



Northeast Site Solutions
Victoria Masse
5 Melrose Drive
Farmington, CT 06032
victoria@northeastitesolutions.com

November 29, 2023

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

RE: Tower Share Application
6 Main Street, Essex, CT 06426
Latitude: 41.34809 N
Longitude: -72.42648 W
Site#: BOBDL00219A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the water tower site located at 6 Main Street, Essex, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 98-foot level of the existing 124-foot water tower, one (1) hybrid cable will also be installed. Dish Wireless LLC equipment cabinets will be placed within 8"x11" lease area. Included are plans by Centek, dated November 22, 2023, Exhibit C. Also included is a structural analysis prepared by Centek, dated August 14, 2023 confirming that the existing water tower is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Town of Essex Zoning Commission, on January 13, 1997. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Norm Needleman, First Selectman, Carey Duques, Land Use Official/Wetlands Enforcement Officer Town Planner, as well as the property owner and tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the water tower is 124-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 98-feet.
2. The proposed modification will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modification will not increase the noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligible.

5 Melrose Drive, Farmington CT 06032



4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 22.45% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully indicates that the shared use of this facility satisfies these criteria.

A. Technical Feasibility. The existing water tower has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in Exhibit D.

B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing water tower such as this water tower in Essex. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. Environmental Feasibility. The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 98-foot level of the existing 124-foot water tower would have an insignificant visual impact on the area around the water tower. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

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

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

Sincerely,

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



Attachments

Cc:

Norm Needleman, First Selectman
Essex Town Hall
29 West Avenue
Essex, CT 06426

Carey Duques, Land Use Official/Wetlands Enforcement Officer Town Planner
Essex Town Hall, 3rd flr
29 West Avenue
Essex, CT 06426

Property and Tower Owner
MACBETH VENTURES LLC C/O HT PARTNER LLC
6 Main St, Suite 312
Centerbrook, CT 06409

ATTACHMENT 1

#162

PRINT OR TYPE
Please read Essex Zoning Regulations
before completing this Application Form.

TOWN OF ESSEX Zoning Commission

Town Hall, Essex, Connecticut 06426
Telephone: (203) 767-4341

MAP 33

APPLICATION FOR ZONING PERMIT

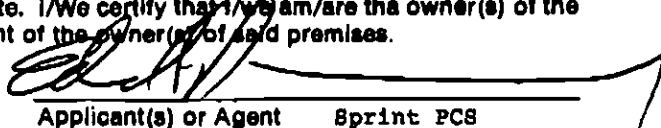
LOT 28

1. Property Owner(s) Name(s) Merz & Dickinson d/b/a E.S. Dickinson Company
2. Address(es) 2 Enterprise Dr., Shelton, CT 06484 Telephone(s) _____
3. Applicant(s) Name(s) Sprint PCS
4. Address(es) 9 Barnes Industrial Road Wallingford, CT 06492 Telephone(s) (203) 294-5620
5. Location of Premises (by street) 6 Main Street a/k/a Railroad Avenue, Centerbrook, CT
Tax Map No. 33 Tax Lot No. 28 Zoning District Commercial
6. Description of use and any improvements proposed: Installation of antennas on water tower and construction of utility building per approval of amendment to Special Exception granted by the Zoning Commission on December 16, 1996.

7. A Site Plan marked Exhibit "A" is attached clearly showing: Previously submitted
 - (a) The location and exact dimensions of all boundaries of the lot;
 - (b) The exact aggregate area of the lot and of any portion of it represented by Wetlands and/or Watercourses (including but not limited to, streams, ponds or lakes);
 - (c) The location and exact dimensions of all existing and proposed structures and other improvements; including the location and layout of the septic system.
 - (d) The exact distance of all existing and proposed structures and other improvements from lot lines;
 - (e) Name and location of each street abutting the lot, and the location and width of any other way affording access to the lot from a street;
 - (f) The exact percentage of the lot area covered by existing and proposed structures;
 - (g) The source of water supply.
8. The following must also be furnished as part of the application: Previously submitted
 - (a) A list of the names and mailing addresses, with Tax Map and Tax Lot Numbers, of owners of all land adjacent to the land to which this application relates;
 - (b) Fee: checks should be payable to the Town of Essex. Other fees as required.

I/We certify that all the information on this application, including that on the site plan and any attachments, is correct as of the date below and complete. I/We certify that I/we am/are the owner(s) of the premises described above, or the authorized agent of the owner(s) of said premises.

Dated: Re January 13, 1997 IGG



Applicant(s) or Agent Sprint PCS
Agent: Edward S. Domnarski, Jr., Esq., Cloutier & Domnarski, 29 Elm St., Old Saybrook, CT 06475

FOR OFFICIAL USE ONLY: Application No. 3178 Date Received by ZEA 1/13/97 IGG

Fee Paid 8096 Granted 1/13/97 Denied _____ Sec. 121 E

Permit No. 97-33-28 Contractor _____
Permit Date January 13, 1997

TOWN OF ESSEX
ZONING PERMIT

Map 33 Lot 28

Issue Date 1/13/97 Hr. 10:15 a.m.

Applicant's Name Sprint PCS Address 9 Barnes Industrial Road
Wallingford, CT 06492

Owner's Name: Merz & Dickison DBA-E.E. Dickinson Co. Address? Enterprise Dr., Shelton 06484

Address of Work: 6 Main St., a/k/a Railroad Ave., Centerbrook, CT

Zoning District: C Description of Improvement or Use _____

Construction of a second cellular telecommunications facility on the
existing water tank located on Railroad Avenue. The second facility shall consist
of 9 panel-type antennae placed around the circumference of the water tank, and a
radio equipment building near the base of the tank as shown on the revised plans.

ALL AS PER A GRANT OF SPECIAL EXCEPTION APPROVED ON MONDAY, DECEMBER 16, 1996.

THIS IS NOT A BUILDING PERMIT OR A HEALTH DEPT. PERMIT.

- NOTES:**
- (1) This is not a building permit. This permit expires one year from date of issue if construction shall not have commenced.
 - (2) A certified plot plan may be required, at the time of construction of the foundation and at the completion of the structure, to verify compliance with the requirements of the Essex Zoning Regulations.

Signature: *Larry Hillman*
Zoning Enforcement Agent

ESSEX - SITE #162

120 FOOT MONOPOLE (128' W/LIGHTENING ROD)
SPRINT PCS
PRELIMINARY LAND USE PERMITTING REPORT

Prepared By
Cloutier & Domnarski
November 15, 1996

I. SITE INFORMATION

Street Address	Tax Map Information			Owner
	Map	Block	Lot	
6 Main Street, Centerbrook	33		28	Merz & Dickinson *

* Metro Mobile CTS (20 Alexander Drive, Wallingford, CT 06492) is listed as owner of one building built in 1996. See Tax Assessor's Card.

II. SUMMARY OF REQUIRED PERMITS

A. *Special Exception*

1. A Special Exception is required for a cellular telecommunications facility in a commercial district. Because a Special Exception has previously been granted to E.E. Dickinson to allow installation of the Cellco antennae, we have been advised by Larry Gillian, The Zoning Enforcