN'T LINE UP WITH CURRENT SPACING BELOW

LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)

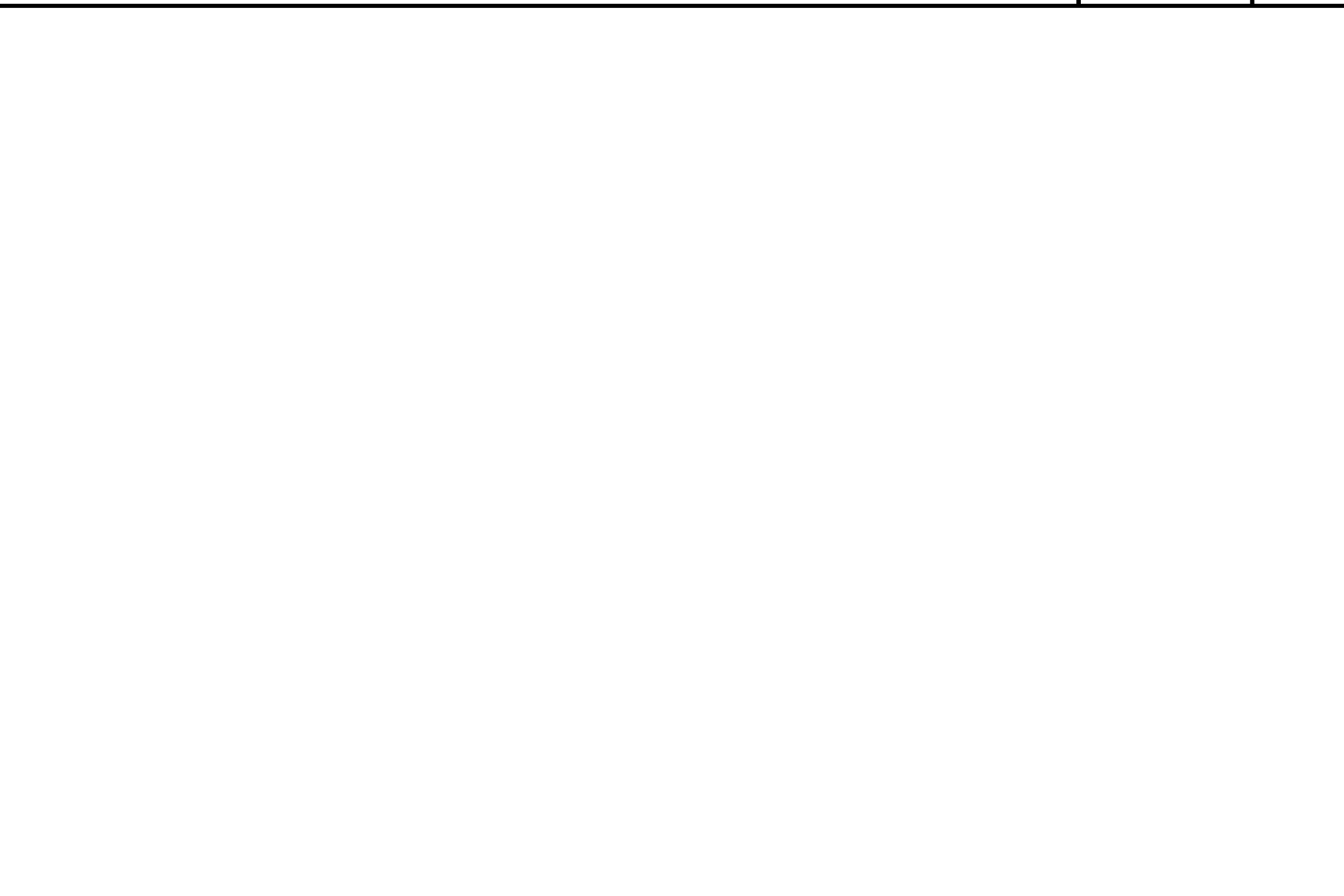
NO SCALE 4

NOT USED

NO SCALE 5

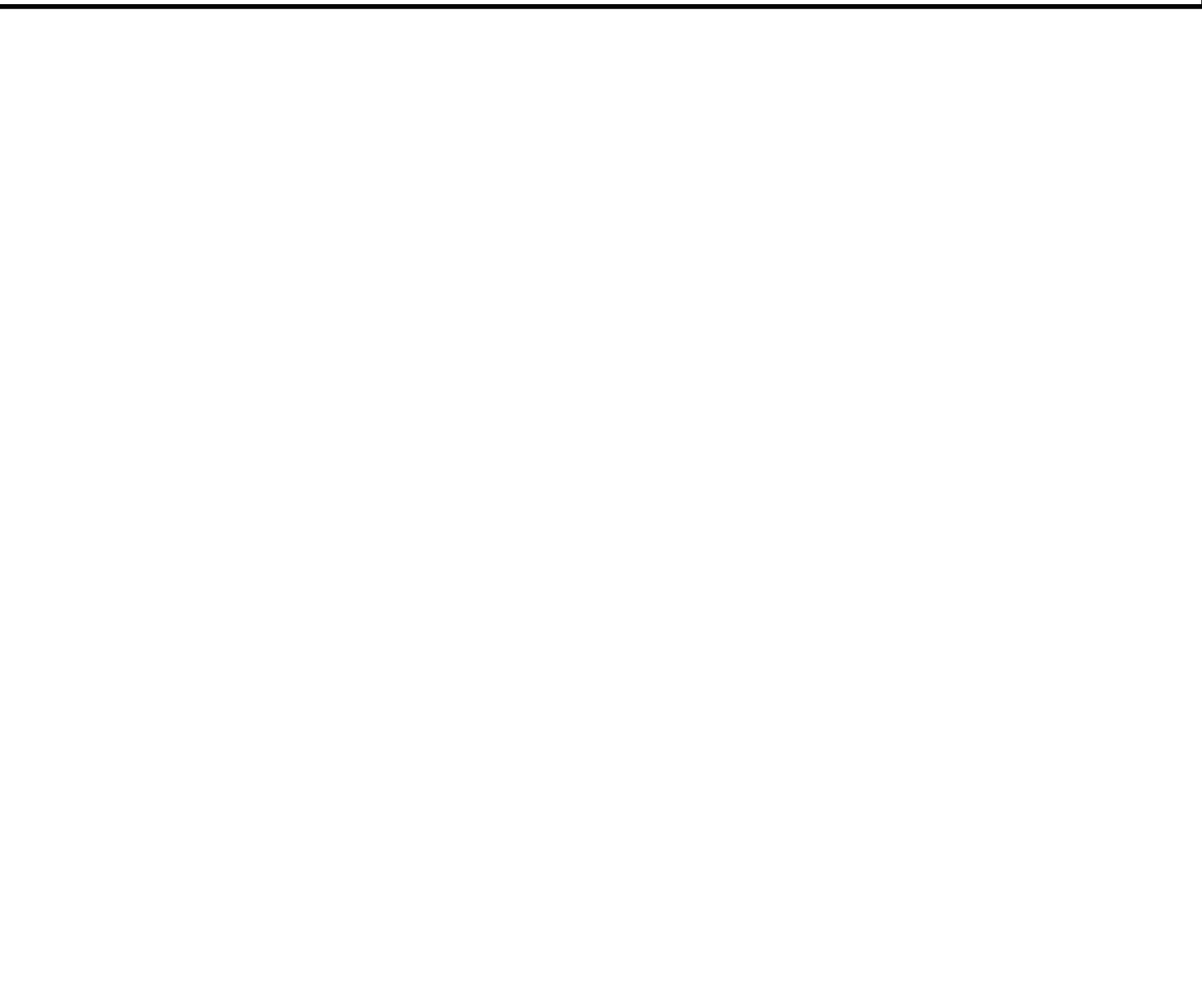
NOT USED

NO SCALE 6



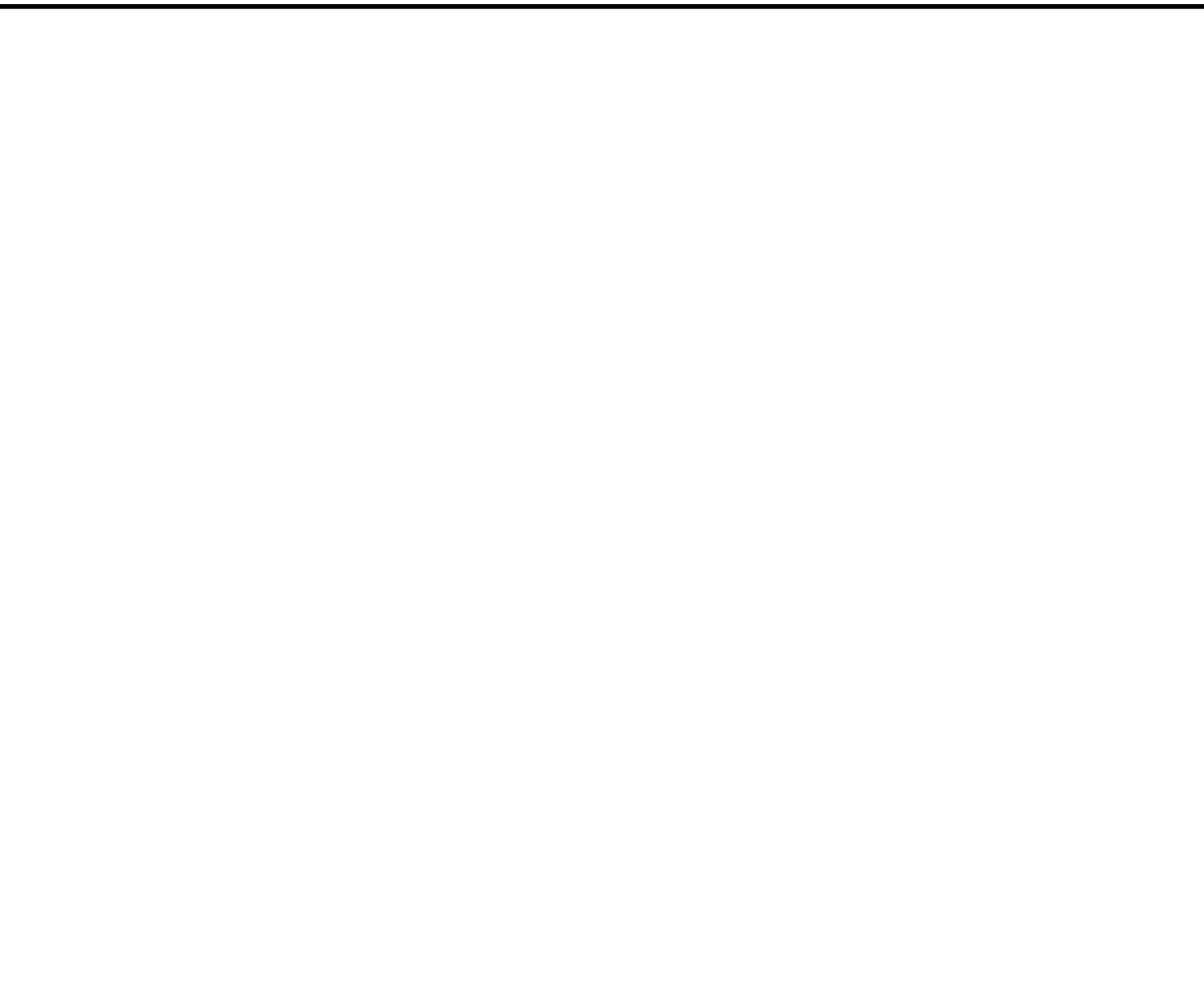
NOT USED

NO SCALE 7



NOT USED

NO SCALE 8



NOT USED

NO SCALE 9



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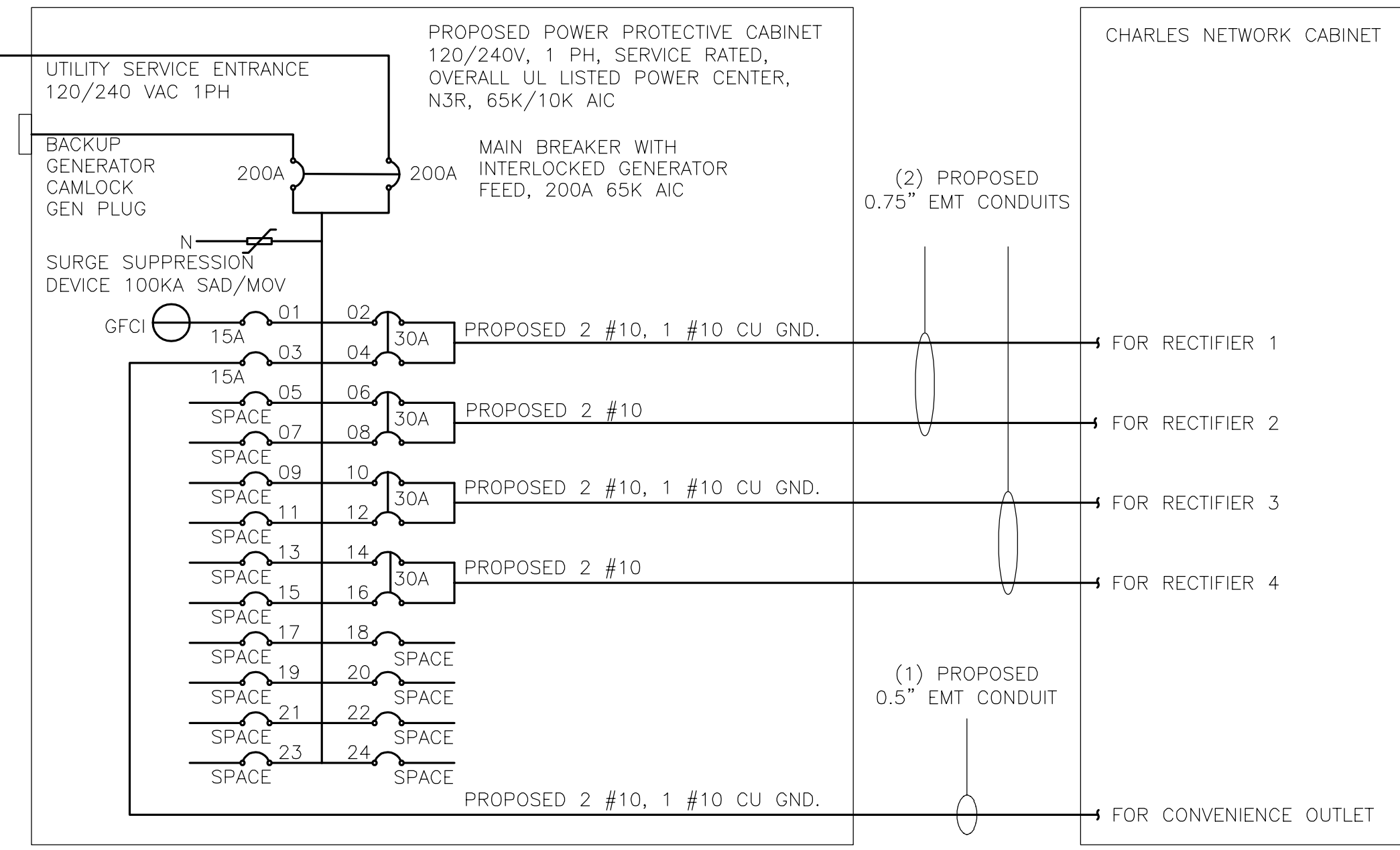
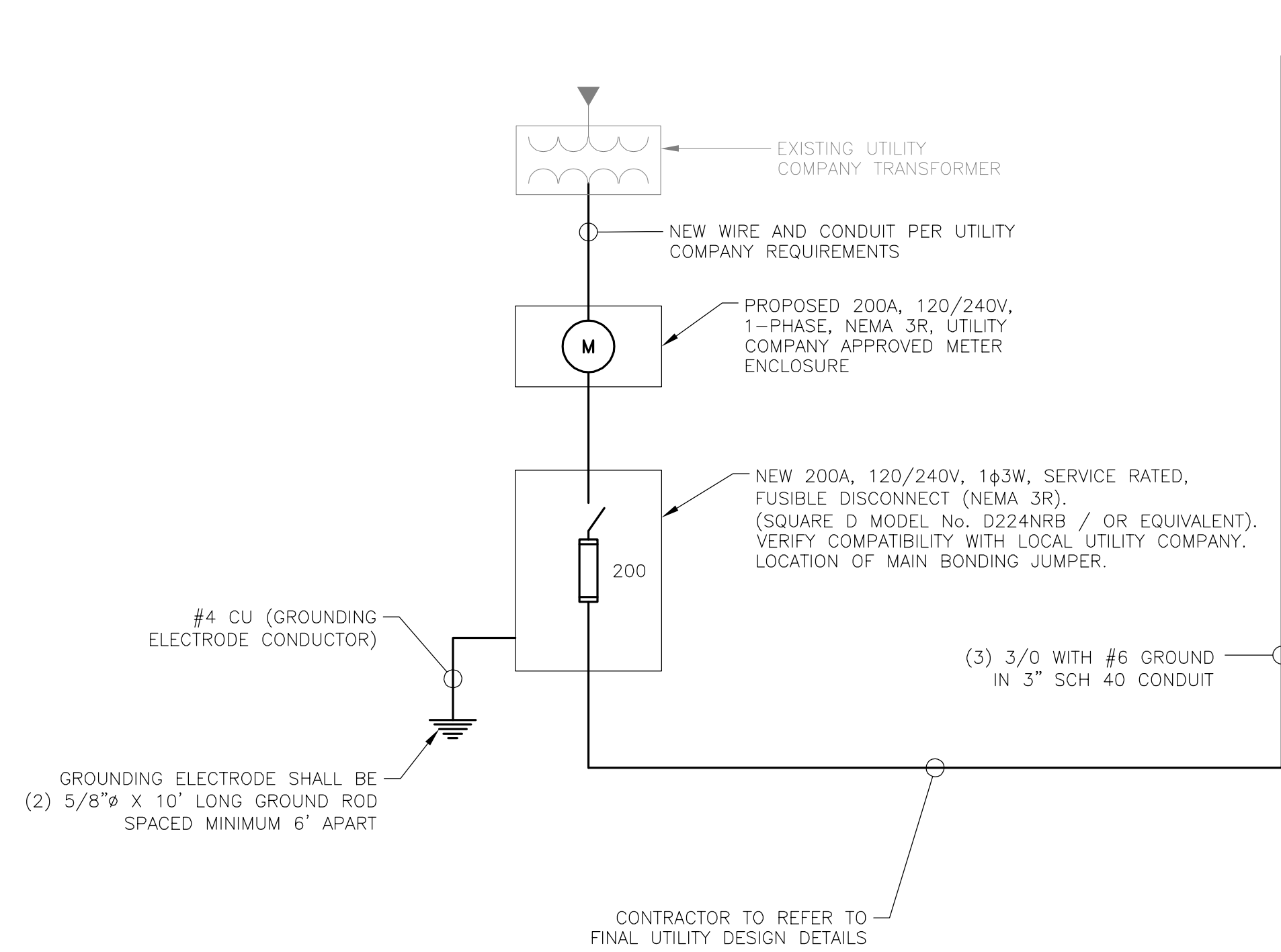
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A&E PROJECT NUMBER  
**842860**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

SHEET TITLE  
**ELECTRICAL DETAILS**

SHEET NUMBER  
**E-2**



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

BREAKERS REQUIRED:  
(4) 30A, 2P BREAKER - SQUARE D P/N:Q0230  
(1) 15A, 1P BREAKER - SQUARE D P/N:Q0115

PPC ONE-LINE DIAGRAM

NO SCALE 1

PROPOSED CHARLES PANEL SCHEDULE										
LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI OUTLET	180	180	15A	1	A	2	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET			15A	3	B	4	30A	2880	2880	ABB/GE INFINITY RECTIFIER 1
--SPACE--				5	A	6	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
--SPACE--				7	B	8	30A	2880	2880	ABB/GE INFINITY RECTIFIER 2
--SPACE--				9	A	10	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
--SPACE--				11	B	12	30A	2880	2880	ABB/GE INFINITY RECTIFIER 3
--SPACE--				13	A	14	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
--SPACE--				15	B	16	30A	2880	2880	ABB/GE INFINITY RECTIFIER 4
--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					
				98	98					VOLTAGE AMPS
										AMPS
										MAX AMPS
										MAX 125%

PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3

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)(g) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

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

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

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.  
#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN  
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND  
TOTAL = 0.0633 SQ. IN

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

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.  
#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN  
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND  
TOTAL = 0.1146 SQ. IN

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

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.  
3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN  
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND  
TOTAL = 0.8544 SQ. IN

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



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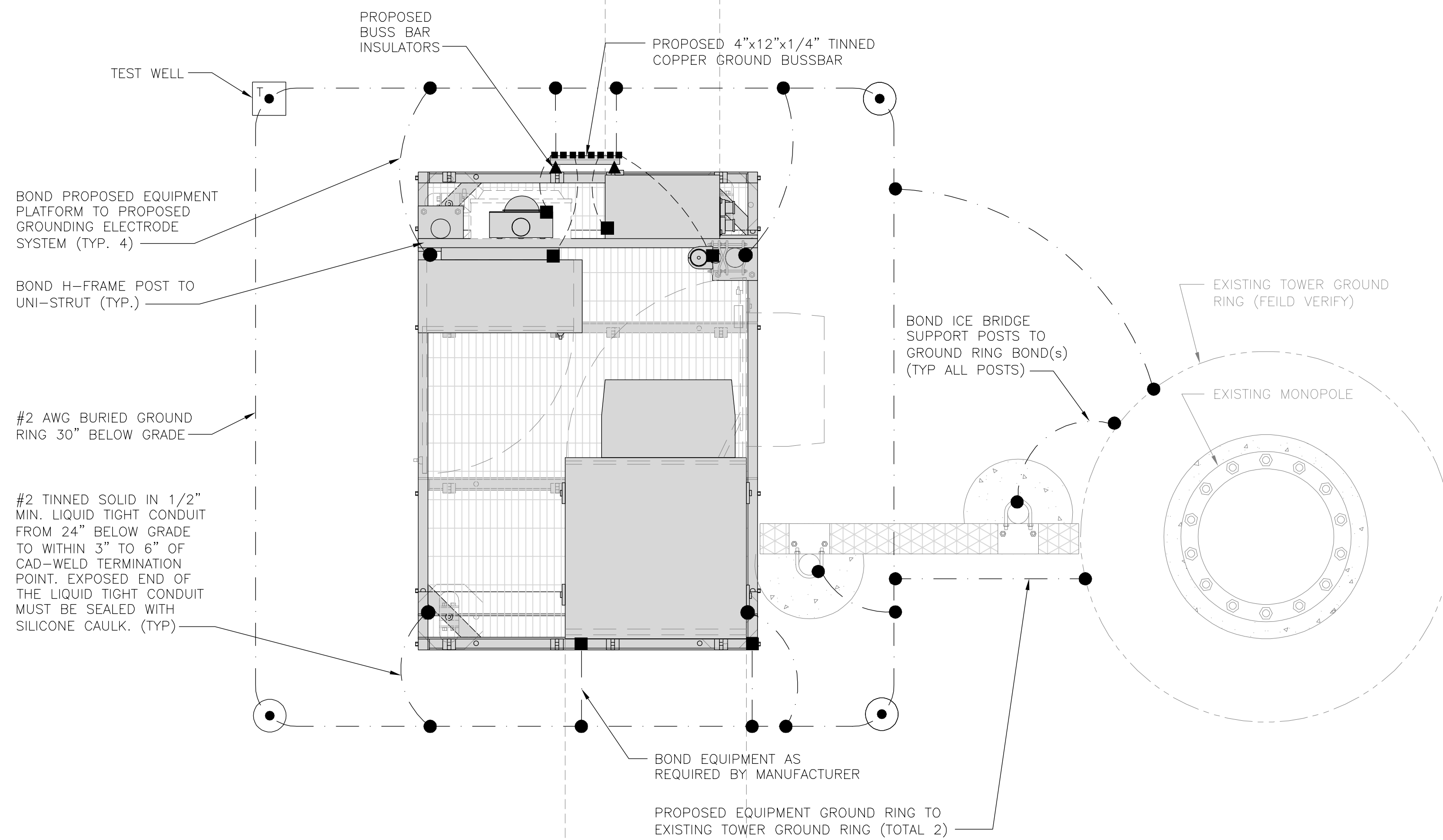
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BOBOS00888A  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

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

SHEET NUMBER  
E-3

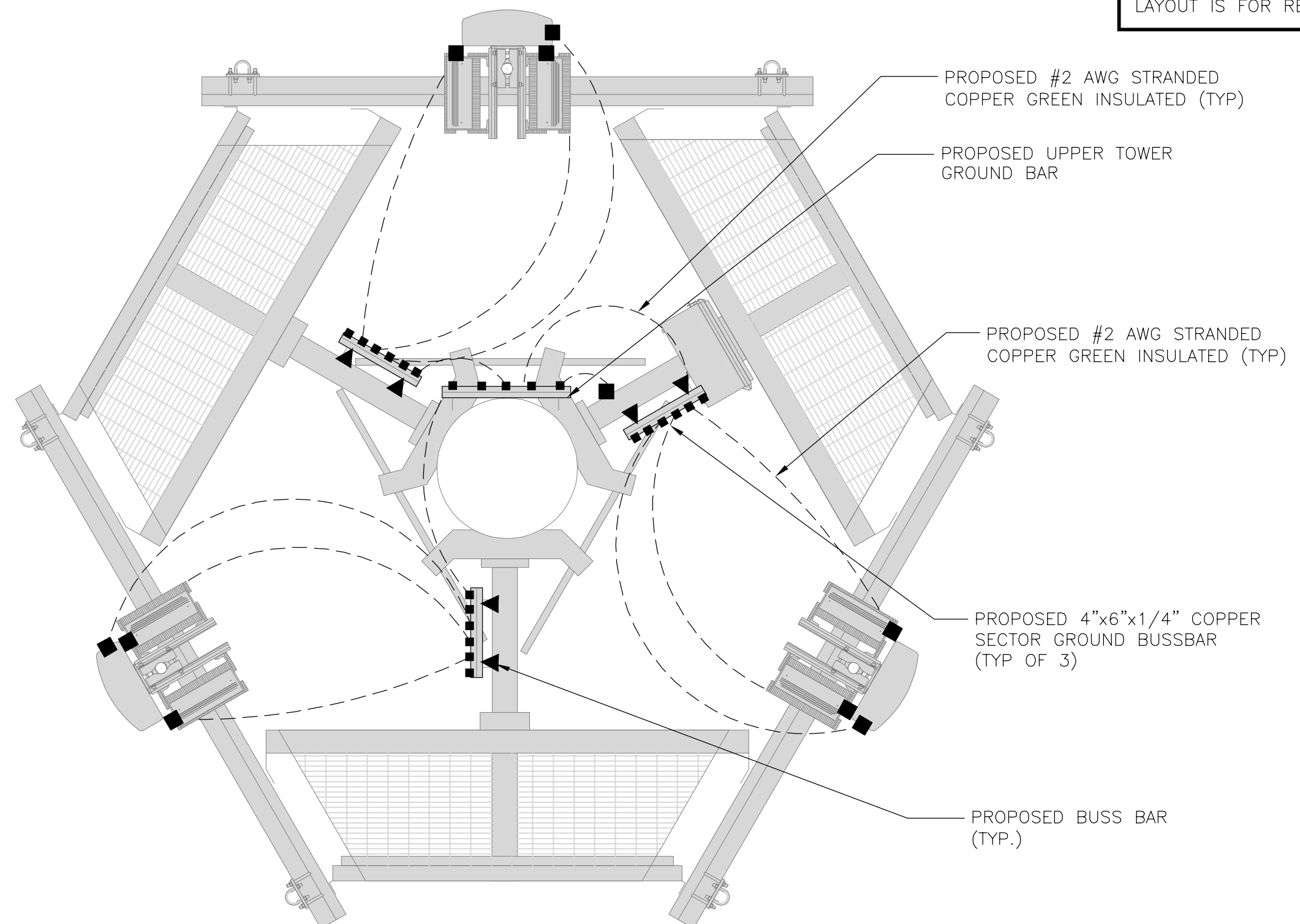


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

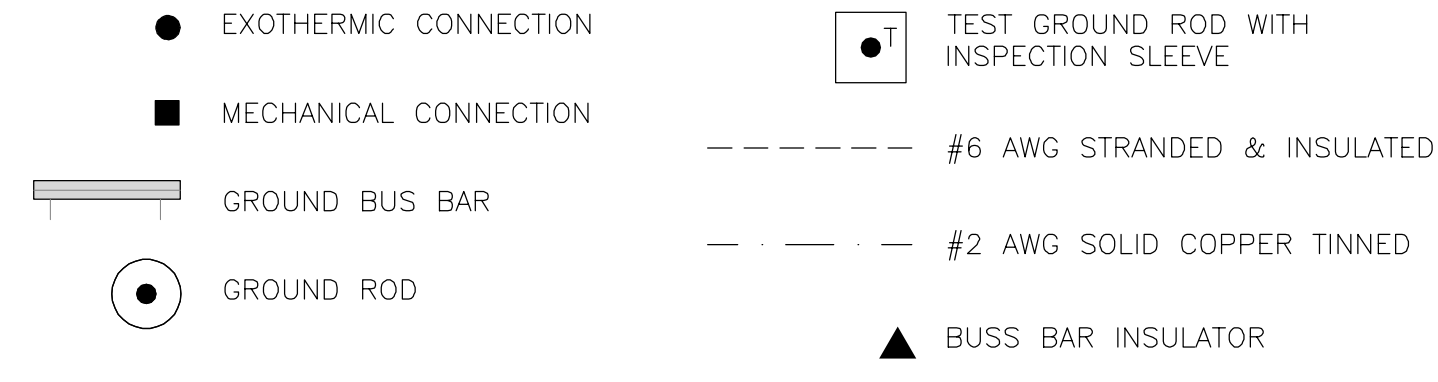
NOTES

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



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- 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.
- 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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



NB+C ENGINEERING SERVICES, L.L.C.  
6095 MARSHALEE DRIVE, SUITE 300  
ELKRIDGE, MD 21075  
(410) 712-7092



06/10/2022  
KRUPAKARAN KOLANDAIVELU, P.E.  
STATE OF CONNECTICUT  
PROFESSIONAL ENGINEER  
LICENSE #PEN.0028997

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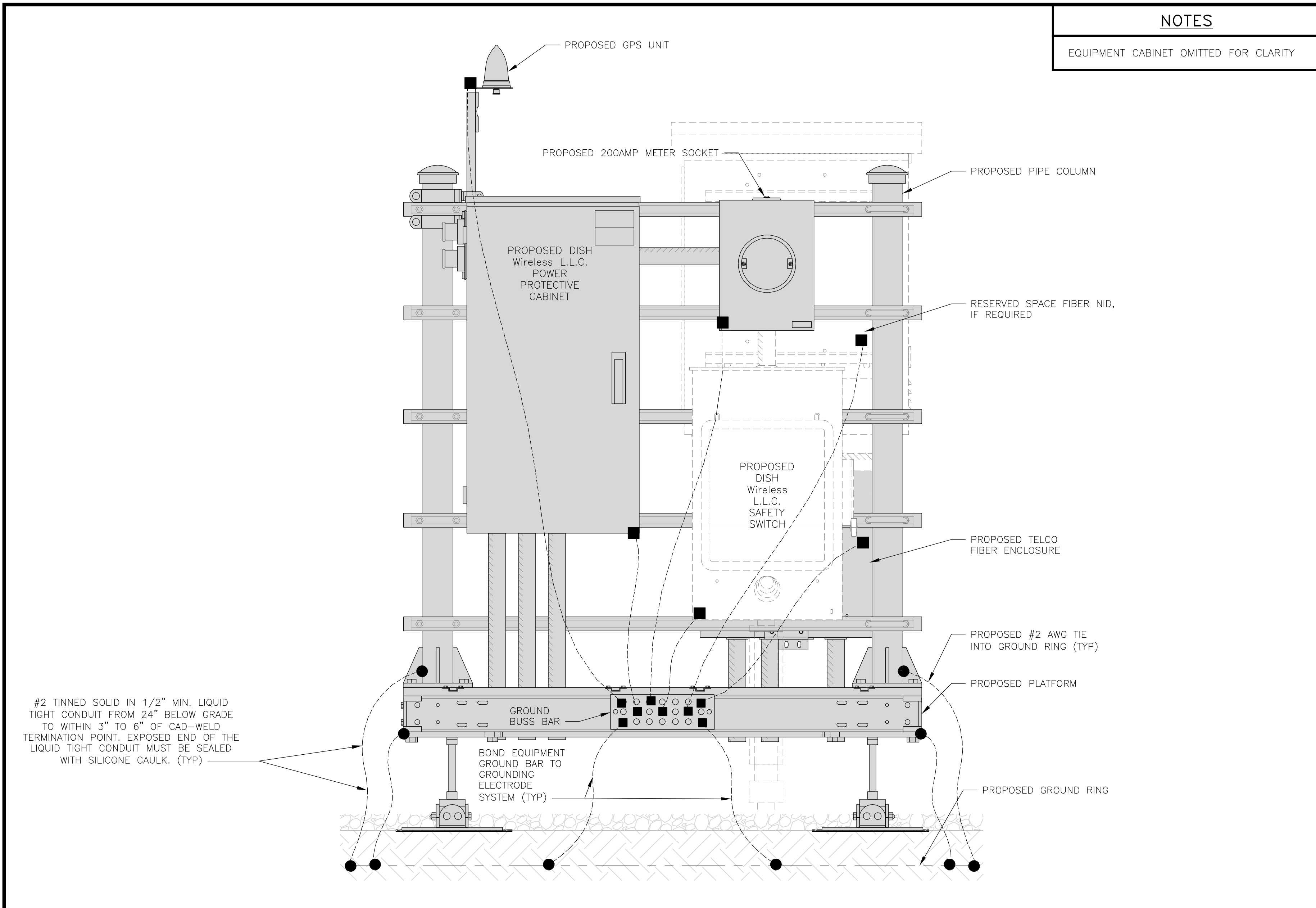
A&E PROJECT NUMBER  
**842860**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

SHEET TITLE  
**GROUNDING PLANS AND NOTES**

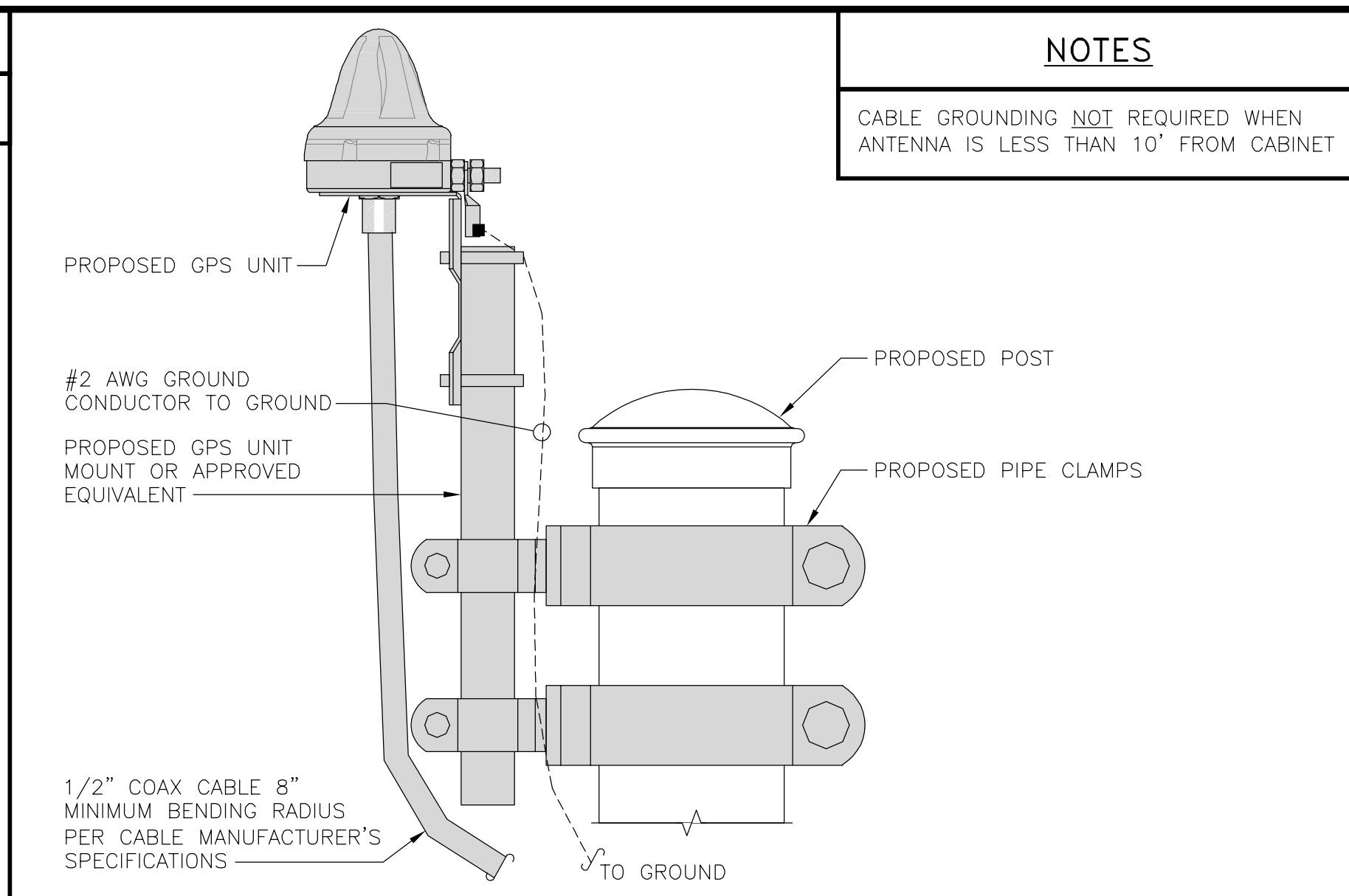
SHEET NUMBER  
**G-1**





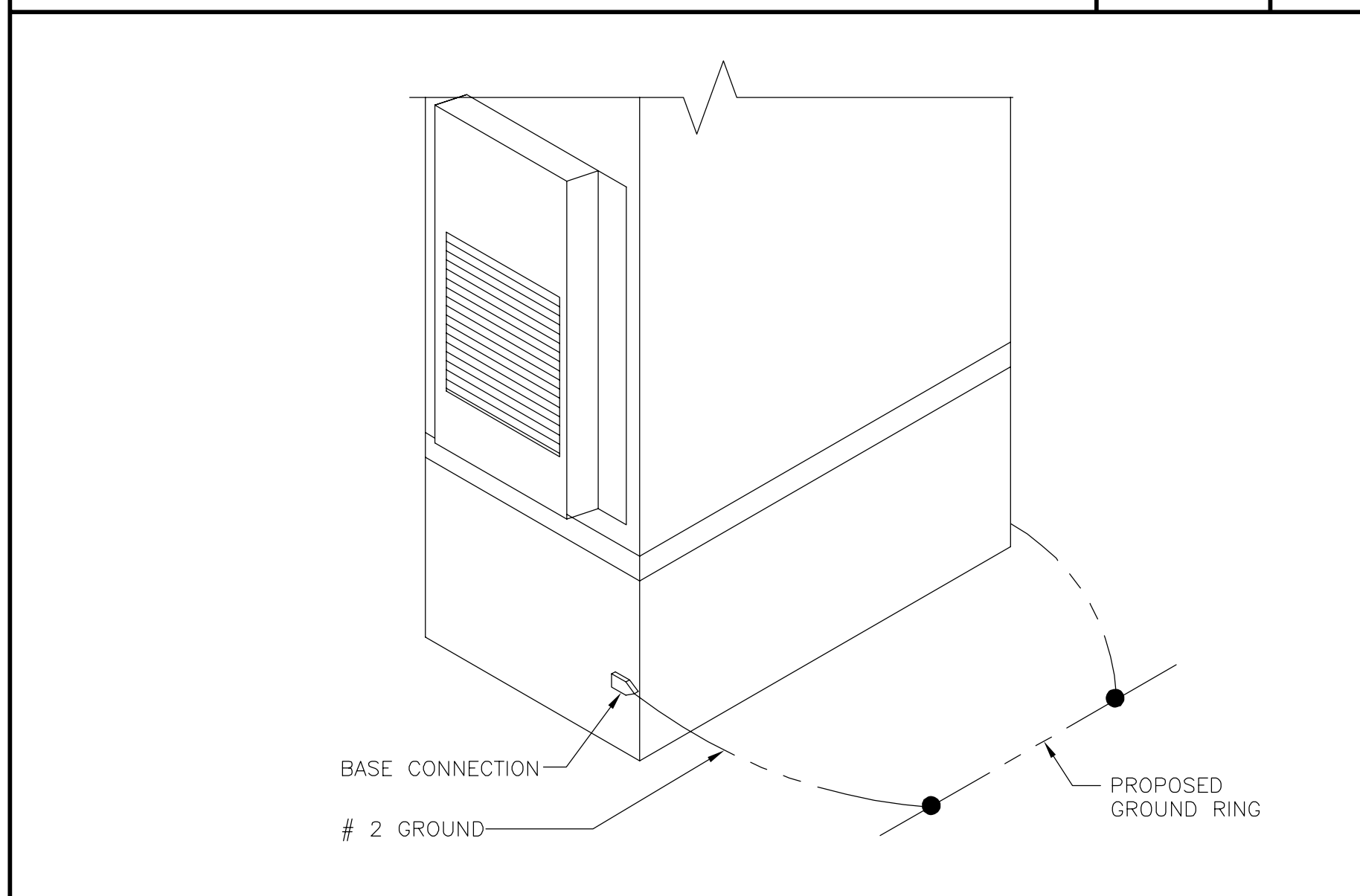
**H-FRAME GROUNDING DETAIL**

NO SCALE 1



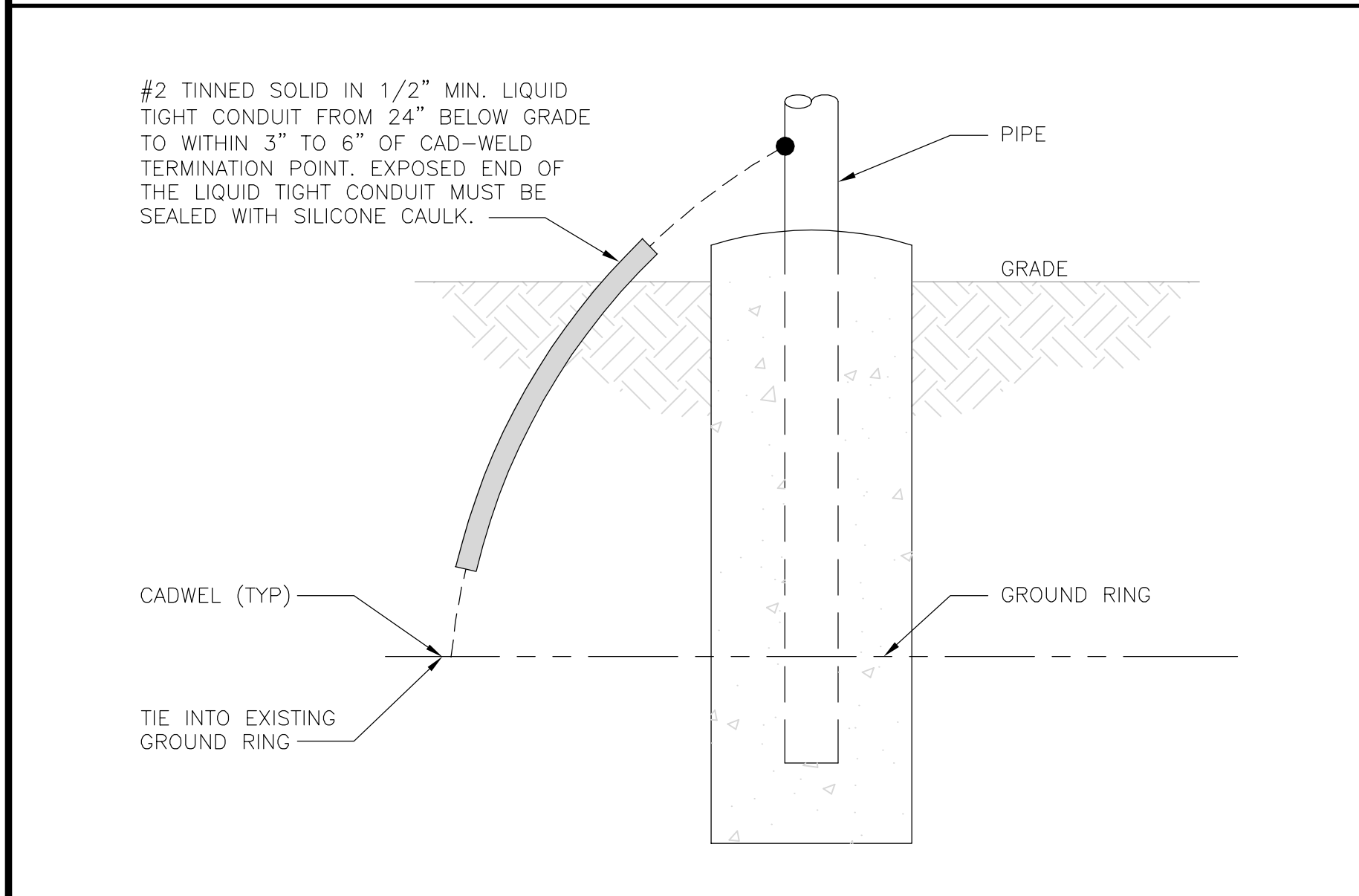
**TYPICAL GPS UNIT GROUNDING**

NO SCALE 2



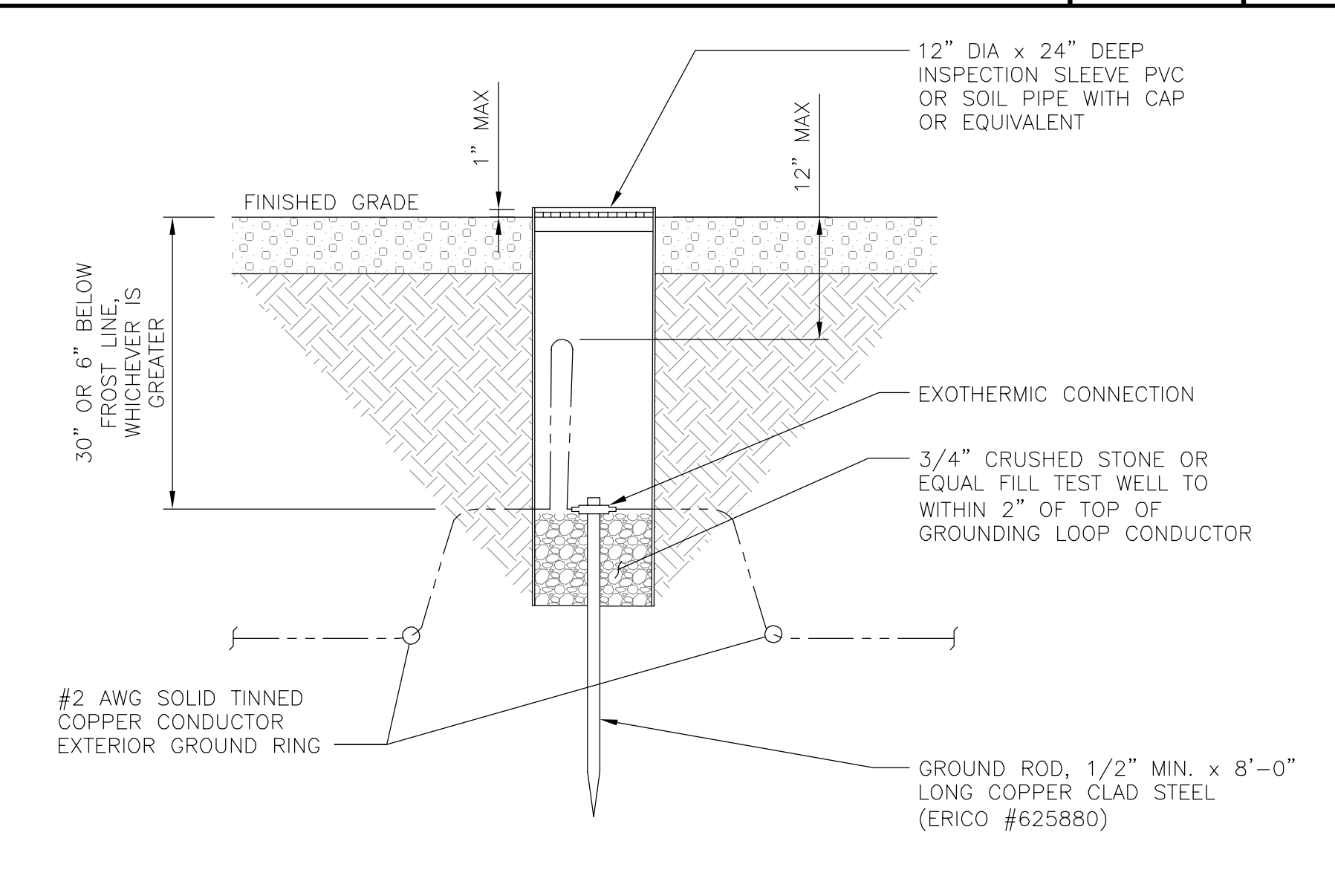
**OUTDOOR CABINET GROUNDING**

NO SCALE 3



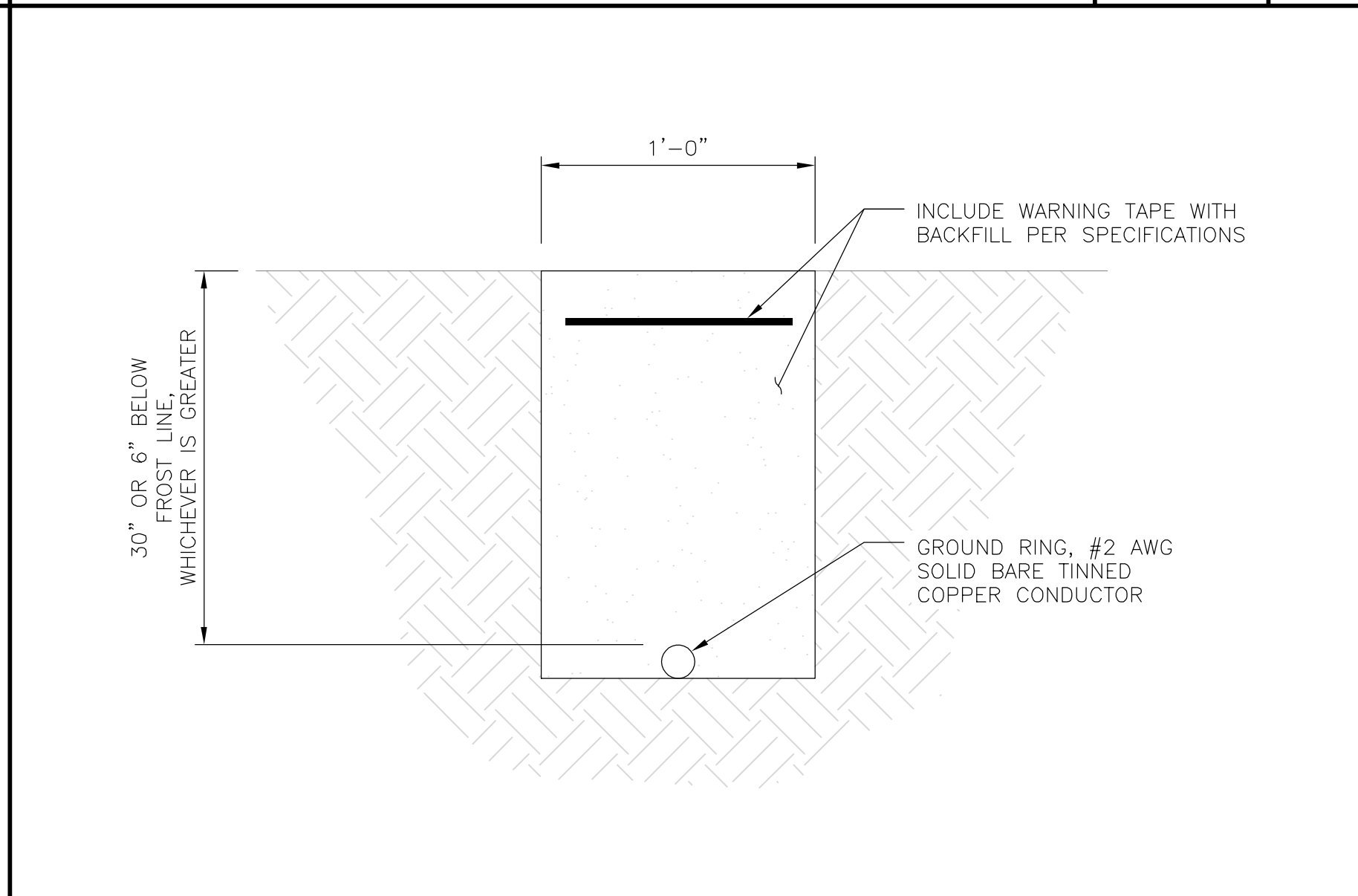
**TRANSITIONING GROUND DETAIL**

NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

NO SCALE 5



**TYPICAL GROUND RING TRENCH**

NO SCALE 6



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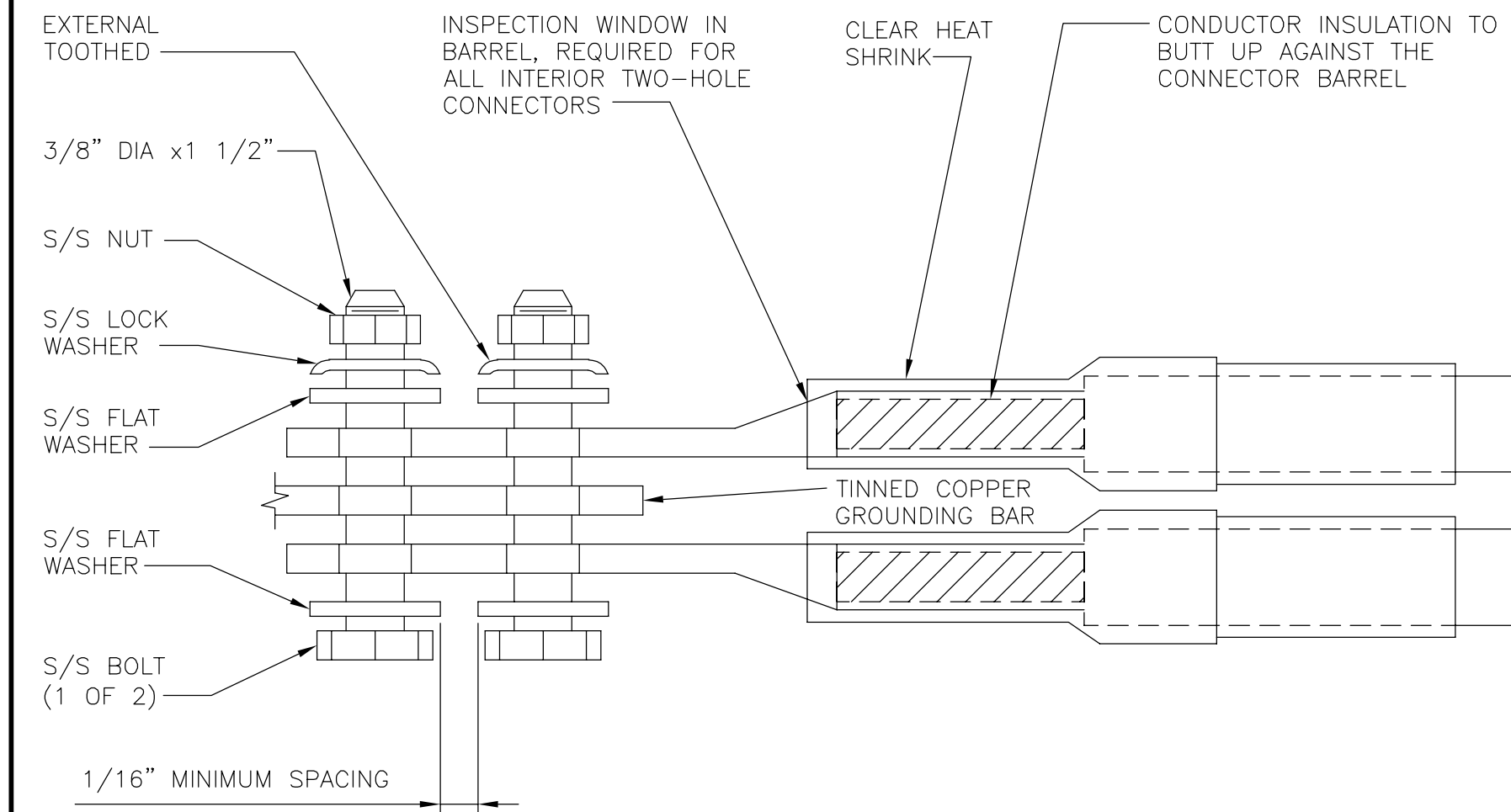
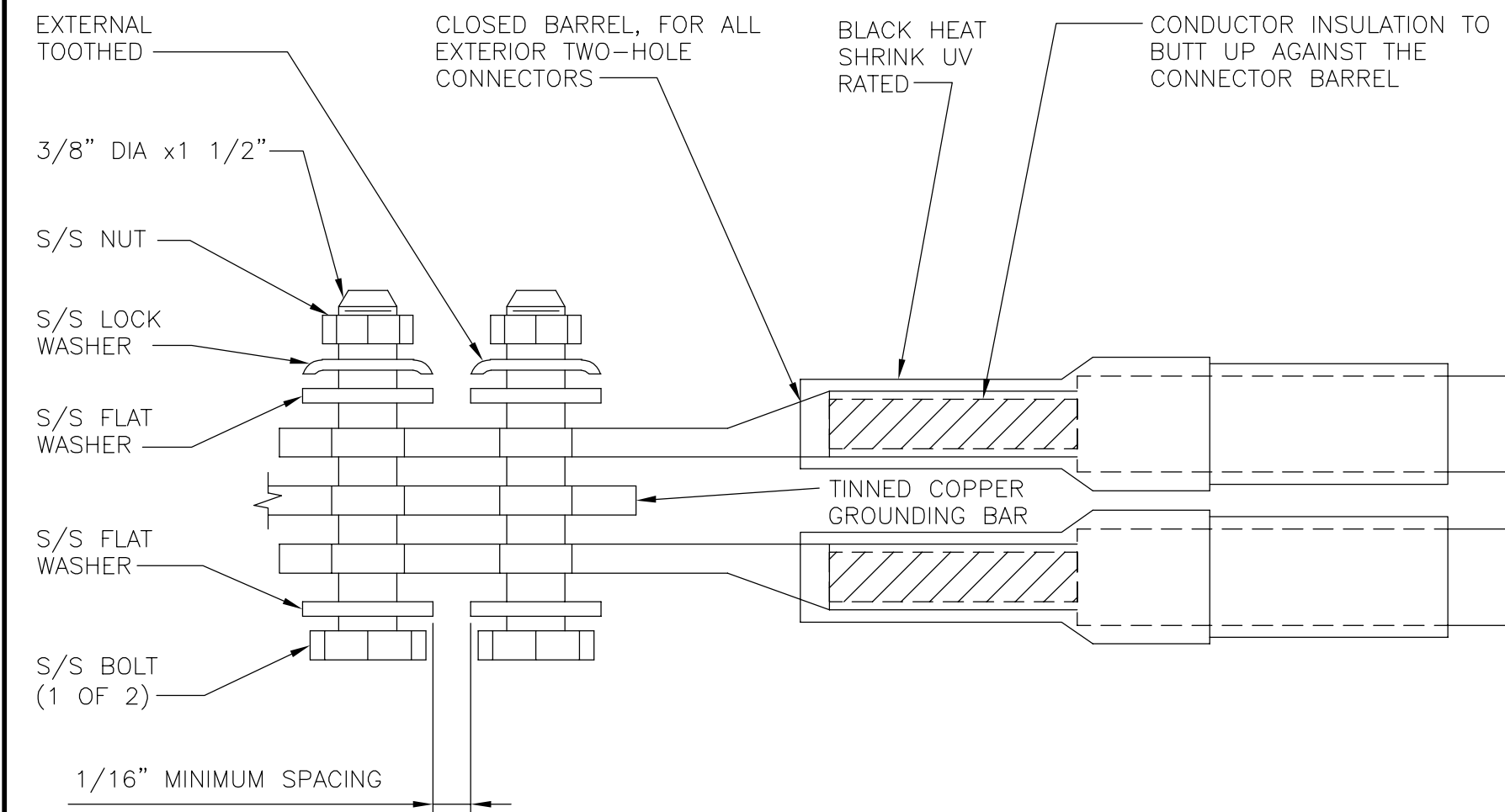
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SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G-2**

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



TYPICAL GROUNDING NOTES

NO SCALE

1

TYPICAL EXTERIOR TWO HOLE LUG

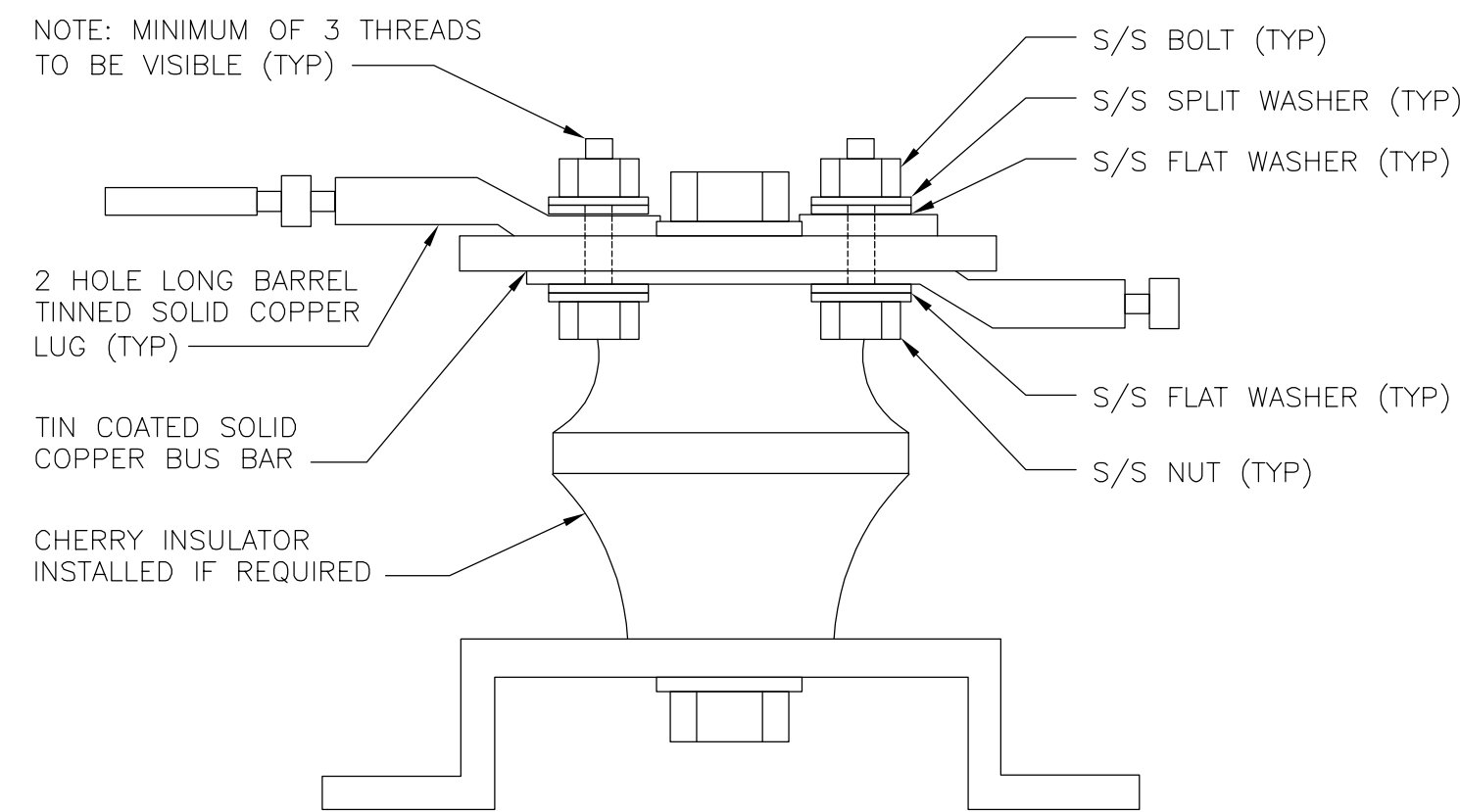
NO SCALE

2

TYPICAL INTERIOR TWO HOLE LUG

NO SCALE

3



LUG DETAIL

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120

**NB+C**  
TOTALLY COMMITTED.

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GROUNDING DETAILS

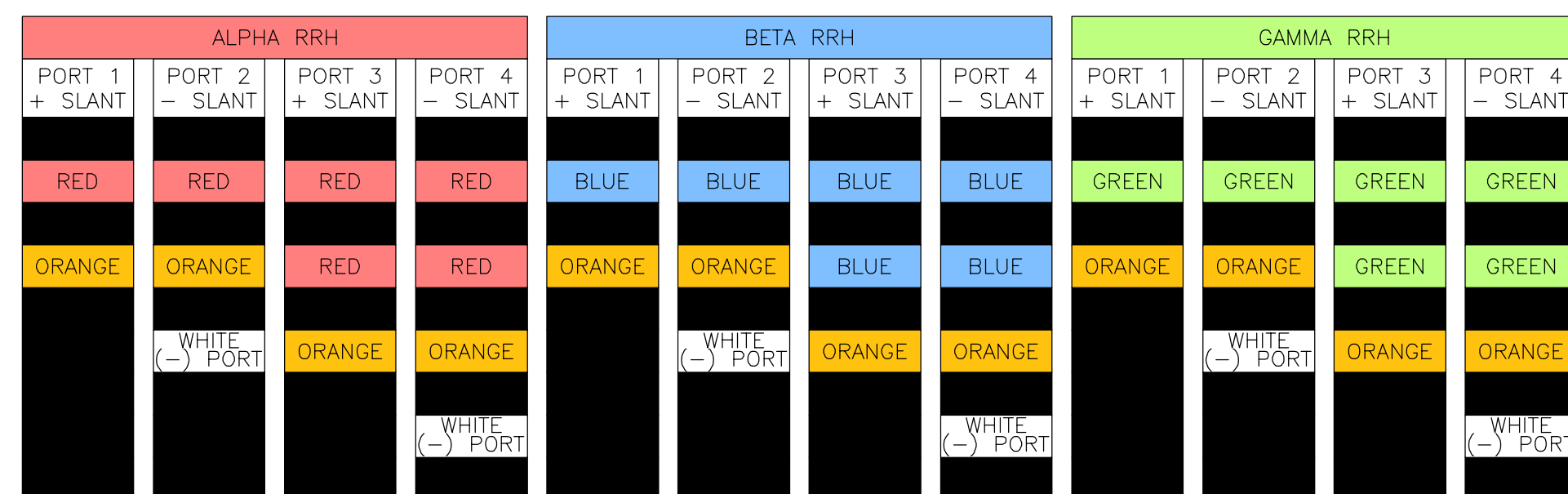
SHEET NUMBER

G-3

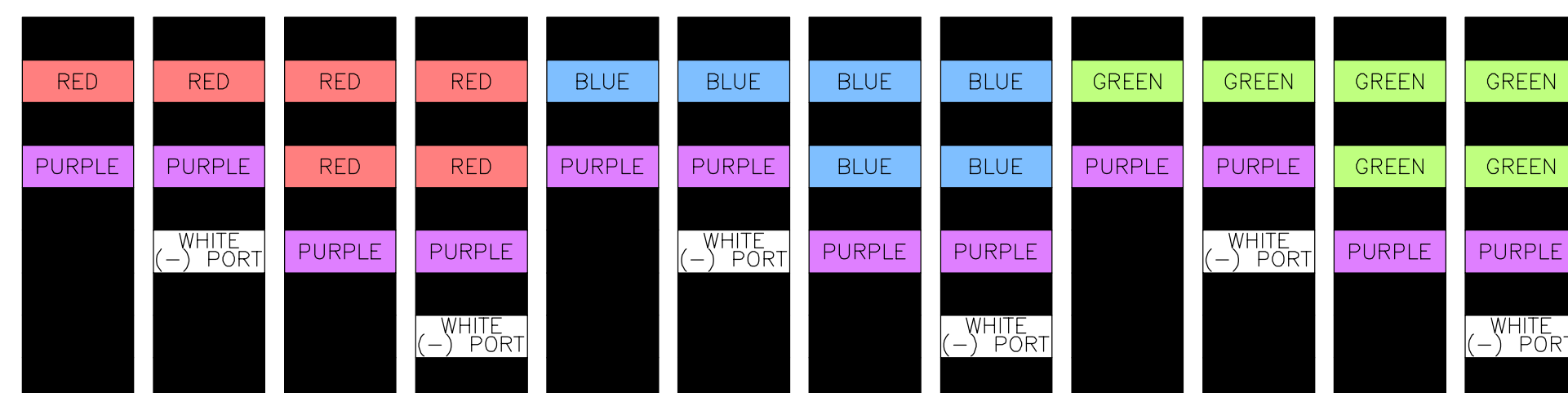
**HYBRID/DISCREET CABLES**

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

LOW-BAND RRH  
(600 MHz N71 BASEBAND) +  
(850 MHz N26 BAND) +  
(700 MHz N29 BAND) - OPTIONAL PER MARKET  
ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BAND)



MID-BAND RRH  
(AWS BANDS N66+N70)  
ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BANDS)



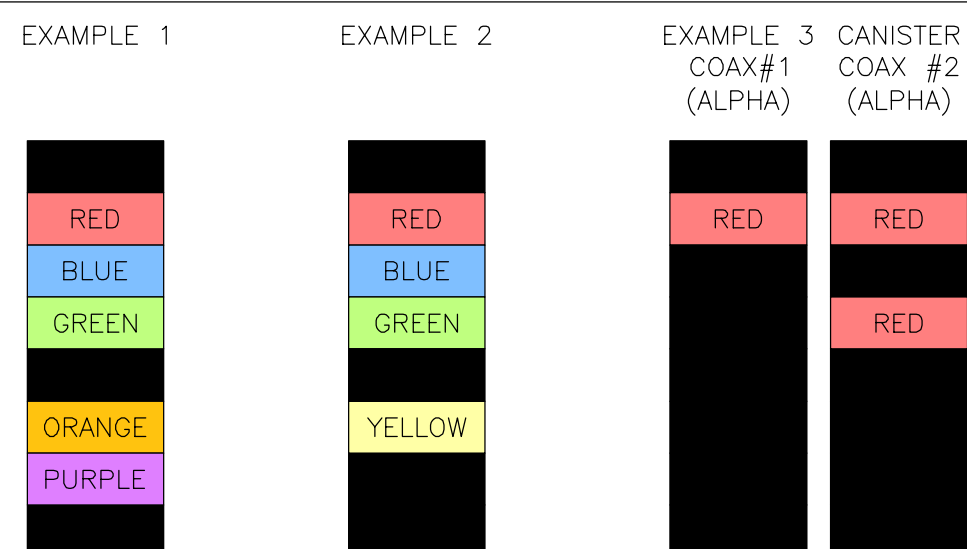
**HYBRID/DISCREET CABLES**

INCLUDE SECTOR BANDS BEING SUPPORTED  
ALONG WITH FREQUENCY BANDS.

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

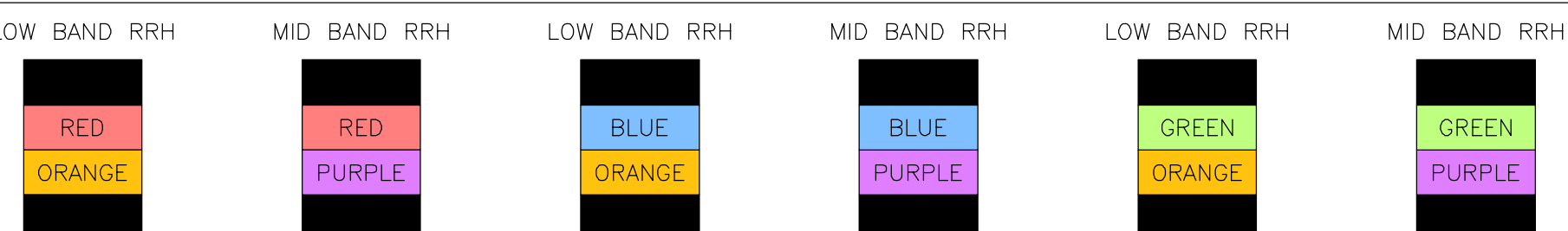
EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS  
CBRS ONLY, ALL SECTORS.

EXAMPLE 3 - MAIN COAX WITH GROUND  
MOUNTED RRHS.



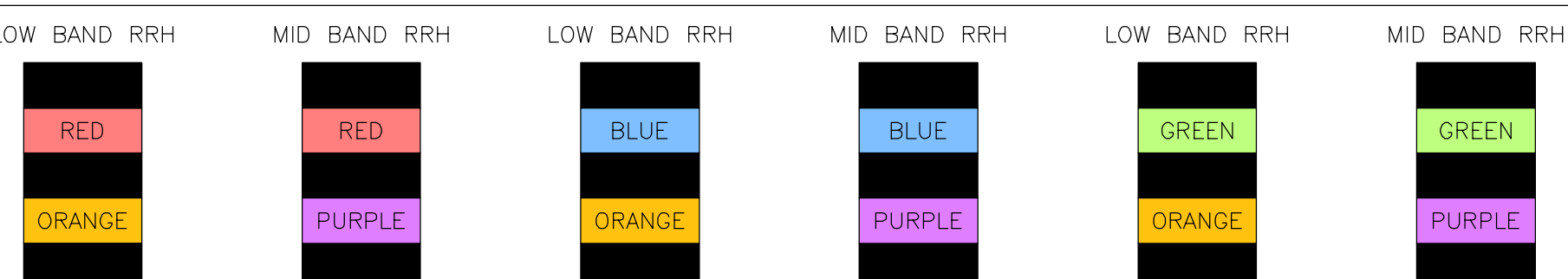
**FIBER JUMPERS TO RRHS**

LOW-BAND HHR FIBER CABLES HAVE SECTOR  
STRIPE ONLY.



**POWER CABLES TO RRHS**

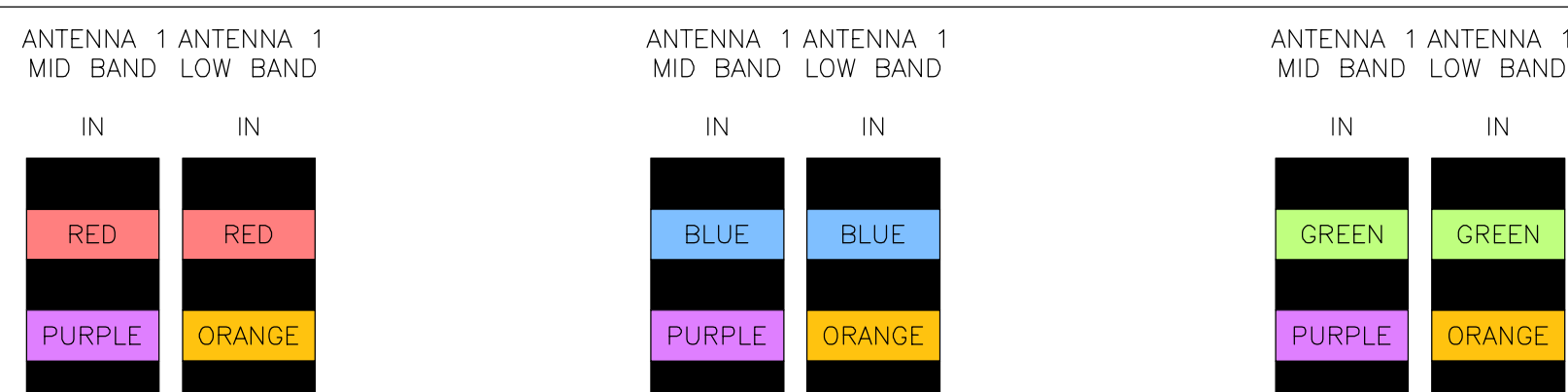
LOW-BAND RRH POWER CABLES HAVE SECTOR  
STRIPE ONLY



**RET MOTORS AT ANTENNAS**

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

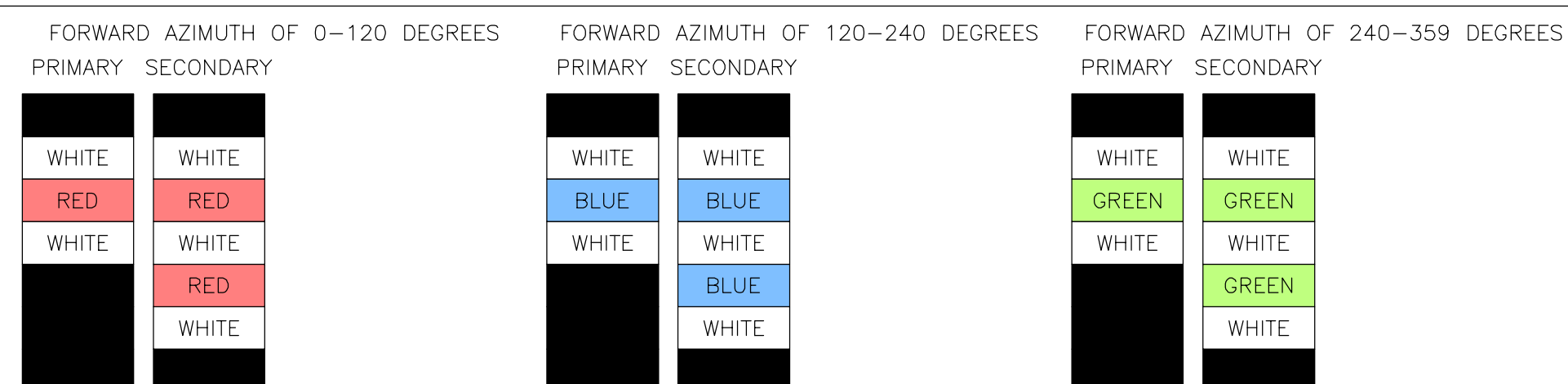
SEPARATE RET CABLES ARE USED WHEN  
ANTENNA PORTS PROVIDE INPUTS FOR BOTH  
LOW AND MID BANDS.



**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.



LOW BANDS (N71+N26)  
OPTIONAL - (N29)



AWS  
(N66+N70+H-BLOCK)



CBRS TECH  
(3 GHz)



NEGATIVE SLANT PORT  
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

2

NOT USED

3

RF CABLE COLOR CODES

1

NOT USED

4



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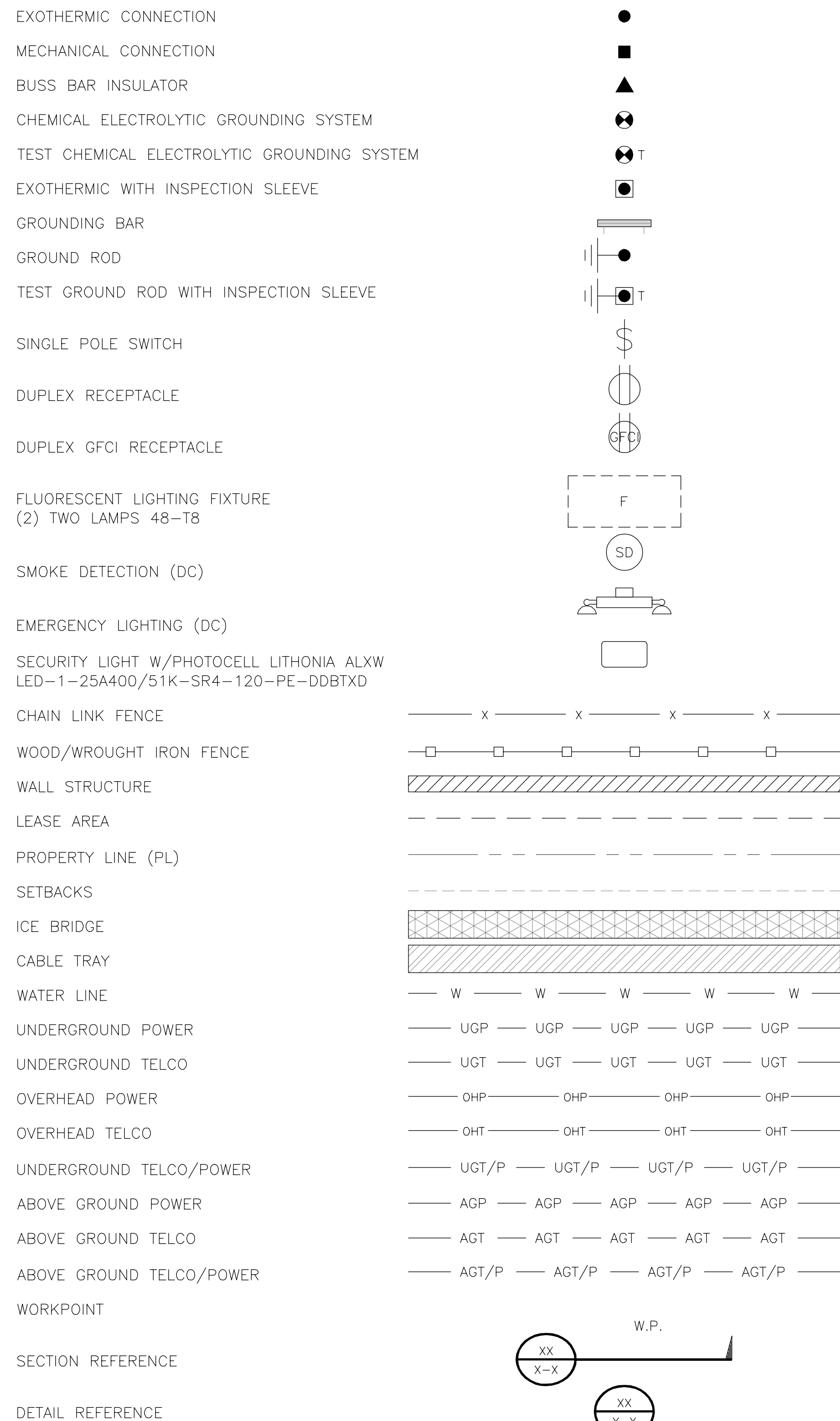
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PROJECT INFORMATION  
BOBOS00888A  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

SHEET TITLE  
RF  
CABLE COLOR CODES

SHEET NUMBER  
RF-1



LEGEND

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

ABBREVIATIONS



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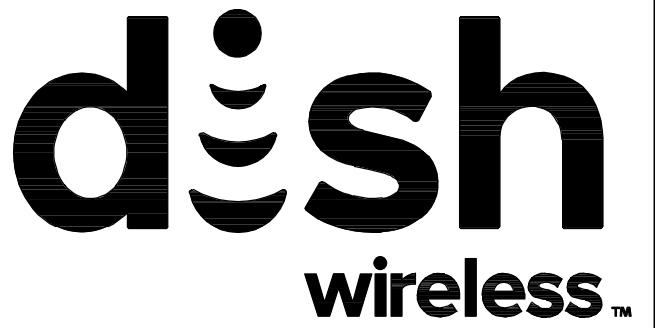
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SITE ACTIVITY REQUIREMENTS:

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.
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06/10/2022  
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A&E PROJECT NUMBER  
**842860**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415

SHEET TITLE  
**GENERAL NOTES**

SHEET NUMBER  
**GN-2**

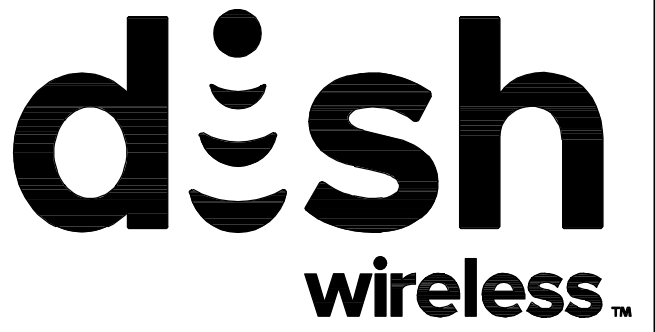
CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
  - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
  - 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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A&E PROJECT NUMBER  
**842860**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**BOBOS00888A**  
**315 OLD HARTFORD ROAD**  
**COLCHESTER, CT 06415**

SHEET TITLE  
**GENERAL NOTES**

SHEET NUMBER  
**GN-3**

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.



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**A&E PROJECT NUMBER**

**842860**

**DISH Wireless L.L.C.  
PROJECT INFORMATION**

**BOBOS00888A  
315 OLD HARTFORD ROAD  
COLCHESTER, CT 06415**

**SHEET TITLE**

**GENERAL NOTES**

**SHEET NUMBER**

**GN-4**

# ATTACHMENT 4



Date: **October 12, 2021**



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

**Subject:** **Structural Analysis Report**

**Carrier Designation:** **DISH Network Co-Locate**  
**Site Number:** BOBOS00888A

**Crown Castle Designation:** **BU Number:** 842860  
**Site Name:** COLCHESTER NORTH CENTRAL  
**JDE Job Number:** 671469  
**Work Order Number:** 2031954  
**Order Number:** 572909 Rev. 1

**Engineering Firm Designation:** **Crown Castle Project Number:** 2031954

**Site Data:** **315 OLD HARTFORD ROAD, COLCHESTER, NEW LONDON County, CT**  
**Latitude 41° 34' 49.69", Longitude -72° 21' 0.07"**  
**60 Foot - Monopole Tower**

Crown Castle is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration

**Sufficient Capacity – 77.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 121 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Didi Rossmiller

Respectfully submitted by:

*Barimani* Digitally signed by Maham Barimani  
Date: 2021.10.13 15:09:06  
30501

A circular professional engineer seal for the State of Connecticut. The outer ring contains the text 'STATE OF CONNECTICUT' at the top and 'PROFESSIONAL ENGINEER' at the bottom, separated by two stars. The inner circle features the state seal of Connecticut and the text 'MAHAM BARIMANI' and '30501 LICENSED'.

Maham Barimani, P.E.  
Senior Project Engineer

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## 1) INTRODUCTION

This tower is a 60 ft Monopole tower mapped by TEP in 2015.

## 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Wind Speed:</b>	121 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor:</b>	1
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Service Wind Speed:</b>	60 mph

**Table 1 - Proposed Equipment Configuration**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
40.0	40.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

**Table 2 - Other Considered Equipment**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
58.0	68.0	1	rfs celwave	BMR12	1	1/2
	58.0	1	tower mounts	Side Arm Mount [SO 701-1]		
53.0	57.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	1 3 6 12	conduit 3/8 3/4 7/8
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
	55.0	3	ericsson	RADIO 4478		
		3	ericsson	RADIO 8843		
		3	ericsson	RRUS 32		
		3	kaelus	DBCT108F1V92-1		
		3	raycap	DC6-48-60-18-8F		
	54.0	3	ericsson	RRUS 11 B12		
		6	powerwave technologies	LGP21401		
53.0	1	tower mounts	Miscellaneous [NA 507-1]			
	1	tower mounts	Platform Mount [LP 403-1_KCKR]			
44.0	45.0	1	andrew	DB438-A	1	1/2

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	44.0	1	tower mounts	Side Arm Mount [SO 701-1]		
31.0	31.0	1	andrew	DB438-A	2	1/2
		1	maxrad	MYA1506K		
		1	tower mounts	Side Arm Mount [SO 701-1]		

### 3) ANALYSIS PROCEDURE

**Table 3 - Documents Provided**

Document	Reference	Source
4-GEOTECHNICAL REPORTS	5142093	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	6060632	CCISITES
4-TOWER MANUFACTURER DRAWINGS	6041767	CCISITES

#### 3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

#### 3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

### 4) ANALYSIS RESULTS

**Table 4 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	60 - 36	Pole	TP32.125x27.375x0.1875	1	-9.95	1077.69	20.5	Pass
L2	36 - 0	Pole	TP37.875x32.125x0.2188	2	-14.26	1482.43	47.1	Pass
							Summary	
						Pole (L2)	47.1	Pass
						Rating =	47.1	Pass

**Table 5 - Tower Component Stresses vs. Capacity - LC5**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	77.5	Pass
1	Base Plate	0	13.8	Pass
1	Base Foundation (Structure)	0	23.5	Pass
1	Base Foundation (Soil Interaction)	0	24.3	Pass
<b>Structure Rating (max from all components) =</b>				<b>77.5%</b>

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

**4.1) Recommendations**

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

**APPENDIX A**  
**TNXTOWER OUTPUT**

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi			

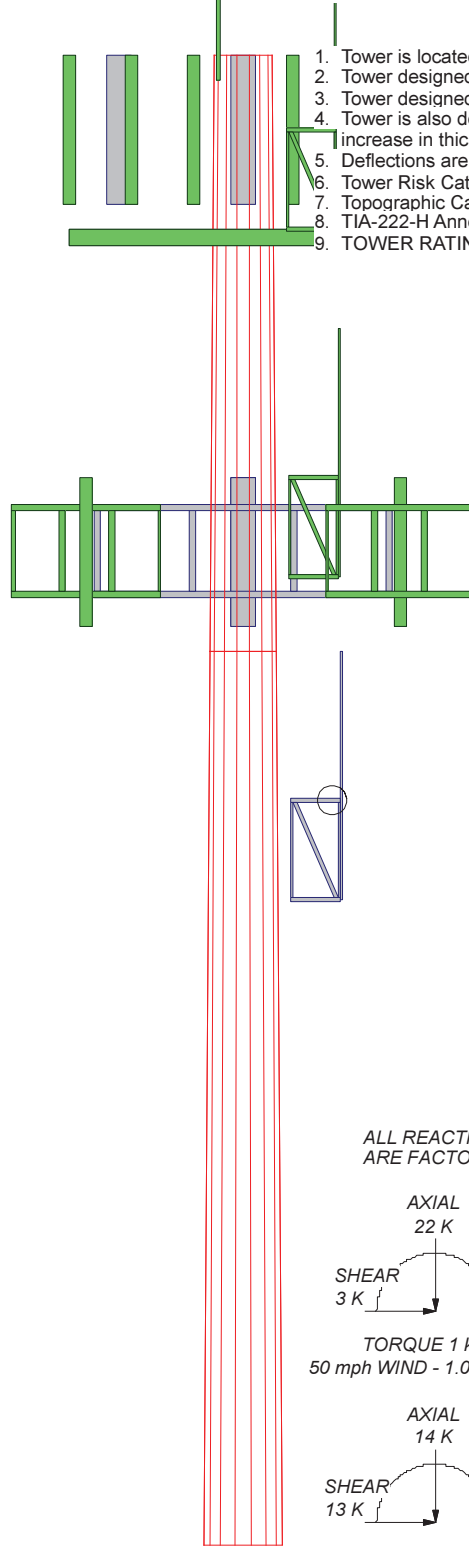
**TOWER DESIGN NOTES**

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 121 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 47.1%

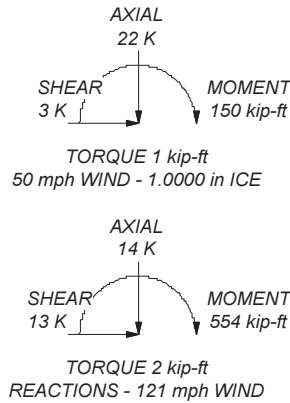
60.0 ft

36.0 ft

0.0 ft



ALL REACTIONS ARE FACTORED



Section	1	2								
Length (ft)	24.0000	36.0000								
Number of Sides	18	18								
Thickness (in)	0.1875	0.2188								
Top Dia (in)	27.3750	32.1250								
Bot Dia (in)	32.1250	37.8750								
Grade		A572-60								
Weight (K)	1.4	3.0								
										4.4

**Crown Castle**  
 2000 Corporate Drive  
 Canonsburg, PA 15317  
 The Pathway to Possible Phone: 724-416-2000  
 FAX:

Job:	<b>BU 842860</b>		
Project:			
Client:	Crown Castle	Drawn by:	DRossmiller
Code:	TIA-222-H	Date:	10/12/21
Path:		Scale:	NTS
		Dwg No.:	E-1

C:\Users\rosmillr\Credrive - Crown Castle USA, Inc\2021\temp\proj\BU2860\WC 2031854 - SA\Proj\BU2860.dwg

## Tower Input Data

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

- Tower is located in New London County, Connecticut.
- Tower base elevation above sea level: 420.0000 ft.
- Basic wind speed of 121 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.0000 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.00 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Deflections calculated using a wind speed of 60 mph.
- TIA-222-H Annex S.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used:  $K_{es}(F_w) = 0.95$ ,  $K_{es}(t_i) = 0.85$ .
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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## 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	60.0000- 36.0000	24.0000	0.00	18	27.3750	32.1250	0.1875	0.7500	A572-60 (60 ksi)
L2	36.0000- 0.0000	36.0000		18	32.1250	37.8750	0.2188	0.8750	A572-60 (60 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	27.7684	16.1800	1510.9617	9.6516	13.9065	108.6515	3023.9116	8.0915	4.4880	23.936
	32.5917	19.0068	2449.3362	11.3378	16.3195	150.0865	4901.8953	9.5052	5.3240	28.395
L2	32.5868	22.1529	2849.1789	11.3267	16.3195	174.5874	5702.1069	11.0786	5.2690	24.087
	38.4255	26.1452	4683.8571	13.3680	19.2405	243.4374	9373.8774	13.0751	6.2810	28.713

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 60.0000- 36.0000				1	1	1			
L2 36.0000- 0.0000				1	1	1			

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r in	Perimeter r in	Weight plf
*** 40 *** CU12PSM9P8XXX(1- 3/8)	A	No	Surface Ar (CaAa)	40.0000 - 0.0000	1	1	-0.250 -0.200	1.4110		1.66

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf	
*** 58 *** LDF4-50A(1/2)	C	No	No	Inside Pole	58.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.15 0.15 0.15
*** 53 *** LDF5-50A(7/8)	C	No	No	Inside Pole	53.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.33 0.33 0.33

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C <sub>AA</sub> ft <sup>2</sup> /ft	Weight plf
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	53.0000 - 0.0000	3	No Ice	0.0000	0.06
							1/2" Ice	0.0000	0.06
							1" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	53.0000 - 0.0000	6	No Ice	0.0000	0.58
							1/2" Ice	0.0000	0.58
							1" Ice	0.0000	0.58
2" Flex Conduit	C	No	No	Inside Pole	53.0000 - 0.0000	6	No Ice	0.0000	0.36
							1/2" Ice	0.0000	0.36
							1" Ice	0.0000	0.36
* *** 44 ***									
LDF4-50A(1/2)	C	No	No	Inside Pole	44.0000 - 0.0000	1	No Ice	0.0000	0.15
							1/2" Ice	0.0000	0.15
							1" Ice	0.0000	0.15
* *** 31 ***									
LDF4-50A(1/2)	C	No	No	Inside Pole	31.0000 - 0.0000	2	No Ice	0.0000	0.15
							1/2" Ice	0.0000	0.15
							1" Ice	0.0000	0.15
* * *									

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	60.0000-36.0000	A	0.000	0.000	0.564	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.17
L2	36.0000-0.0000	A	0.000	0.000	5.080	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.37

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	60.0000-36.0000	A	0.882	0.000	0.000	1.270	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.17
L2	36.0000-0.0000	A	0.800	0.000	0.000	10.841	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.37

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
L1	60.0000-36.0000	-0.2093	-0.0110	-0.2696	-0.0141
L2	36.0000-0.0000	-1.1148	-0.0584	-1.3647	-0.0715

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

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	14	CU12PSM9P8XXX(1-3/8)	36.00 - 40.00	1.0000	1.0000
L2	14	CU12PSM9P8XXX(1-3/8)	0.00 - 36.00	1.0000	1.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment  °	Placement  ft
Lightning Rod 5/8"x8'	C	From Leg	0.0000 0.00 4.00	0.0000	60.0000
*** Level 58 *** BMR12	B	From Leg	4.0000 0.00 10.00	0.0000	58.0000
Side Arm Mount [SO 701-1]	B	From Leg	2.0000 0.00 0.00	0.0000	58.0000
*** Level 53 *** Platform Mount [LP 403-1_KCKR] Miscellaneous [NA 507-1] 7770.00 w/ Mount Pipe	C C A	None None From Leg	4.0000 0.00 4.00	0.0000 0.0000 0.0000	53.0000 53.0000 53.0000
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 4.00	0.0000	53.0000
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 4.00	0.0000	53.0000
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.0000 0.00 4.00	0.0000	53.0000
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.0000 0.00 4.00	0.0000	53.0000
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.0000 0.00 4.00	0.0000	53.0000
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.0000 0.00 4.00	0.0000	53.0000
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.0000 0.00 4.00	0.0000	53.0000
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.0000	0.0000	53.0000

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement
			Horz	Lateral		
			ft	ft	°	ft
			0.00			
			4.00			
RADIO 8843	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RADIO 8843	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RADIO 8843	C	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
(2) DC6-48-60-18-8F	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
DC6-48-60-18-8F	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
(2) LGP21401	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			1.00			
(2) LGP21401	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			1.00			
(2) LGP21401	C	From Leg	4.0000		0.0000	53.0000
			0.00			
			1.00			
DBCT108F1V92-1	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
DBCT108F1V92-1	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
DBCT108F1V92-1	C	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RRUS 32	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RRUS 32	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RRUS 32	C	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RADIO 4478	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RADIO 4478	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RADIO 4478	C	From Leg	4.0000		0.0000	53.0000
			0.00			
			2.00			
RRUS 11 B12	A	From Leg	4.0000		0.0000	53.0000
			0.00			
			1.00			
RRUS 11 B12	B	From Leg	4.0000		0.0000	53.0000
			0.00			
			1.00			
RRUS 11 B12	C	From Leg	4.0000		0.0000	53.0000
			0.00			
			1.00			
*** 40 ***						
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.0000		0.0000	40.0000
			0.00			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
MX08FRO665-21 w/ Mount Pipe	B	From Leg	0.00 4.0000	0.0000	40.0000
MX08FRO665-21 w/ Mount Pipe	C	From Leg	0.00 4.0000	0.0000	40.0000
TA08025-B604	A	From Leg	0.00 4.0000	0.0000	40.0000
TA08025-B604	B	From Leg	0.00 4.0000	0.0000	40.0000
TA08025-B604	C	From Leg	0.00 4.0000	0.0000	40.0000
TA08025-B605	A	From Leg	0.00 4.0000	0.0000	40.0000
TA08025-B605	B	From Leg	0.00 4.0000	0.0000	40.0000
TA08025-B605	C	From Leg	0.00 4.0000	0.0000	40.0000
RDIDC-9181-PF-48	A	From Leg	0.00 4.0000	0.0000	40.0000
(2) 8' x 2" Mount Pipe	A	From Leg	0.00 4.0000	0.0000	40.0000
(2) 8' x 2" Mount Pipe	B	From Leg	0.00 4.0000	0.0000	40.0000
(2) 8' x 2" Mount Pipe	C	From Leg	0.00 4.0000	0.0000	40.0000
Commscope MC-PK8-DSH ***	C	None	0.00	0.0000	40.0000
DB438-A	B	From Leg	4.0000 0.00 1.00	0.0000	44.0000
Side Arm Mount [SO 701-1] ***	B	From Leg	2.0000 0.00 0.00	0.0000	44.0000
DB438-A	B	From Face	4.0000 0.00 0.00	1.0000	31.0000
MYA1506K	B	From Face	0.0000 0.00 0.00	1.0000	31.0000
Side Arm Mount [SO 701-1] ***	B	From Face	2.0000 0.00 0.00	0.0000	31.0000

**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
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

**Maximum Member Forces**

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	60 - 36	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.88	-2.36	-0.37
			Max. Mx	8	-9.95	-144.69	0.04
			Max. My	14	-9.95	-0.83	-144.36
			Max. Vy	8	9.99	-144.69	0.04
			Max. Vx	14	10.04	-0.83	-144.36
			Max. Torque	5			-2.16
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.62	-2.78	0.10
			Max. Mx	8	-14.26	-551.64	0.44
Max. My	14	-14.26	-0.84	-553.58			
L2	36 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.62	-2.78	0.10
			Max. Mx	8	-14.26	-551.64	0.44
Max. My	14	-14.26	-0.84	-553.58			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	12.50	-551.64	0.44
			Max. Vx	14	12.58	-0.84	-553.58
			Max. Torque	15			2.36

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	21.62	-3.41	0.00
	Max. H <sub>x</sub>	21	10.70	12.49	-0.00
	Max. H <sub>z</sub>	2	14.27	-0.00	12.57
	Max. M <sub>x</sub>	2	553.33	-0.00	12.57
	Max. M <sub>z</sub>	8	551.64	-12.49	0.00
	Max. Torsion	15	2.36	0.00	-12.57
	Min. Vert	23	10.70	10.82	6.28
	Min. H <sub>x</sub>	8	14.27	-12.49	0.00
	Min. H <sub>z</sub>	14	14.27	0.00	-12.57
	Min. M <sub>x</sub>	14	-553.58	0.00	-12.57
	Min. M <sub>z</sub>	20	-548.83	12.49	-0.00
	Min. Torsion	3	-2.36	-0.00	12.57

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overtuning Moment, M <sub>x</sub> kip-ft	Overtuning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	11.89	0.00	0.00	0.10	-1.15	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	14.27	0.00	-12.57	-553.33	-1.97	2.36
0.9 Dead+1.0 Wind 0 deg - No Ice	10.70	0.00	-12.57	-551.89	-1.61	2.36
1.2 Dead+1.0 Wind 30 deg - No Ice	14.27	6.25	-10.89	-479.47	-277.01	2.24
0.9 Dead+1.0 Wind 30 deg - No Ice	10.70	6.25	-10.89	-478.22	-275.92	2.24
1.2 Dead+1.0 Wind 60 deg - No Ice	14.27	10.82	-6.29	-277.09	-478.21	1.52
0.9 Dead+1.0 Wind 60 deg - No Ice	10.70	10.82	-6.29	-276.39	-476.58	1.52
1.2 Dead+1.0 Wind 90 deg - No Ice	14.27	12.49	-0.00	-0.44	-551.64	0.39
0.9 Dead+1.0 Wind 90 deg - No Ice	10.70	12.49	-0.00	-0.47	-549.82	0.39
1.2 Dead+1.0 Wind 120 deg - No Ice	14.27	10.82	6.28	276.36	-477.64	-0.84
0.9 Dead+1.0 Wind 120 deg - No Ice	10.70	10.82	6.28	275.60	-476.02	-0.84
1.2 Dead+1.0 Wind 150 deg - No Ice	14.27	6.24	10.88	479.15	-276.04	-1.85
0.9 Dead+1.0 Wind 150 deg - No Ice	10.70	6.24	10.88	477.84	-274.95	-1.85
1.2 Dead+1.0 Wind 180 deg - No Ice	14.27	-0.00	12.57	553.58	-0.84	-2.36
0.9 Dead+1.0 Wind 180 deg - No Ice	10.70	-0.00	12.57	552.07	-0.49	-2.36
1.2 Dead+1.0 Wind 210 deg - No Ice	14.27	-6.25	10.89	479.71	274.20	-2.24
0.9 Dead+1.0 Wind 210 deg - No Ice	10.70	-6.25	10.89	478.40	273.82	-2.24

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 240 deg - No Ice	14.27	-10.82	6.29	277.33	475.40	-1.52
0.9 Dead+1.0 Wind 240 deg - No Ice	10.70	-10.82	6.29	276.57	474.48	-1.52
1.2 Dead+1.0 Wind 270 deg - No Ice	14.27	-12.49	0.00	0.68	548.83	-0.39
0.9 Dead+1.0 Wind 270 deg - No Ice	10.70	-12.49	0.00	0.65	547.72	-0.39
1.2 Dead+1.0 Wind 300 deg - No Ice	14.27	-10.82	-6.28	-276.12	474.83	0.84
0.9 Dead+1.0 Wind 300 deg - No Ice	10.70	-10.82	-6.28	-275.42	473.92	0.84
1.2 Dead+1.0 Wind 330 deg - No Ice	14.27	-6.24	-10.88	-478.90	273.23	1.85
0.9 Dead+1.0 Wind 330 deg - No Ice	10.70	-6.24	-10.88	-477.66	272.85	1.85
1.2 Dead+1.0 Ice	21.62	0.00	0.00	-0.10	-2.78	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	21.62	0.00	-3.43	-147.90	-2.98	0.87
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	21.62	1.71	-2.97	-128.19	-76.44	0.87
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	21.62	2.95	-1.72	-74.15	-130.17	0.63
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	21.62	3.41	-0.00	-0.27	-149.77	0.22
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	21.62	2.95	1.71	73.66	-130.00	-0.24
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	21.62	1.70	2.97	127.82	-76.14	-0.65
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	21.62	-0.00	3.43	147.71	-2.64	-0.87
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	21.62	-1.71	2.97	127.99	70.82	-0.87
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	21.62	-2.95	1.72	73.95	124.55	-0.63
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	21.62	-3.41	0.00	0.07	144.15	-0.22
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	21.62	-2.95	-1.71	-73.85	124.38	0.24
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	21.62	-1.70	-2.97	-128.01	70.52	0.65
Dead+Wind 0 deg - Service	11.89	0.00	-2.97	-132.12	-1.30	0.82
Dead+Wind 30 deg - Service	11.89	1.48	-2.58	-114.47	-67.02	0.82
Dead+Wind 60 deg - Service	11.89	2.56	-1.49	-66.12	-115.10	0.61
Dead+Wind 90 deg - Service	11.89	2.96	-0.00	-0.03	-132.65	0.23
Dead+Wind 120 deg - Service	11.89	2.56	1.49	66.10	-114.97	-0.21
Dead+Wind 150 deg - Service	11.89	1.48	2.57	114.55	-66.80	-0.59
Dead+Wind 180 deg - Service	11.89	-0.00	2.97	132.33	-1.04	-0.82
Dead+Wind 210 deg - Service	11.89	-1.48	2.58	114.68	64.68	-0.82
Dead+Wind 240 deg - Service	11.89	-2.56	1.49	66.33	112.76	-0.61
Dead+Wind 270 deg - Service	11.89	-2.96	0.00	0.23	130.31	-0.23
Dead+Wind 300 deg - Service	11.89	-2.56	-1.49	-65.90	112.63	0.21
Dead+Wind 330 deg - Service	11.89	-1.48	-2.57	-114.34	64.46	0.59

**Solution Summary**



Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-11.89	0.00	0.00	11.89	0.00	0.000%
2	0.00	-14.27	-12.57	-0.00	14.27	12.57	0.000%
3	0.00	-10.70	-12.57	-0.00	10.70	12.57	0.000%
4	6.25	-14.27	-10.89	-6.25	14.27	10.89	0.000%
5	6.25	-10.70	-10.89	-6.25	10.70	10.89	0.000%
6	10.82	-14.27	-6.29	-10.82	14.27	6.29	0.000%
7	10.82	-10.70	-6.29	-10.82	10.70	6.29	0.000%
8	12.49	-14.27	-0.00	-12.49	14.27	0.00	0.000%
9	12.49	-10.70	-0.00	-12.49	10.70	0.00	0.000%
10	10.82	-14.27	6.28	-10.82	14.27	-6.28	0.000%
11	10.82	-10.70	6.28	-10.82	10.70	-6.28	0.000%
12	6.24	-14.27	10.88	-6.24	14.27	-10.88	0.000%
13	6.24	-10.70	10.88	-6.24	10.70	-10.88	0.000%
14	-0.00	-14.27	12.57	0.00	14.27	-12.57	0.000%
15	-0.00	-10.70	12.57	0.00	10.70	-12.57	0.000%
16	-6.25	-14.27	10.89	6.25	14.27	-10.89	0.000%
17	-6.25	-10.70	10.89	6.25	10.70	-10.89	0.000%
18	-10.82	-14.27	6.29	10.82	14.27	-6.29	0.000%
19	-10.82	-10.70	6.29	10.82	10.70	-6.29	0.000%
20	-12.49	-14.27	0.00	12.49	14.27	-0.00	0.000%
21	-12.49	-10.70	0.00	12.49	10.70	-0.00	0.000%
22	-10.82	-14.27	-6.28	10.82	14.27	6.28	0.000%
23	-10.82	-10.70	-6.28	10.82	10.70	6.28	0.000%
24	-6.24	-14.27	-10.88	6.24	14.27	10.88	0.000%
25	-6.24	-10.70	-10.88	6.24	10.70	10.88	0.000%
26	0.00	-21.62	0.00	0.00	21.62	0.00	0.000%
27	0.00	-21.62	-3.43	-0.00	21.62	3.43	0.000%
28	1.71	-21.62	-2.97	-1.71	21.62	2.97	0.000%
29	2.95	-21.62	-1.72	-2.95	21.62	1.72	0.000%
30	3.41	-21.62	-0.00	-3.41	21.62	0.00	0.000%
31	2.95	-21.62	1.71	-2.95	21.62	-1.71	0.000%
32	1.70	-21.62	2.97	-1.70	21.62	-2.97	0.000%
33	-0.00	-21.62	3.43	0.00	21.62	-3.43	0.000%
34	-1.71	-21.62	2.97	1.71	21.62	-2.97	0.000%
35	-2.95	-21.62	1.72	2.95	21.62	-1.72	0.000%
36	-3.41	-21.62	0.00	3.41	21.62	-0.00	0.000%
37	-2.95	-21.62	-1.71	2.95	21.62	1.71	0.000%
38	-1.70	-21.62	-2.97	1.70	21.62	2.97	0.000%
39	0.00	-11.89	-2.97	-0.00	11.89	2.97	0.000%
40	1.48	-11.89	-2.58	-1.48	11.89	2.58	0.000%
41	2.56	-11.89	-1.49	-2.56	11.89	1.49	0.000%
42	2.96	-11.89	-0.00	-2.96	11.89	0.00	0.000%
43	2.56	-11.89	1.49	-2.56	11.89	-1.49	0.000%
44	1.48	-11.89	2.57	-1.48	11.89	-2.57	0.000%
45	-0.00	-11.89	2.97	0.00	11.89	-2.97	0.000%
46	-1.48	-11.89	2.58	1.48	11.89	-2.58	0.000%
47	-2.56	-11.89	1.49	2.56	11.89	-1.49	0.000%
48	-2.96	-11.89	0.00	2.96	11.89	-0.00	0.000%
49	-2.56	-11.89	-1.49	2.56	11.89	1.49	0.000%
50	-1.48	-11.89	-2.57	1.48	11.89	2.57	0.000%

**Non-Linear Convergence Results**

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00011280
3	Yes	4	0.00000001	0.00007202
4	Yes	4	0.00000001	0.00016359
5	Yes	4	0.00000001	0.00010417
6	Yes	4	0.00000001	0.00008173
7	Yes	4	0.00000001	0.00005158
8	Yes	4	0.00000001	0.00002723
9	Yes	4	0.00000001	0.00001724
10	Yes	4	0.00000001	0.00006866
11	Yes	4	0.00000001	0.00004261
12	Yes	4	0.00000001	0.00013964
13	Yes	4	0.00000001	0.00008863
14	Yes	4	0.00000001	0.00011246
15	Yes	4	0.00000001	0.00007179
16	Yes	4	0.00000001	0.00010080
17	Yes	4	0.00000001	0.00006435
18	Yes	4	0.00000001	0.00013360
19	Yes	4	0.00000001	0.00008506
20	Yes	4	0.00000001	0.00002744
21	Yes	4	0.00000001	0.00001742
22	Yes	4	0.00000001	0.00009619
23	Yes	4	0.00000001	0.00006078
24	Yes	4	0.00000001	0.00008216
25	Yes	4	0.00000001	0.00005211
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00002530
28	Yes	4	0.00000001	0.00002817
29	Yes	4	0.00000001	0.00001958
30	Yes	4	0.00000001	0.00000990
31	Yes	4	0.00000001	0.00000898
32	Yes	4	0.00000001	0.00002068
33	Yes	4	0.00000001	0.00002533
34	Yes	4	0.00000001	0.00002435
35	Yes	4	0.00000001	0.00002110
36	Yes	4	0.00000001	0.00000927
37	Yes	4	0.00000001	0.00000993
38	Yes	4	0.00000001	0.00001709
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

**Maximum Tower Deflections - Service Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	60 - 36	2.210	42	0.2680	0.0060
L2	36 - 0	0.935	41	0.2216	0.0030

**Critical Deflections and Radius of Curvature - Service Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
60.0000	Lightning Rod 5/8"x8'	42	2.210	0.2680	0.0060	42413
58.0000	BMR12	42	2.093	0.2658	0.0058	42413
53.0000	Platform Mount [LP 403- 1_KCKR]	42	1.803	0.2599	0.0051	30295
44.0000	DB438-A	42	1.312	0.2446	0.0039	13254
40.0000	MX08FRO665-21 w/ Mount Pipe	42	1.114	0.2345	0.0034	10609
31.0000	DB438-A	41	0.740	0.2009	0.0024	10261

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	60 - 36	9.092	4	1.0886	0.0159
L2	36 - 0	3.876	4	0.9141	0.0084

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
60.0000	Lightning Rod 5/8"x8'	4	9.092	1.0886	0.0159	10503
58.0000	BMR12	4	8.613	1.0811	0.0152	10503
53.0000	Platform Mount [LP 403- 1_KCKR]	4	7.430	1.0606	0.0135	7502
44.0000	DB438-A	4	5.420	1.0043	0.0107	3282
40.0000	MX08FRO665-21 w/ Mount Pipe	4	4.611	0.9653	0.0095	2627
31.0000	DB438-A	4	3.074	0.8308	0.0070	2540

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L1	60 - 36 (1)	TP32.125x27.375x0.1875	24.000	0.0000	0.0	19.006	-9.95	1026.37	0.010
L2	36 - 0 (2)	TP37.875x32.125x0.2188	36.000	0.0000	0.0	26.145	-14.26	1411.84	0.010

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	60 - 36 (1)	TP32.125x27.375x0.1875	144.82	709.88	0.204	0.00	709.88	0.000
L2	36 - 0 (2)	TP37.875x32.125x0.2188	553.73	1145.35	0.483	0.00	1145.35	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	60 - 36 (1)	TP32.125x27.375x0.1875	10.02	307.91	0.033	1.52	861.20	0.002
L2	36 - 0 (2)	TP37.875x32.125x0.2188	12.56	423.55	0.030	2.24	1396.77	0.002

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	60 - 36 (1)	0.010	0.204	0.000	0.033	0.002	0.215	1.050	4.8.2
L2	36 - 0 (2)	0.010	0.483	0.000	0.030	0.002	0.495	1.050	4.8.2

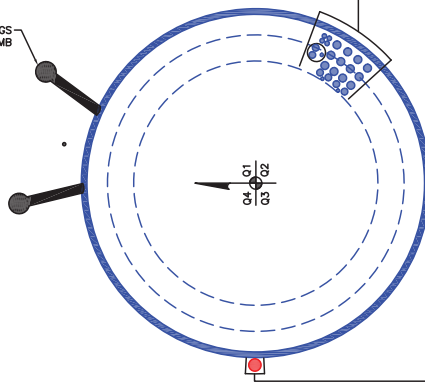
### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail	
L1	60 - 36	Pole	TP32.125x27.375x0.1875	1	-9.95	1077.69	20.5	Pass	
L2	36 - 0	Pole	TP37.875x32.125x0.2188	2	-14.26	1482.43	47.1	Pass	
							Summary		
							Pole (L2)	47.1	Pass
							<b>RATING =</b>	<b>47.1</b>	<b>Pass</b>

**APPENDIX B**  
**BASE LEVEL DRAWING**



CLIMBING PEGS  
W/ SAFETY CLIMB



(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)  
(1) 3/8" TO 53 FT LEVEL  
(2) 3/4" TO 53 FT LEVEL  
(OTHER CONSIDERED EQUIPMENT)  
(2) 3/8" TO 53 FT LEVEL  
(4) 3/4" TO 53 FT LEVEL  
(12) 7/8" TO 53 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)  
(2) 1/2" TO 31 FT LEVEL  
(1) 1/2" TO 44 FT LEVEL  
(1) 1/2" TO 58 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION)  
(1) 1-3/8" TO 40 FT LEVEL

**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# Monopole Base Plate Connection

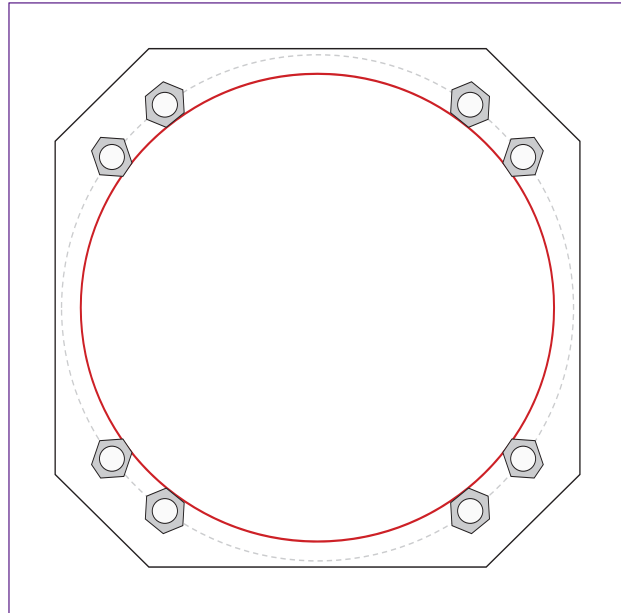


Site Info	
BU #	842860
Site Name	CHESTER NORTH CENT
Order #	572909, rev 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$l_{ar}$ (in)	1.25

Applied Loads	
Moment (kip-ft)	553.73
Axial Force (kips)	14.26
Shear Force (kips)	12.56

\*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

**Anchor Rod Data**

(8) 2"  $\phi$  bolts (A36 N;  $F_y=36$  ksi,  $F_u=58$  ksi) on 41" BC  
*Anchor Spacing: 6 in*

**Base Plate Data**

42" W x 2.5" Plate (A572-50;  $F_y=50$  ksi,  $F_u=65$  ksi); Clip: 7.5 in

**Stiffener Data**

N/A

**Pole Data**

37.875" x 0.21875" 18-sided pole (A572-60;  $F_y=60$  ksi,  $F_u=75$  ksi)

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

$P_{u_c} = 82.74$	$\phi P_{n_c} = 101.79$	<b>Stress Rating</b>
$V_u = 1.57$	$\phi V_n = 45.8$	<b>77.5%</b>
$M_u = n/a$	$\phi M_n = n/a$	<b>Pass</b>

**Base Plate Summary**

Max Stress (ksi):	6.53	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	<b>13.8%</b>	<b>Pass</b>



### Drilled Pier Foundation

BU # :	842860
Site Name:	COLCHESTER NORTH CE
Order Number:	572909, Rev 1
TIA-222 Revison:	H
Tower Type:	Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	553.74	
Axial Force (kips)	14.27	
Shear Force (kips)	12.56	

Material Properties	
Concrete Strength, f <sub>c</sub> :	3 ksi
Rebar Strength, F <sub>y</sub> :	60 ksi
Tie Yield Strength, F <sub>y</sub> :	40 ksi

Pier Design Data	
Depth	16.83 ft
Ext. Above Grade	0.17 ft
Pier Section 1	
<i>From 0.17' above grade to 16.83' below grade</i>	
Pier Diameter	6.5 ft
Rebar Quantity	18
Rebar Size	11
Clear Cover to Ties	8.625 in
Tie Size	3
Tie Spacing	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

#### Analysis Results

Soil Lateral Check	Compression	Uplift
D <sub>req</sub> (ft from TOC)	6.30	-
Soil Safety Factor	5.21	-
Max Moment (kip-ft)	626.31	-
Rating*	24.3%	-

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	1304.49	-
End Bearing (kips)	597.30	-
Weight of Concrete (kips)	101.54	-
Total Capacity (kips)	1901.79	-
Axial (kips)	115.81	-
Rating*	5.8%	-

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	6.35	-
Critical Moment (kip-ft)	626.30	-
Critical Moment Capacity	3883.77	-
Rating*	15.4%	-

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	12.72	-
Critical Shear (kip)	120.16	-
Critical Shear Capacity	486.19	-
Rating*	23.5%	-

Structural Foundation Rating*	23.5%
Soil Interaction Rating*	24.3%

\*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

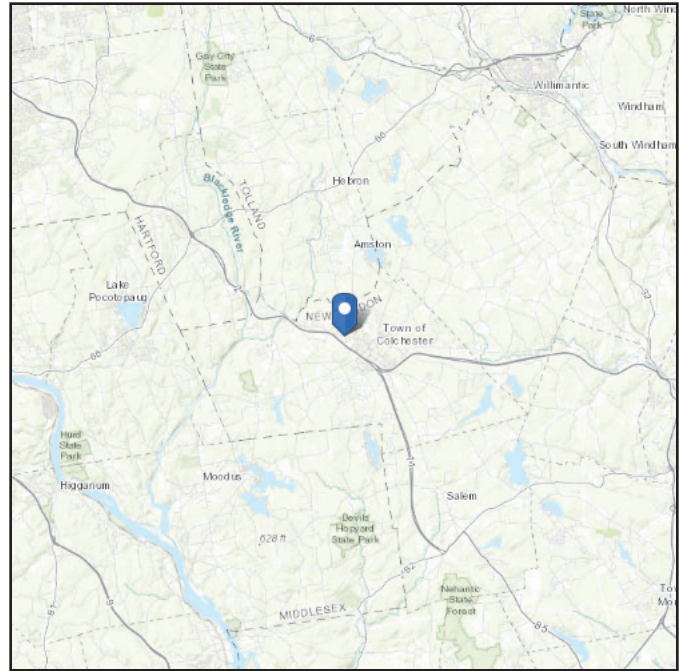
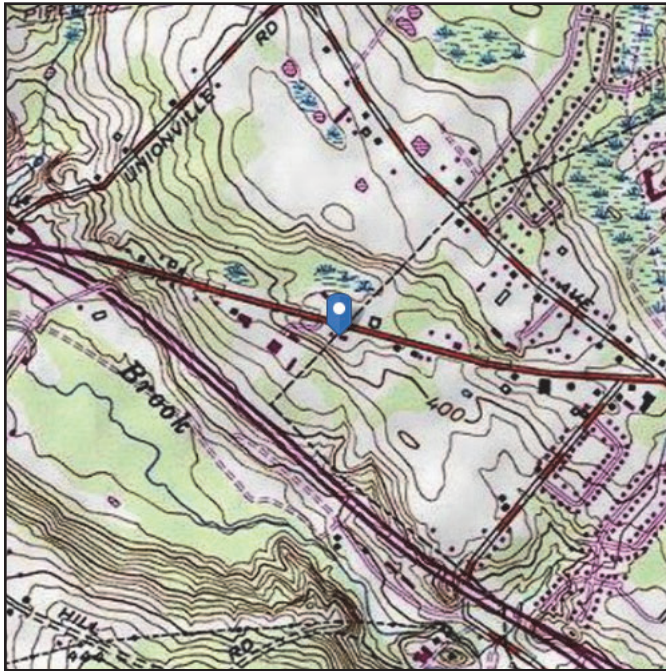
Soil Profile														
Groundwater Depth		N/A		# of Layers		2								
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ <sub>soil</sub> (pcf)	γ <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	5	5	165	150			0.000	0.000					Cohesionless
2	5	16.83	11.83	165	150		32	0.000	0.000	7.20	7.20	24		Cohesionless

# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** II  
**Soil Class:** D - Default (see Section 11.4.3)

**Elevation:** 420.23 ft (NAVD 88)  
**Latitude:** 41.580469  
**Longitude:** -72.350019



## Wind

### Results:

Wind Speed:	121 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue Oct 12 2021

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

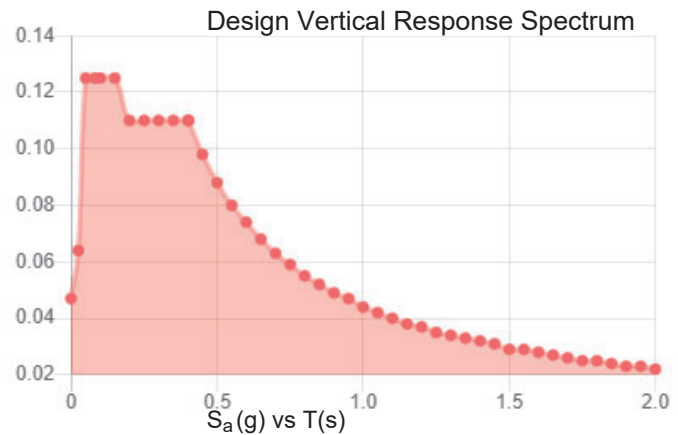
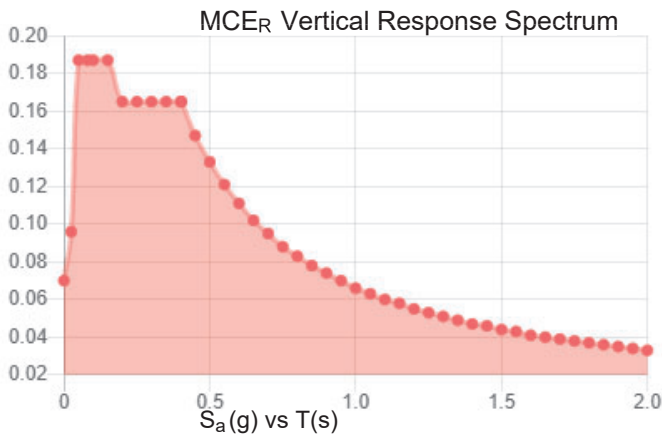
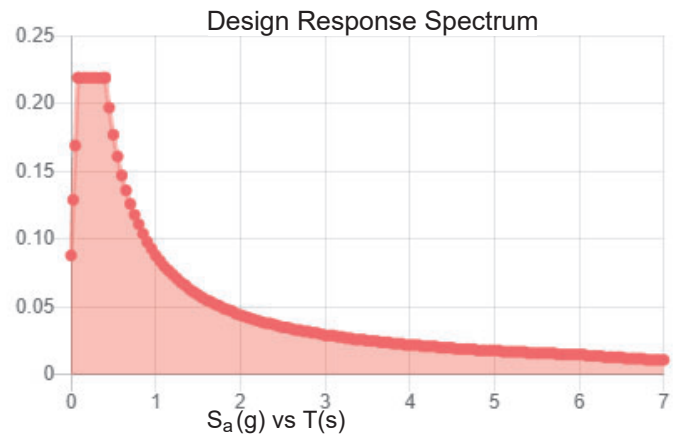
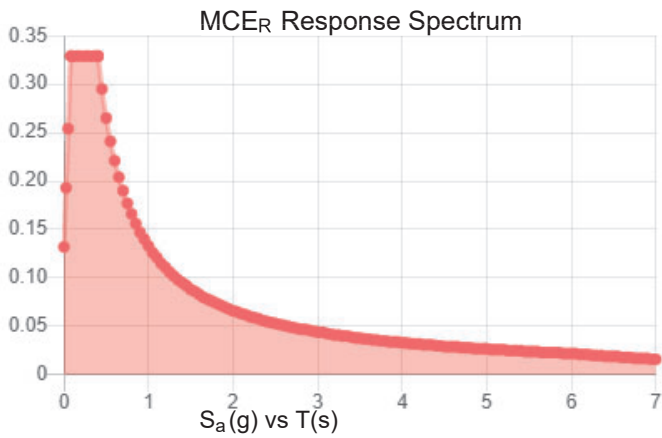
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

$S_s$ :	0.206	$S_{D1}$ :	0.088
$S_1$ :	0.055	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.114
$F_v$ :	2.4	PGA <sub>M</sub> :	0.179
$S_{MS}$ :	0.329	$F_{PGA}$ :	1.572
$S_{M1}$ :	0.133	$I_e$ :	1
$S_{DS}$ :	0.219	$C_v$ :	0.711

**Seismic Design Category** B



**Data Accessed:**

Tue Oct 12 2021

**Date Source:**

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

## Ice

---

### Results:

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue Oct 12 2021

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

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

---

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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# **ATTACHMENT 5**

Date: November 3, 2021



Kimley-Horn and Associates, Inc.  
421 Fayetteville Street, Suite 600  
Raleigh, NC 27601  
(919) 677-2000  
CrownMounts@kimley-horn.com

**Subject:** Mount Analysis - Conditional Passing Report

**Carrier Designation:** DISH Network Equipment Change-Out  
**Carrier Site Number:** BOBOS00888A  
**Carrier Site Name:** N/A

**Crown Castle Designation:** **BU Number:** 842860  
**Site Name:** COLCHESTER NORTH CENTRAL  
**JDE Job Number:** 671469  
**Order Number:** 572909, Rev. 1

**Engineering Firm Designation:** Kimley-Horn Project Number: 019558057

**Site Data:** 315 Old Hartford Road, Colchester, New London County, CT 06415  
Latitude 41° 34' 49.69" Longitude -72° 21' 0.07"

**Structure Information:** **Tower Height & Type:** 60 ft Monopole  
**Mount Elevation:** 40 ft  
**Mount Type:** 8 ft Platform w/ Support Rails

Kimley-Horn is pleased to submit this “**Mount Analysis - Conditional Passing Report**” to determine the structural integrity of DISH Network’s antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

**Platform w/ Support Rails**

**Sufficient**

\* See Section 4.1 for loading and structural modifications required for the mount to support the loading listed in Table 1.

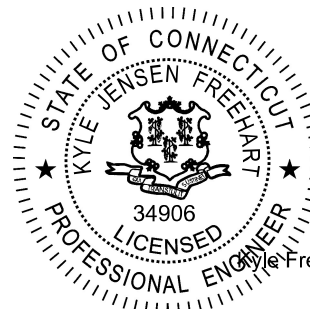
This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 121 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jeffery Rahming

Respectfully Submitted by:

Kyle Freehart, P.E.

Lic. #PEN.0034906, Exp. 1/31/2022  
Kimley-Horn and Associates, Inc. COA #PEC.0000738



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### 2) ANALYSIS CRITERIA

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### 3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

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3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

Wire Frame and Rendered Models

### 6) APPENDIX B

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### 7) APPENDIX C

Software Analysis Output

### 8) APPENDIX D

Additional Calculations

### 9) APPENDIX E

Supplemental Drawings

**1) INTRODUCTION**

The mounting configuration consists of a proposed 8 ft Platform w/ Support Rails designed by CommScope.

**2) ANALYSIS CRITERIA**

<b>Building Code:</b>	2018 Connecticut State Building Code
<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	121 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor at Base:</b>	1.0
<b>Topographic Factor at Mount:</b>	1.0
<b>Ice Thickness:</b>	1 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Live Loading Wind Speed:</b>	30 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 – Proposed Equipment Configuration**

Elevation (ft)		Antennas			Mount / Modification Details
Mount	Centerline	#	Manufacturer	Model	
40	40	3	Fujitsu	TA08025-B604	Proposed 8 ft Platform w/ Support Rails designed by CommScope
		3	Fujitsu	TA08025-B605	
		3	Jma wireless	MX08FRO665-21	
		1	Raycap	RDIDC-9181-PF-48	



**3) ANALYSIS PROCEDURE**

**Table 2 – Documents Provided**

Document	Remarks	Reference	Source
Photos	-	-	CCISites
Mount Design Drawings	Commscope	MC-PK8-DSH	On File

**3.1) Analysis Method**

RISA-3D (version 17.02.00), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A proprietary tool internally developed by Kimley-Horn was used to calculate wind loading on all appurtenances, dishes and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle’s ENG-SOW-10208 *Mount Analysis* (Revision D).

**3.2) Assumptions**

- 1) The antenna mounting system (including any considered modifications) was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA standards, and/or manufacturer specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the provided reference information.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members that could not be verified at this time.
- 5) Any referenced prior structural modifications to the tower mounting system are assumed to be installed as shown per available data unless noted otherwise.
- 6) Steel grades have been assumed as follows, unless noted otherwise:
 

Channel, Solid Round, Angle, Plate	ASTM A36 (Gr. 36)
HSS (Rectangular)	ASTM A36 (Gr. 36)
Pipe	ASTM A53 (Gr. B-35)
Connection Bolts	ASTM A325
Threaded Rods	ASTM A36 (Gr. 36)

This analysis may be affected if any assumptions are not valid or have been made in error. Kimley-Horn should be notified to determine the effect on the structural integrity of the antenna mounting system.

**4) ANALYSIS RESULTS**

**Table 3 – Mount Component Stresses vs. Capacity**

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Connections	-	40	24%	Pass
1, 2	Platform Base	M63A		20%	Pass
1, 2	Corner Plates	M10		17%	Pass
1, 2	Support Rails	M12		15%	Pass
1, 2	Mount Pipes	MP3		13%	Pass

<b>Structure Rating (max from all components) =</b>	<b>24%</b>
-----------------------------------------------------	------------

Notes:

- 1) See additional documentation in Appendix C and Appendix D for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H, Section 15.5.

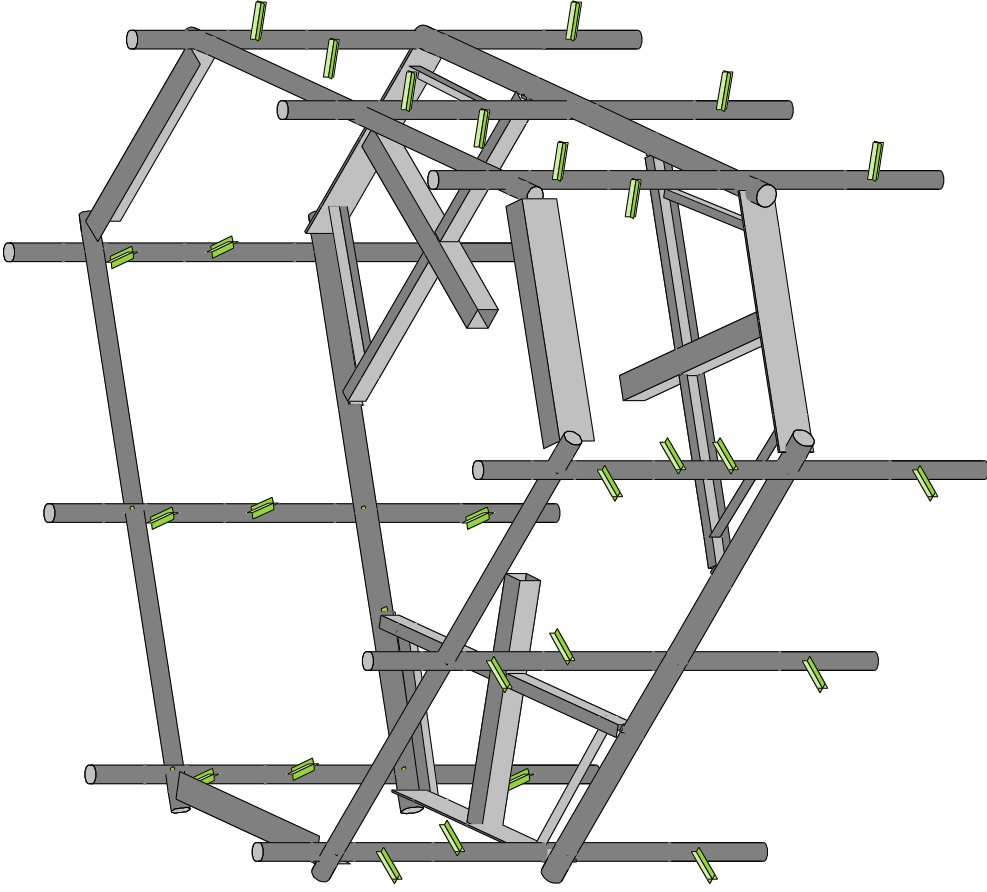
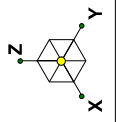
**4.1) Recommendations**

The mounting configuration will have sufficient capacity to carry the referenced loading once the following modifications are completed:

- **Install CommScope MC-PK8-DSH. Vertically center antennas and mount pipes on the mount face.**

No additional modifications are required at this time provided that the above-listed changes are completed.

**APPENDIX A**  
**WIRE FRAME AND RENDERED MODELS**



Kimley-Horn and Associates, Inc.

JJR

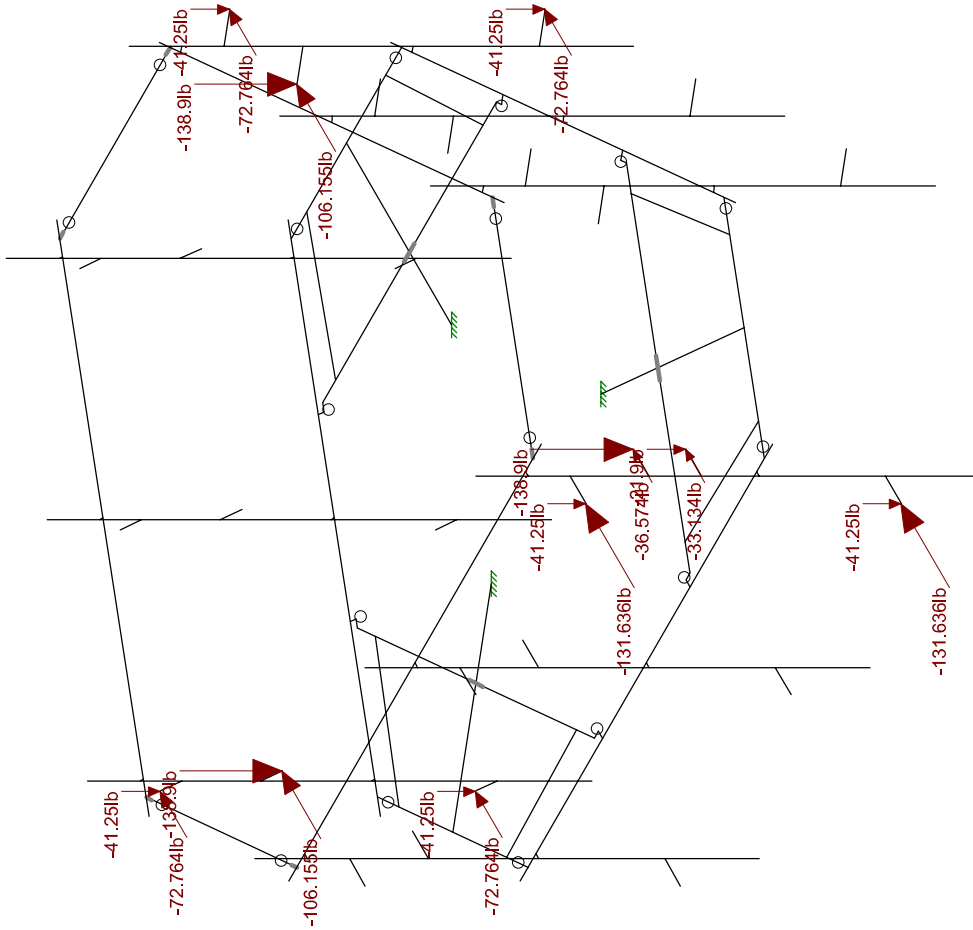
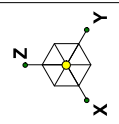
019558057

842860

SK - 1

Nov 2, 2021 at 2:51 PM

842860.r3d



Loads: LC 1, Summary: 1.0D + 1.0W  
Envelope Only Solution

Kimley-Horn and Associates, Inc.

JJR

019558057

842860

SK - 1

Nov 2, 2021 at 5:49 PM

842860.r3d

**APPENDIX B**  
**SOFTWARE INPUT CALCULATIONS**



Date	November 03, 2021
Client	Crown Castle
Site #	842860
Site Name	COLCHESTER NORTH CENTRAL
Project #	19558057

General Criteria	
TIA Standard	H
IBC Edition	2018
Structure Class	-
Risk Category	II

Wind Summary	
Basic Wind Speed w/o Ice, V (mph)	121.00
Velocity Pressure Coeff., K <sub>z</sub>	1.04
Velocity Pressure, q <sub>z</sub> (w/o Ice) (psf)	36.60

Site-Specific Criteria	
Exposure Category	C
Topographic Factor, K <sub>zt</sub>	1.00
Structure Base Elev. (AMSL), z <sub>g</sub> (ft)	420.00
Ground Effect Factor, K <sub>e</sub>	0.98

Ice Load Summary	
Basic Wind Speed w/ Ice, V <sub>i</sub> (mph)	50.00
Design Ice Thick. (ASCE 7-16), t <sub>i</sub> (in)	1
Velocity Pressure, q <sub>z</sub> (w/ Ice) (psf)	6.25
Escalated Ice Thick. @ Mount, t <sub>iz</sub> (in)	1.02

Mount & Structure Criteria	
Mount Elevation (AGL) (ft)	40.00
Structure Height (ft)	60.00
Structure Type	Monopole

Seismic Load Summary	
Spectral Response (Short Periods), S <sub>s</sub>	-
Spectral Response (1-Sec. Period), S <sub>1</sub>	-
Site Class	-
Seismic Design Category	-
Seismic Risk Category	-

Constants	
Wind Direction Probability Factor, K <sub>d</sub>	0.95
Gust Effect Factor, G <sub>h</sub>	1
Shielding Factor, K <sub>s</sub> (antenna)	0.9
Shielding Factor, K <sub>s</sub> (mount)	0.9

Snow Load Summary	
Ground Snow Load, p <sub>g</sub> (psf)	-
Snow Load on Flat Roofs, p <sub>f</sub> (psf)	-

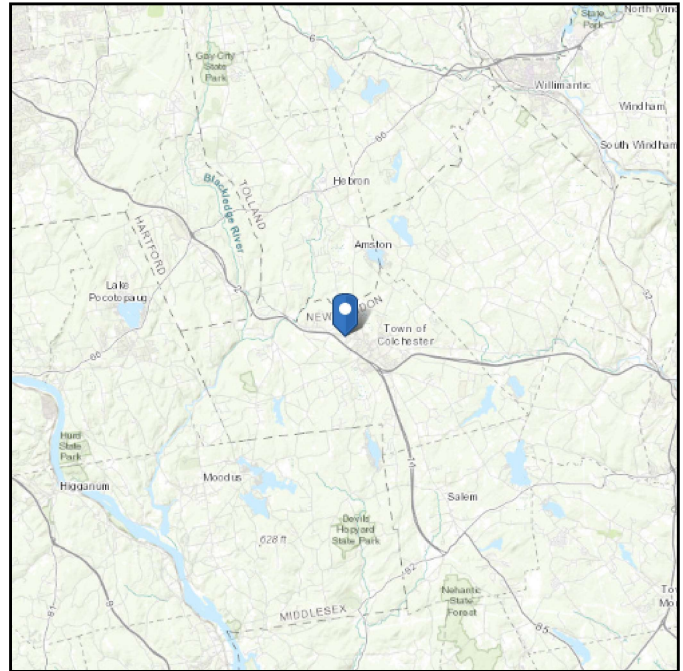
Antenna Name	Qty	Shape	Dimensions (in)			Weight (lb)	Joint Labels								EPA (ft <sup>2</sup> )		Wind Force, F <sub>A</sub> (lb)			
			H	W	D		Alpha		Beta		Gamma		Delta		Front	Side	No Ice		With Ice	
							A1T	A1B	B1T	B1B	G1T	G1B					Front	Side	Front	Side
MX08FRO665-21	3	Flat	72	20	8	82.5	A1T	A1B	B1T	B1B	G1T	G1B			7.99	3.23	263.27	106.28	50.5	22.55
TA08025-B604	3	Flat	15.8	15	7.9	63.9	A1R		B1R		G1R				0.52	1.96	17.01	64.67	4.13	14.17
TA08025-B605	3	Flat	15.8	15	9.1	75	A1R		B1R		G1R				0.59	1.96	19.56	64.67	4.62	14.17
RDIDC-9181-PF-48	1	Flat	16.6	14.6	8.5	21.9	A1R2								1.01	1.17	33.13	38.48	7.24	9.16

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** II  
**Soil Class:** D - Default (see  
Section 11.4.3)

**Elevation:** 420.23 ft (NAVD 88)  
**Latitude:** 41.580472  
**Longitude:** -72.350028



## Wind

### Results:

Wind Speed:	121 Vmph
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Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Tue Nov 02 2021

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

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

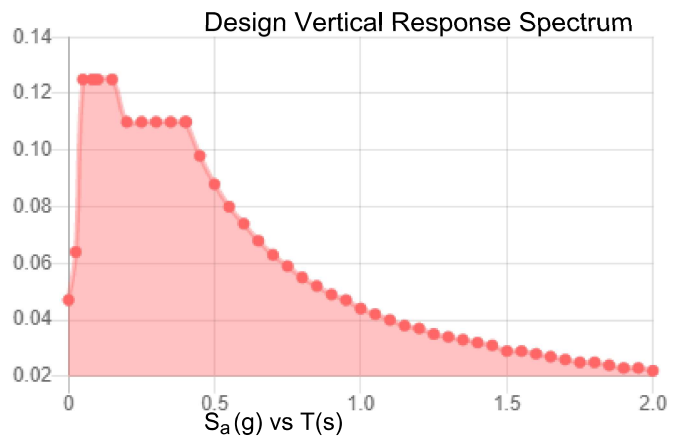
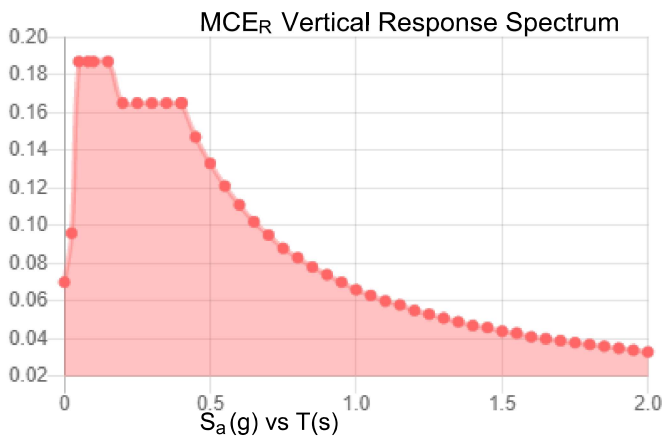
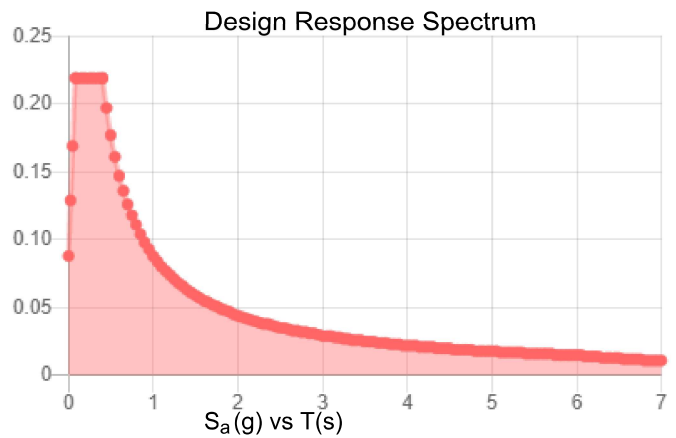
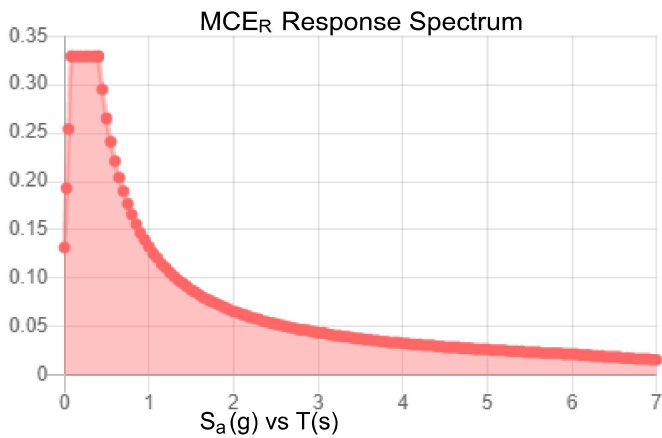


**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

$S_s$ :	0.206	$S_{D1}$ :	0.088
$S_1$ :	0.055	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.114
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$S_{MS}$ :	0.329	$F_{PGA}$ :	1.572
$S_{M1}$ :	0.133	$I_e$ :	1
$S_{DS}$ :	0.219	$C_v$ :	0.711

**Seismic Design Category** B



**Data Accessed:** Tue Nov 02 2021  
**Date Source:** USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

## Ice

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### Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue Nov 02 2021

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

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

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**APPENDIX C**  
**SOFTWARE ANALYSIS OUTPUT**



Company : Kimley-Horn and Associates, Inc.  
 Designer : JJR  
 Job Number : 019558057  
 Model Name : 842860

Nov 3, 2021  
 8:34 AM  
 Checked By: ZAM

### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B Rnd	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A913 Gr.65	29000	11154	.3	.65	.49	65	1.1	80	1.1
9	A500 Gr.C Rnd	29000	11154	.3	.65	.49	46	1.6	62	1.2
10	A500 Gr.C Rect	29000	11154	.3	.65	.49	50	1.5	62	1.2
11	A529 Gr. 50	29000	11154	.3	.65	.49	50	1.1	65	1.1
12	A1011-33 ksi	29000	11154	.3	.65	.49	33	1.5	58	1.2
13	A1011 36 ksi	29000	11154	.3	.65	.49	36	1.5	58	1.2
14	A1018 50 ksi	29000	11154	.3	.65	.49	50	1.5	65	1.2
15	Q235	29000	11154	.3	.65	.49	35	1.5	58	1.2

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Corner Plate	PL6-1/2x3/8	Beam	None	A1011 36 ksi	Typical	2.438	.029	8.582	.11
2	Side Plate	PL2-3/8x1/2	Beam	None	A1011 36 ksi	Typical	1.188	.025	.558	.086
3	Grating Horiz	L2x2x4	Beam	None	A529 Gr. 50	Typical	.944	.346	.346	.021
4	Face Horiz	HSS3.500x...	Beam	None	A500 Gr.C ...	Typical	1.729	2.409	2.409	4.819
5	Mount Pipe	HSS2.875x...	Column	None	A500 Gr.C ...	Typical	1.039	.987	.987	1.975
6	Cross Horiz	C3.38x2.06...	Beam	None	A1011 36 ksi	Typical	1.75	.715	3.026	.034
7	Stand-Off Horiz	HSS4X4X6	Beam	None	A500 Gr.C ...	Typical	4.78	10.3	10.3	17.5
8	Support Rail	HSS2.875x...	Beam	None	A500 Gr.C ...	Typical	1.039	.987	.987	1.975
9	SR Corner Brace	L6.6x4.46x0...	Beam	None	A1011 36 ksi	Typical	2.703	4.759	12.473	.055

### Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbby[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M3	Grating Horiz	27.295			Lbby						Lateral
2	M8	Grating Horiz	27.295			Lbby						Lateral
3	M13	Grating Horiz	27.295			Lbby						Lateral
4	M28	SR Corner ...	42			Lbby						Lateral
5	M29	SR Corner ...	42			Lbby						Lateral
6	M30	SR Corner ...	42			Lbby						Lateral
7	M63A	Cross Horiz	33			Lbby						Lateral
8	M61B	Cross Horiz	33			Lbby						Lateral
9	M63B	Cross Horiz	33			Lbby						Lateral
10	M25	Support Rail	96			Lbby						Lateral
11	M51	Support Rail	96			Lbby						Lateral
12	M65A	Support Rail	96			Lbby						Lateral
13	M2	Stand-Off H..	40			Lbby						Lateral
14	M7	Stand-Off H..	40			Lbby						Lateral
15	M12	Stand-Off H..	40			Lbby						Lateral
16	MP9	Mount Pipe	96			Lbby						Lateral
17	MP7	Mount Pipe	96			Lbby						Lateral
18	MP8	Mount Pipe	96			Lbby						Lateral



**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
19	MP3	Mount Pipe	96			Lbyy						Lateral
20	MP1	Mount Pipe	96			Lbyy						Lateral
21	MP6	Mount Pipe	96			Lbyy						Lateral
22	MP4	Mount Pipe	96			Lbyy						Lateral
23	MP2	Mount Pipe	96			Lbyy						Lateral
24	MP5	Mount Pipe	96			Lbyy						Lateral
25	M4	Grating Horiz	27.295			Lbyy						Lateral
26	M9	Grating Horiz	27.295			Lbyy						Lateral
27	M14	Grating Horiz	27.295			Lbyy						Lateral
28	M18	Face Horiz	96			Lbyy						Lateral
29	M48	Face Horiz	96			Lbyy						Lateral
30	M62	Face Horiz	96			Lbyy						Lateral
31	M61A	Cross Horiz	33			Lbyy						Lateral
32	M60A	Cross Horiz	33			Lbyy						Lateral
33	M62A	Cross Horiz	33			Lbyy						Lateral
34	M5	Corner Plate	42			Lbyy						Lateral
35	M10	Corner Plate	42			Lbyy						Lateral
36	M15	Corner Plate	42			Lbyy						Lateral
37	M88A	Side Plate	1.5			Lbyy						Lateral
38	M89A	Side Plate	1.5			Lbyy						Lateral
39	M90A	Side Plate	1.5			Lbyy						Lateral
40	M91A	Side Plate	1.5			Lbyy						Lateral
41	M92A	Side Plate	1.5			Lbyy						Lateral
42	M93A	Side Plate	1.5			Lbyy						Lateral

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Dead	DL			-1	13			
2	Dead of Ice	RL				13		42	
4	Structure Wind (0)	None						84	
5	Structure Wind (30)	None						84	
6	Structure Wind (45)	None						84	
7	Structure Wind (60)	None						84	
8	Structure Wind (90)	None						84	
9	Structure Wind (120)	None						84	
10	Structure Wind (135)	None						84	
11	Structure Wind (150)	None						84	
12	Structure Wind w/ Ice...	None						84	
13	Structure Wind w/ Ice...	None						84	
14	Structure Wind w/ Ice...	None						84	
15	Structure Wind w/ Ice...	None						84	
16	Structure Wind w/ Ice...	None						84	
17	Structure Wind w/ Ice...	None						84	
18	Structure Wind w/ Ice...	None						84	
19	Structure Wind w/ Ice...	None						84	
20	Antenna Wind (0)	None				26			
21	Antenna Wind (30)	None				26			
22	Antenna Wind (45)	None				26			
23	Antenna Wind (60)	None				26			
24	Antenna Wind (90)	None				26			



**Basic Load Cases (Continued)**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
25	Antenna Wind (120)	None				26			
26	Antenna Wind (135)	None				26			
27	Antenna Wind (150)	None				26			
28	Antenna Wind w/ Ice ...	None				26			
29	Antenna Wind w/ Ice ...	None				26			
30	Antenna Wind w/ Ice ...	None				26			
31	Antenna Wind w/ Ice ...	None				26			
32	Antenna Wind w/ Ice ...	None				26			
33	Antenna Wind w/ Ice ...	None				26			
34	Antenna Wind w/ Ice ...	None				26			
35	Antenna Wind w/ Ice ...	None				26			
36	Maintenance Live Lm ...	OL1				1			
37	Maintenance Live Lm ...	OL2				1			
38	Maintenance Live Lm ...	OL3				1			
41	Maintenance Live Lv (...)	OL6					1		
42	Maintenance Live Lv (...)	OL7					1		

**Load Combinations**

	Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
1	Summary: 1.0D + ...	Yes	Y		DL	1	20	1						
2	1.4D	Yes	Y		DL	1.4								
3	1.2D + 1.0W(0)	Yes	Y		DL	1.2	4	1	20	1				
4	1.2D + 1.0W(30)	Yes	Y		DL	1.2	5	1	21	1				
5	1.2D + 1.0W(45)	Yes	Y		DL	1.2	6	1	22	1				
6	1.2D + 1.0W(60)	Yes	Y		DL	1.2	7	1	23	1				
7	1.2D + 1.0W(90)	Yes	Y		DL	1.2	8	1	24	1				
8	1.2D + 1.0W(120)	Yes	Y		DL	1.2	9	1	25	1				
9	1.2D + 1.0W(135)	Yes	Y		DL	1.2	10	1	26	1				
10	1.2D + 1.0W(150)	Yes	Y		DL	1.2	11	1	27	1				
11	1.2D + 1.0W(180)	Yes	Y		DL	1.2	4	-1	20	-1				
12	1.2D + 1.0W(210)	Yes	Y		DL	1.2	5	-1	21	-1				
13	1.2D + 1.0W(225)	Yes	Y		DL	1.2	6	-1	22	-1				
14	1.2D + 1.0W(240)	Yes	Y		DL	1.2	7	-1	23	-1				
15	1.2D + 1.0W(270)	Yes	Y		DL	1.2	8	-1	24	-1				
16	1.2D + 1.0W(300)	Yes	Y		DL	1.2	9	-1	25	-1				
17	1.2D + 1.0W(315)	Yes	Y		DL	1.2	10	-1	26	-1				
18	1.2D + 1.0W(330)	Yes	Y		DL	1.2	11	-1	27	-1				
19	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	12	1	28	1		
20	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	13	1	29	1		
21	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	14	1	30	1		
22	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	15	1	31	1		
23	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	16	1	32	1		
24	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	17	1	33	1		
25	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	18	1	34	1		
26	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	19	1	35	1		
27	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	12	-1	28	-1		
28	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	13	-1	29	-1		
29	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	14	-1	30	-1		
30	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	15	-1	31	-1		
31	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	16	-1	32	-1		



**Load Combinations (Continued)**

	Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
32	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	17	-1	33	-1								
33	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	18	-1	34	-1								
34	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	RL	1	19	-1	35	-1								
35	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		4	.061	20	.061	OL1	1.5							
36	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		5	.061	21	.061	OL1	1.5							
37	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		6	.061	22	.061	OL1	1.5							
38	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		7	.061	23	.061	OL1	1.5							
39	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		8	.061	24	.061	OL1	1.5							
40	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		9	.061	25	.061	OL1	1.5							
41	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		10	.061	26	.061	OL1	1.5							
42	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		11	.061	27	.061	OL1	1.5							
43	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		4	-.061	20	-.061	OL1	1.5							
44	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		5	-.061	21	-.061	OL1	1.5							
45	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		6	-.061	22	-.061	OL1	1.5							
46	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		7	-.061	23	-.061	OL1	1.5							
47	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		8	-.061	24	-.061	OL1	1.5							
48	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		9	-.061	25	-.061	OL1	1.5							
49	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		10	-.061	26	-.061	OL1	1.5							
50	1.2D + 1.5Lm(1) +...	Yes	Y		DL	1.2		11	-.061	27	-.061	OL1	1.5							
51	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		4	.061	20	.061	OL2	1.5							
52	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		5	.061	21	.061	OL2	1.5							
53	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		6	.061	22	.061	OL2	1.5							
54	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		7	.061	23	.061	OL2	1.5							
55	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		8	.061	24	.061	OL2	1.5							
56	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		9	.061	25	.061	OL2	1.5							
57	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		10	.061	26	.061	OL2	1.5							
58	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		11	.061	27	.061	OL2	1.5							
59	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		4	-.061	20	-.061	OL2	1.5							
60	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		5	-.061	21	-.061	OL2	1.5							
61	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		6	-.061	22	-.061	OL2	1.5							
62	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		7	-.061	23	-.061	OL2	1.5							
63	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		8	-.061	24	-.061	OL2	1.5							
64	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		9	-.061	25	-.061	OL2	1.5							
65	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		10	-.061	26	-.061	OL2	1.5							
66	1.2D + 1.5Lm(2) +...	Yes	Y		DL	1.2		11	-.061	27	-.061	OL2	1.5							
67	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		4	.061	20	.061	OL3	1.5							
68	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		5	.061	21	.061	OL3	1.5							
69	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		6	.061	22	.061	OL3	1.5							
70	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		7	.061	23	.061	OL3	1.5							
71	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		8	.061	24	.061	OL3	1.5							
72	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		9	.061	25	.061	OL3	1.5							
73	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		10	.061	26	.061	OL3	1.5							
74	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		11	.061	27	.061	OL3	1.5							
75	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		4	-.061	20	-.061	OL3	1.5							
76	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		5	-.061	21	-.061	OL3	1.5							
77	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		6	-.061	22	-.061	OL3	1.5							
78	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		7	-.061	23	-.061	OL3	1.5							
79	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		8	-.061	24	-.061	OL3	1.5							
80	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		9	-.061	25	-.061	OL3	1.5							
81	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		10	-.061	26	-.061	OL3	1.5							
82	1.2D + 1.5Lm(3) +...	Yes	Y		DL	1.2		11	-.061	27	-.061	OL3	1.5							
83	1.2D + 1.5Lv(1) +...	Yes	Y		DL	1.2		4	.061	20	.061	OL6	1.5							



**Load Combinations (Continued)**

	Description	So...	P...	S...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...	BLC Fac...
84	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	5	.061	21	.061	OL6	1.5			
85	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	6	.061	22	.061	OL6	1.5			
86	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	7	.061	23	.061	OL6	1.5			
87	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	8	.061	24	.061	OL6	1.5			
88	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	9	.061	25	.061	OL6	1.5			
89	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	10	.061	26	.061	OL6	1.5			
90	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	11	.061	27	.061	OL6	1.5			
91	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	4	-.061	20	-.061	OL6	1.5			
92	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	5	-.061	21	-.061	OL6	1.5			
93	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	6	-.061	22	-.061	OL6	1.5			
94	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	7	-.061	23	-.061	OL6	1.5			
95	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	8	-.061	24	-.061	OL6	1.5			
96	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	9	-.061	25	-.061	OL6	1.5			
97	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	10	-.061	26	-.061	OL6	1.5			
98	1.2D + 1.5Lv(1) + ...	Yes	Y		DL	1.2	11	-.061	27	-.061	OL6	1.5			
99	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	4	.061	20	.061	OL7	1.5			
100	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	5	.061	21	.061	OL7	1.5			
101	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	6	.061	22	.061	OL7	1.5			
102	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	7	.061	23	.061	OL7	1.5			
103	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	8	.061	24	.061	OL7	1.5			
104	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	9	.061	25	.061	OL7	1.5			
105	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	10	.061	26	.061	OL7	1.5			
106	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	11	.061	27	.061	OL7	1.5			
107	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	4	-.061	20	-.061	OL7	1.5			
108	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	5	-.061	21	-.061	OL7	1.5			
109	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	6	-.061	22	-.061	OL7	1.5			
110	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	7	-.061	23	-.061	OL7	1.5			
111	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	8	-.061	24	-.061	OL7	1.5			
112	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	9	-.061	25	-.061	OL7	1.5			
113	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	10	-.061	26	-.061	OL7	1.5			
114	1.2D + 1.5Lv(2) + ...	Yes	Y		DL	1.2	11	-.061	27	-.061	OL7	1.5			

**Envelope Joint Reactions**

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC	
1	P24	max	955.627	18	779.794	16	1453.087	78	-.602	6	.002	7	1.532	18
2		min	-954.782	10	-778.642	8	344.005	6	-2.929	30	-2.574	79	-1.528	10
3	P13	max	519.272	3	1109.096	15	1272.981	19	.697	31	2.977	19	1.477	7
4		min	-526.234	11	-1113.135	7	333.468	11	.202	8	.533	11	-1.478	15
5	P1	max	1035.054	3	649.579	14	1452.048	40	2.361	40	-.566	16	1.495	12
6		min	-1029.485	11	-646.4	6	348.742	16	.293	16	-3.21	40	-1.5	4
7	Totals:	max	2467.393	3	2472.854	15	3708.844	33						
8		min	-2467.406	11	-2472.845	7	1645.272	1						

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

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn	
1	M63A	C3.38x2.06x1...	.212	0	9	.036	0	y	50	48281.427	56700	2.203	5.751	1...	H1-1b
2	M61B	C3.38x2.06x1...	.200	0	3	.030	26.105	z	12	48281.427	56700	2.203	5.751	1...	H1-1b
3	M63B	C3.38x2.06x1...	.195	0	14	.028	26.105	z	7	48281.427	56700	2.203	5.751	1...	H1-1b
4	M62A	C3.38x2.06x1...	.190	0	14	.039	26.105	y	53	48281.427	56700	2.203	5.751	1...	H1-1b





Company : Kimley-Horn and Associates, Inc.  
 Designer : JJR  
 Job Number : 019558057  
 Model Name : 842860

Nov 3, 2021  
 8:34 AM  
 Checked By: ZAM

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

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn	
5	M61A	C3.38x2.06x1...	.186	0	8	.036	26.105	y	32	48281.427	56700	2.203	5.751	1...	H1-1b
6	M10	PL6-1/2x3/8	.180	21	3	.079	36.032	y	31	3658.14	78975	.617	8.272	1...	H1-1b
7	M5	PL6-1/2x3/8	.179	21	40	.106	36.032	y	35	3658.14	78975	.617	8.74	1...	H1-1b
8	M60A	C3.38x2.06x1...	.178	0	3	.034	26.105	y	27	48281.427	56700	2.203	5.751	1...	H1-1b
9	M15	PL6-1/2x3/8	.175	21	14	.073	5.968	y	67	3658.14	78975	.617	8.247	1...	H1-1b
10	M89A	PL2-3/8x1/2	.157	1.5	16	.196	0	y	60	38256.871	38475	.401	1.904	2...	H1-1b
11	M12	HSS4X4X6	.156	40	75	.067	40	y	80	203733.28	215100	23.963	23.963	1...	H1-1b
12	M2	HSS4X4X6	.155	40	43	.103	40	y	39	203733.28	215100	23.963	23.963	1...	H1-1b
13	M93A	PL2-3/8x1/2	.154	1.5	3	.148	0	y	22	38256.871	38475	.401	1.904	1...	H1-1b
14	M88A	PL2-3/8x1/2	.153	1.5	7	.185	0	y	57	38256.871	38475	.401	1.904	2...	H1-1b
15	M92A	PL2-3/8x1/2	.150	1.5	18	.103	0	y	20	38256.871	38475	.401	1.904	2...	H1-1b
16	M91A	PL2-3/8x1/2	.148	1.5	5	.144	0	y	34	38256.871	38475	.401	1.904	2...	H1-1b
17	M90A	PL2-3/8x1/2	.143	1.5	12	.115	0	y	79	38256.871	38475	.401	1.904	2...	H1-1b
18	M7	HSS4X4X6	.141	40	6	.063	24	y	32	203733.28	215100	23.963	23.963	1...	H1-1b
19	M8	L2x2x4	.140	0	4	.009	0	y	11	29527.563	42480	.96	2.19	2...	H2-1
20	M3	L2x2x4	.138	0	9	.009	0	y	17	29527.563	42480	.96	2.19	2...	H2-1
21	MP3	HSS2.875x0....	.134	42.442	7	.049	42.442		15	22397.228	43014.6	3.143	3.143	1...	H1-1b
22	M13	L2x2x4	.133	0	15	.008	27.295	z	67	29527.562	42480	.96	2.19	2...	H2-1
23	MP6	HSS2.875x0....	.133	42.442	9	.037	42.442		6	22397.228	43014.6	3.143	3.143	2...	H1-1b
24	MP9	HSS2.875x0....	.127	42.442	4	.056	42.442		3	22397.228	43014.6	3.143	3.143	1...	H1-1b
25	MP8	HSS2.875x0....	.118	42.442	4	.036	42.442		12	22397.228	43014.6	3.143	3.143	2...	H1-1b
26	MP2	HSS2.875x0....	.113	42.442	15	.038	42.442		7	22397.228	43014.6	3.143	3.143	1...	H1-1b
27	MP5	HSS2.875x0....	.108	42.442	10	.041	42.442		18	22397.228	43014.6	3.143	3.143	1...	H1-1b
28	MP4	HSS2.875x0....	.104	42.442	18	.036	42.442		11	22397.228	43014.6	3.143	3.143	2...	H1-1b
29	M14	L2x2x4	.101	0	6	.012	27.295	y	26	29527.563	42480	.96	2.19	2...	H2-1
30	MP1	HSS2.875x0....	.098	42.442	7	.037	42.442		8	22397.228	43014.6	3.143	3.143	1...	H1-1b
31	M4	L2x2x4	.097	0	16	.014	27.295	y	36	29527.562	42480	.96	2.19	2...	H2-1
32	MP7	HSS2.875x0....	.091	42.442	12	.039	42.442		14	22397.228	43014.6	3.143	3.143	1...	H1-1b
33	M9	L2x2x4	.090	0	11	.012	27.295	y	31	29527.563	42480	.96	2.19	2...	H2-1
34	M62	HSS3.500x0....	.087	31.326	3	.032	48		4	45873.009	71580.6	6.338	6.338	2...	H1-1b
35	M48	HSS3.500x0....	.087	31.326	8	.044	92.463		39	45873.009	71580.6	6.338	6.338	2...	H1-1b
36	M18	HSS3.500x0....	.083	31.326	14	.030	48		7	45873.009	71580.6	6.338	6.338	1...	H1-1b
37	M29	L6.6x4.46x0.25	.075	39	3	.011	39	z	11	51434.506	87561	2.465	7.125	1...	H2-1
38	M65A	HSS2.875x0....	.072	6.063	18	.030	5.558		3	22397.228	43014.6	3.143	3.143	1...	H1-1b
39	M25	HSS2.875x0....	.070	6.063	12	.026	92.463		8	22397.228	43014.6	3.143	3.143	1...	H1-1b
40	M51	HSS2.875x0....	.069	6.063	7	.030	92.463		11	22397.228	43014.6	3.143	3.143	1...	H1-1b
41	M28	L6.6x4.46x0.25	.065	39	13	.011	0	z	7	51434.506	87561	2.465	7.125	1...	H2-1
42	M30	L6.6x4.46x0.25	.063	39	8	.011	39	z	17	51434.506	87561	2.465	7.125	1...	H2-1

**APPENDIX D**  
**ADDITIONAL CALCULATIONS**

# Square/Rectangular Flange Connection

TIA-222-H



Site Number	842860
Job number	19558057
Code	TIA-222-H

Normalize usages per TIA-222-H, Sec. 15.5

REACTIONS (ABOUT X - HORIZONTAL)	
Moment, Mu (kip-ft)	3.668
Axial, Pu (kips) - <i>Negative for tension</i>	0.032
Shear, Vu (kips)	1.677

BOLT CONFIGURATION	
Bolt Quantity, n <sub>b</sub>	4
Bolt Diameter, d <sub>b</sub> (in)	0.625
Bolt Grade	A325
Width between bolts, s (in)	7.00

PLATE CONFIGURATION	
Plate Shape	Square
Plate Grade	A572-50
Thickness of plate, t (in)	0.750
Width of plate, w (in)	9.00

SUPPORT ARM CONFIGURATION	
Member Shape	Square
Member Grade	A500-50
Thickness of Member, t (in)	0.375
Width of member, w (in)	4.000

Stiffeners present?

Member/Node Under Consideration	M12
Controlling Load Combination (X-Direction)	LC 78
Controlling Load Combination (Y-Direction)	LC 78

X and Y Reactions Simultaneous?  No

REACTIONS (ABOUT Y - VERTICAL)	
Moment, Mu (kip-ft)	0.010
Axial, Pu (kips) - <i>Negative for tension</i>	0.032
Shear, Vu (kips)	1.453

BOLT USAGE	
Maximum Tension in Bolt, Tub (kip)	3.136
Nominal Tensile Strength, φR <sub>nt</sub> (kip)	20,340
Tensile Usage (Section 4.9.6.1)	<b>15%</b>

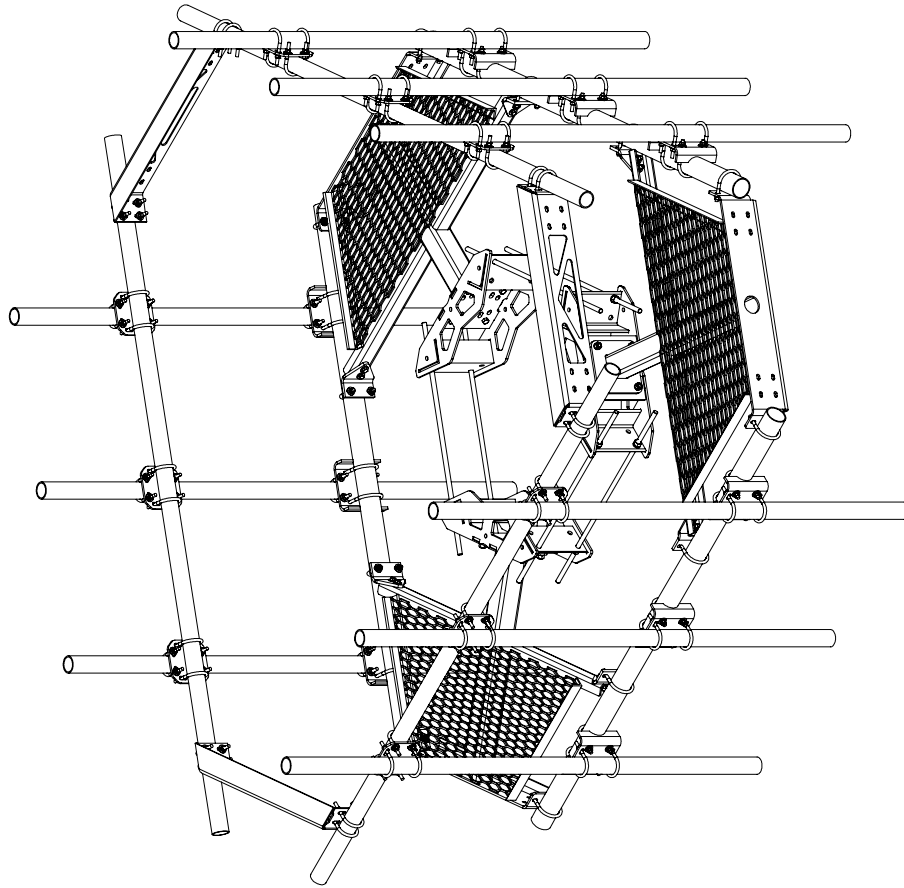
PLATE USAGE	
Ultimate flexural load in plate, Mu (kip-in)	7.044
Factored flexural capacity, φM <sub>n</sub> (kip-in)	28,430
Flexural Usage	<b>25%</b>

SUPPORT ARM USAGE	
Ultimate flexural load in member, Mu (kip-ft)	3.668
Factored flexural capacity, φM <sub>n</sub> (kip-ft)	27,817
Flexural Usage	<b>13%</b>

**APPENDIX E**  
**SUPPLEMENTAL DRAWINGS**

NOTES:

- 1.0 GENERAL
  - 1.1 ALL METRIC DIMENSIONS ARE IN BRACKETS
  - 1.2 FOR PATENTS, SEE WWW.CS-PAT.COM
- 2.0 DESIGN NOTES
  - 2.1 TORQUE L-BOLTS TO 44 FT-LBS
- 3.0 MANUFACTURING/SPECIAL REQUIREMENTS
- 4.0 TEST
- 5.0 PACKAGING



REV.	ECN	REVISIONS	BY	DATE
A	10272PC	INITIAL RELEASE	HDAI	03/09/2021

PATENT PENDING

COMMScope, INC. OF NORTH CAROLINA

TOLERANCES  
 1 PLACE .X ± .25  
 2 PLACE .XX ± 0.12  
 3 PLACE .XXX ± 0.06  
 ANGLES ± 2°

SAP MATERIAL MASTER  
 MC-PK8-DSH

FINISH  
 GALV A123

MATERIAL  
 A500, A1011/A1018

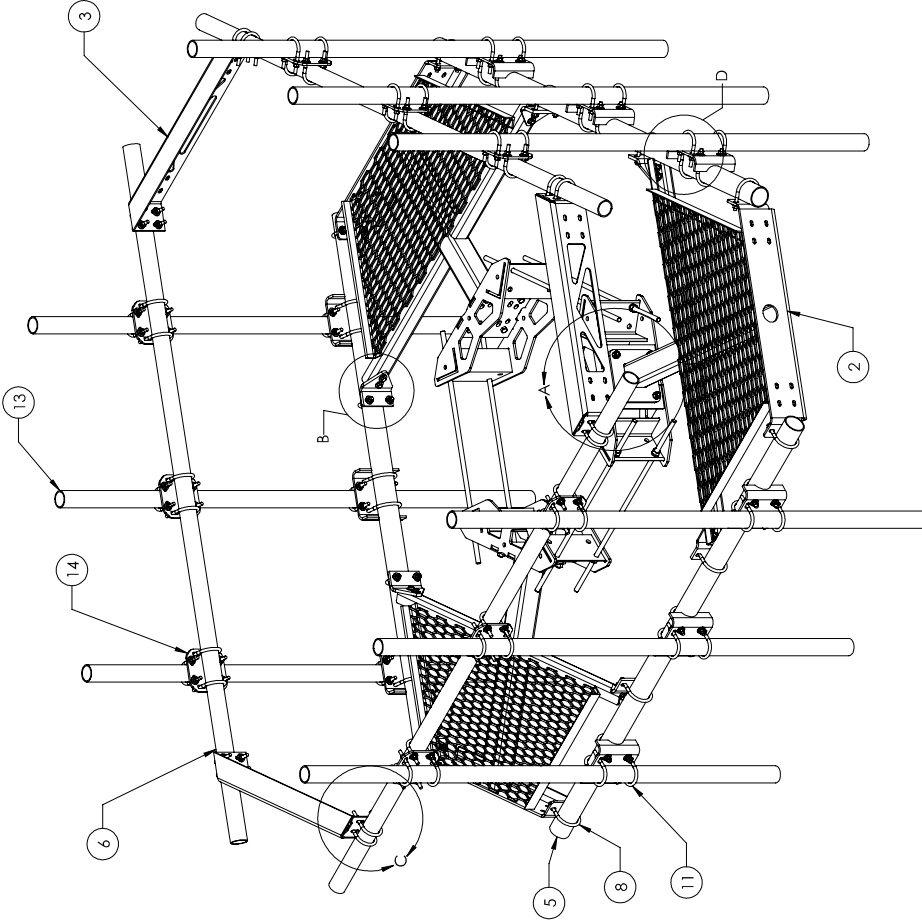
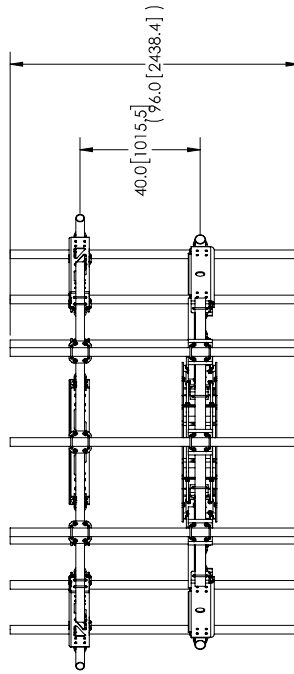
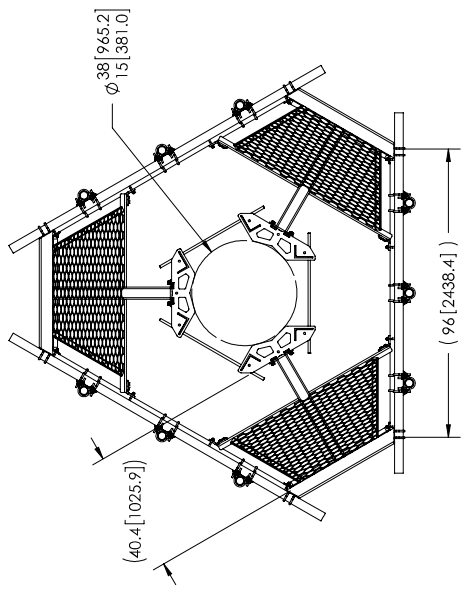
NAME	DATE	TITLE
MRC 02/17/20	03/16/2021	LOW PROFILE PLATFORM FACE
CE ROGHANSON	03/16/2021	
RE FALTOZ	03/17/2021	
AD BURCSS	02/27/2020	
ECN 10272PC		

SCALE	DOCUMENT NO.
1:32	MC-PK8-DSH

DENSITY	HEIGHT
lb/in <sup>3</sup>	90°
lb	46°
in <sup>3</sup>	29°
in <sup>2</sup>	

SIZE	VERSION	MODEL	STATUS	REVISION	DRAWING	SHEET
C	01		AD	00	AD	1 OF 3

NOTES:



ITEM	PART NO.	DESCRIPTION	QTY.
1	MC-RMT1550-3	12" - 50" OD RINGMOUNT	1
2	MITC300602	SECTOR WELDMENT FOR SNUB NOSE PLATFORM	3
3	MIT195801	Corner Weldment Snub Nose Handrail	1
4	GB-0520A	5/8" X 2" GALV BOLT KIT (A325)	12
5	MIT54796	3.50" OD X 96" GALV PIPE	3
6	MIT546120	2.875" O.D. X 120" PIPE	3
7	GW-04	1/2" GALV FLAT WASHER	12
8	GJB-4355	1/2" X 3-5/8" X 5" GALV U-BOLT	12
9	MITC300618	MOUNTING PLATE FOR MIT-19%	6
10	GB-04205	1/2" X 2" GALV BOLT KIT	12
11	MIT-219MH	3.5" OD X 2-7/8" OD Clamp Bracket Assembly	9
12	GUB-4352	1/2" X 3" X 5-1/4" GALV U-BOLT	12
13	MIT54696	Ø2.875" O.D. X 96" PIPE	9
14	XP-2525	CROSSOVER PLATE KIT, 2-7/8 OD X 2-7/8 OD	9

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE  
LOW PROFILE PLATFORM FACE

SIZE  
C

SCALE  
1:32

DOCUMENT NO.  
MC-PK8-DSH

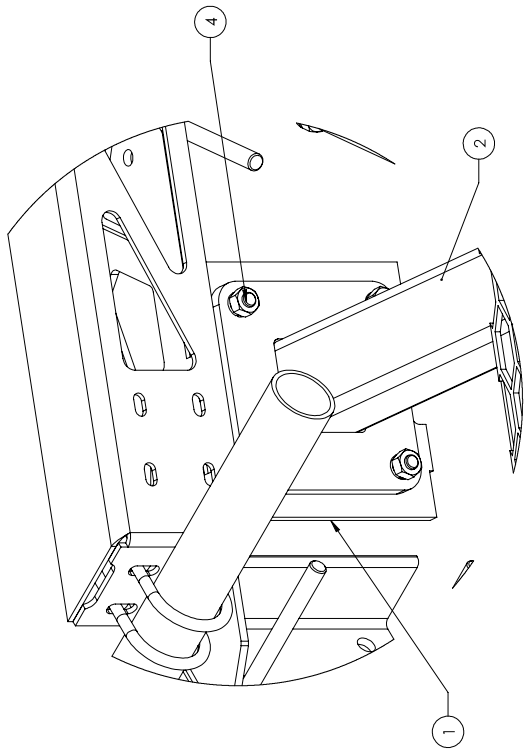
DRAWING STATUS  
AD

VERSION  
00

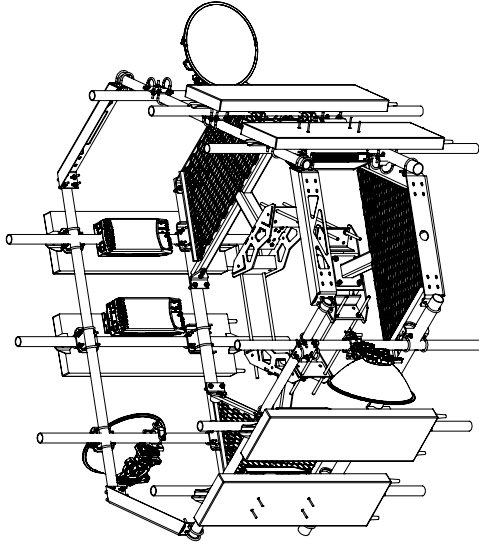
REVISION  
A

SHEET  
A

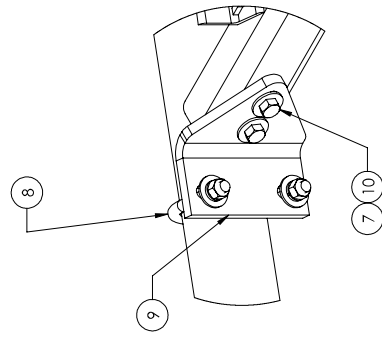
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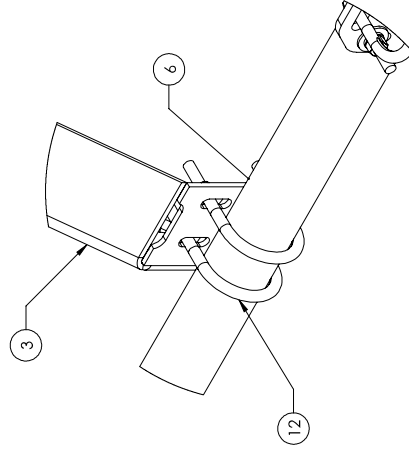
DETAIL A  
SCALE 1 : 4



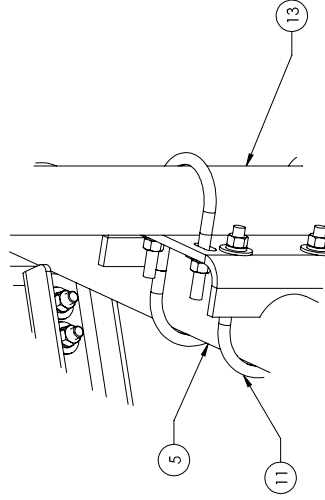
WITH ANTENNAS



DETAIL B  
SCALE 1 : 4



DETAIL C  
SCALE 1 : 4



DETAIL D  
SCALE 1 : 4

COMMSCOPE, INC. OF NORTH CAROLINA

TITLE

LOW PROFILE PLATFORM FACE

SIZE  
**C**

SCALE  
**1:24**

DOCUMENT NO.  
**MC-PK8-DSH**

DRAWING	STATUS	REVISION	SHEET 3 OF 3
	AD	A	

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# ATTACHMENT 6



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

Dish Wireless Existing Facility

Site ID: 842860

BOBOS00888A

315 Old Hartford Road  
Colchester, Connecticut 06415

**May 23, 2022**

**EBI Project Number: 6222003239**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>45.86%</b>

May 23, 2022

Attn: Dish Wireless

Emissions Analysis for Site: 842860 - BOBOS00888A

EBI Consulting was directed to analyze the proposed Dish Wireless facility located at **315 Old Hartford Road in Colchester, Connecticut** for the purpose of determining whether the emissions from the Proposed Dish Wireless Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed Dish Wireless Wireless antenna facility located at 315 Old Hartford Road in Colchester, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since Dish Wireless is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 4 n71 channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 4 n70 channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 4) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 5) The antennas used in this modeling are the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector A, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector B, the JMA MX08FRO665-21 for the 600 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 20 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 6) The antenna mounting height centerline of the proposed antennas is 40 feet above ground level (AGL).
- 7) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 8) All calculations were done with respect to uncontrolled / general population threshold limits.

## Dish Wireless Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21	Make / Model:	JMA MX08FRO665-21
Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz	Frequency Bands:	600 MHz / 1900 MHz
Gain:	11.35 dBd / 15.75 dBd	Gain:	11.35 dBd / 15.75 dBd	Gain:	11.35 dBd / 15.75 dBd
Height (AGL):	40 feet	Height (AGL):	40 feet	Height (AGL):	40 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	280.00 Watts	Total TX Power (W):	280.00 Watts	Total TX Power (W):	280.00 Watts
ERP (W):	1,424.17	ERP (W):	1,424.17	ERP (W):	1,424.17
Antenna AI MPE %:	<b>6.50%</b>	Antenna BI MPE %:	<b>6.50%</b>	Antenna CI MPE %:	<b>6.50%</b>

Site Composite MPE %	
Carrier	MPE %
Dish Wireless (Max at Sector A):	6.50%
AT&T	36.87%
Ken-Tronics	2.49%
<b>Site Total MPE % :</b>	<b>45.86%</b>

Dish Wireless MPE % Per Sector	
Dish Wireless Sector A Total:	6.50%
Dish Wireless Sector B Total:	6.50%
Dish Wireless Sector C Total:	6.50%
<b>Site Total MPE % :</b>	<b>45.86%</b>

Dish Wireless Maximum MPE Power Values (Sector A)							
Dish Wireless Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Dish Wireless 600 MHz n71	4	110.82	40.0	13.79	600 MHz n71	400	3.45%
Dish Wireless 1900 MHz n70	4	245.22	40.0	30.51	1900 MHz n70	1000	3.05%
						<b>Total:</b>	<b>6.50%</b>

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

## Summary

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

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

Dish Wireless Sector	Power Density Value (%)
Sector A:	6.50%
Sector B:	6.50%
Sector C:	6.50%
Dish Wireless Maximum MPE % (Sector A):	6.50%
Site Total:	45.86%
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **45.86%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

# **ATTACHMENT 7**



## **CERTIFICATION OF SERVICE**

I hereby certify that on the 21st day of June 2022, DISH Wireless, LLC provided notice of its intent to file a Petition for a declaratory ruling that a Certificate of Environmental Compatibility and Public Need is not required for the modification of a wireless telecommunications facility at 315 Old Hartford Road in Colchester, Connecticut, to the following:

### **Abutters**

Colchester Hayward Fire CO  
52 Old Harford Road  
Colchester, CT 06415

United Petroleum LLC  
530 Silas Deane HWY 209  
Wethersfield, CT 06109

Town of Colchester  
127 Norwich Ave  
Colchester, CT 06415

181 Upton RD LLC  
226 Upton Road  
Colchester, CT 06415

Richard Baldi Jr & Nancy Baldi  
72 Miller Rd  
Colchester, CT 06415

Belisle Family LLC  
PO Box 161  
Lebanon, CT 06249

Freebird LLC  
227 Upton Road  
Colchester, CT 06415

NCCP LLC  
34 O'Connell Road  
Colchester, CT 06415

### **Owner**

315 Colchester Realty LLC  
425 Gold Star Hwy  
Groton, CT 06340

Respectfully Submitted,

Victoria Masse  
Northeast Site Solutions  
420 Main Street #2  
Sturbridge, MA 01566

June 21, 2022

**VIA USPS CERTIFIED MAIL/  
RETURN RECEIPT REQUESTED**

315 Colchester Realty LLC  
425 Gold Star Hwy  
Groton, CT 06340

**RE: Proposed Modification to Existing Wireless Telecommunications Facility at 315  
Old Hartford Road in Colchester, 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.

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 June 21, 2022 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 Town Clerk at the Colchester Town Hall. All inquiries should be addressed to the Council or to the undersigned.

Sincerely,

Victoria Masse  
Northeast Site Solutions  
420 Main Street #2  
Sturbridge, MA 01566

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<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
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Total Postage and Fees	\$7.38



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<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.58
Total Postage and Fees	\$7.38



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City, State, ZIP+4® Groton, CT 06340

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<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
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Total Postage and Fees	\$7.38



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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.58
Total Postage and Fees	\$7.38



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Street and Apt. No., or PO Box No. 127 Norwich Ave  
City, State, ZIP+4® Colchester, CT 06415

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Total Postage and Fees	\$7.38



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City, State, ZIP+4® **Lebanon, CT 06249**

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Postage \$0.58

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City, State, ZIP+4® **Colchester, CT 06415**

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JUN 23 2022 17  
Postmark Here  
WORCESTER MA 01605  
06/23/2022

CR-DISH

824860 Colchester

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

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First-Class Mail® Letter	1		\$0.58
Colchester, CT 06415 Weight: 0 lb 0.40 oz Estimated Delivery Date Sat 06/25/2022			
Certified Mail®			\$3.75
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Tracking #: 9590 9402 7096 1251 0738 85			
<b>Total</b>			<b>\$7.38</b>

First-Class Mail® Letter	1		\$0.58
Colchester, CT 06415 Weight: 0 lb 0.40 oz Estimated Delivery Date Sat 06/25/2022			
Certified Mail®			\$3.75
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Return Receipt			\$3.05
Tracking #: 9590 9402 7040 1225 8375 13			
<b>Total</b>			<b>\$7.38</b>


First-Class Mail® Letter	1		\$0.58
Lebanon, CT 06249 Weight: 0 lb 0.40 oz Estimated Delivery Date Sat 06/25/2022			
Certified Mail®			\$3.75
Tracking #: 70211970000122840453			
Return Receipt			\$3.05
Tracking #: 9590 9402 7040 1225 8323 03			
<b>Total</b>			<b>\$7.38</b>

First-Class Mail® Letter	1		\$0.58
Colchester, CT 06415 Weight: 0 lb 0.40 oz Estimated Delivery Date Sat 06/25/2022			
Certified Mail®			\$3.75
Tracking #: 70211970000122844482			
Return Receipt			\$3.05
Tracking #: 9590 9402 7040 1225 8323 10			
<b>Total</b>			<b>\$7.38</b>

First-Class Mail® Letter	1		\$0.58
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Certified Mail®			\$3.75
Tracking #: 70211970000122844468			
Return Receipt			\$3.05
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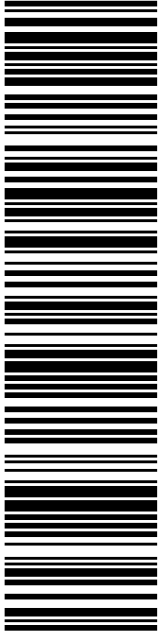
UFN Recd Cler





ANDREAS BISBIKOS  
FIRST SELECTMAN  
127 NORWICH AVE  
COLCHESTER CT 06415-1230

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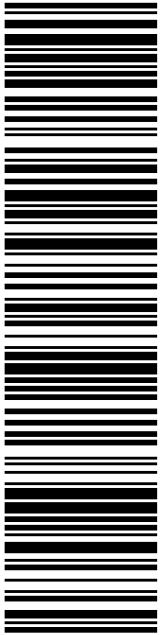
**To:** ANDREAS BISBIKOS  
FIRST SELECTMAN  
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ZONING ENFORCEMENT OFFICER  
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COLCHESTER CT 06415-1230

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Expected Delivery Date: 06/23/2022	

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


Ref#: DS-842860

**To:** ARIEL LAGO  
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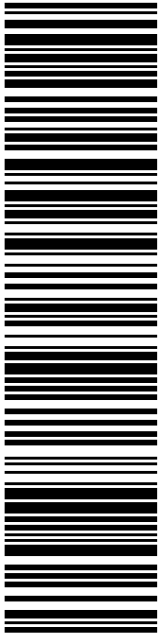


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Expected Delivery Date: 06/23/22  
Ref#: DS-842860  
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<b>9405 5036 9930 0278 9491 92</b>	
Trans. #:	566085425
Print Date:	06/21/2022
Ship Date:	06/21/2022
Expected Delivery Date:	06/23/2022
Priority Mail® Postage:	<b>\$8.95</b>
Total:	<b>\$8.95</b>
<b>From:</b>	DEBORAH CHASE NORTHEAST SITE SOLUTIONS 420 MAIN ST STE 1 STURBRIDGE MA 01566-1359
<b>To:</b>	RICH ZAJAC CROWN CASTLE 4545 E RIVER RD STE 320 W HENRIETTA NY 14586-9024
	Ref#: DS-842860
<p>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</p>	



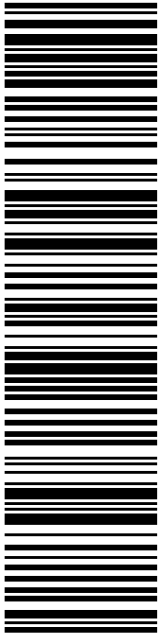
Thank you for shipping with the United States Postal Service!  
Check the status of your shipment on the USPS Tracking® page at usps.com





315 COLCHESTER REALTY LLC  
425 GOLD STAR HWY  
GROTON CT 06340-6265

**USPS TRACKING #**



**9405 5036 9930 0278 9492 08**

**P**

06/21/2022 Mailed from 01566

**U.S. POSTAGE PAID**  
Click-N-Ship®

usps.com 9405 5036 9930 0278 9492 08 0089 5000 0010 6340  
**US POSTAGE**  
Flat Rate Env  
**\$8.95**


**PRIORITY MAIL 2-DAY™**

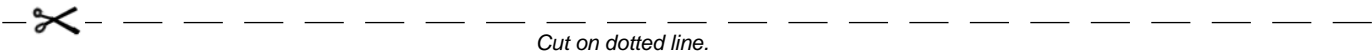
DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
420 MAIN ST  
STE 1  
STURBRIDGE MA 01566-1359

Expected Delivery Date: 06/23/22  
Ref#: DS-842860  
**0006**

**C021**

Electronic Rate Approved #038555749





Cut on dotted line.

### Instructions

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

### Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0278 9492 08**

Trans. #: 566085425	Priority Mail® Postage: <b>\$8.95</b>
Print Date: 06/21/2022	Total: <b>\$8.95</b>
Ship Date: 06/21/2022	
Expected Delivery Date: 06/23/2022	

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

Ref#: DS-842860

**To:** 315 COLCHESTER REALTY LLC  
425 GOLD STAR HWY  
GROTON CT 06340-6265

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



FARMINGTON  
 210 MAIN ST  
 FARMINGTON, CT 06032-9998  
 (800) 275-8777

06/23/2022 04:40 PM

Product	Qty	Unit Price	Price
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Prepaid Mail	1		\$0.00
West Henrietta, NY 14586			
Weight: 0 lb 2.00 oz			
Acceptance Date:			
Thu 06/23/2022			
Tracking #:			
9405 5036 9930 0278 9319 37			

Prepaid Mail	1		\$0.00
Danbury, CT 06811			
Weight: 0 lb 8.40 oz			
Acceptance Date:			
Thu 06/23/2022			
Tracking #:			
9405 5036 9930 0278 9319 13			

Prepaid Mail	1		\$0.00
Danbury, CT 06810			
Weight: 0 lb 8.30 oz			
Acceptance Date:			
Thu 06/23/2022			
Tracking #:			
9405 5036 9930 0278 9319 06			

Prepaid Mail	1		\$0.00
Danbury, CT 06810			
Weight: 0 lb 8.40 oz			
Acceptance Date:			
Thu 06/23/2022			
Tracking #:			
9405 5036 9930 0278 9318 83			

Grand Total: \$0.00

\*\*\*\*\*  
 Every household in the U.S. is now  
 eligible to receive a third set  
 of 8 free test kits.  
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 \*\*\*\*\*

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 Thank you for your business.

Tell us about your experience.  
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 or scan this code with your mobile device.

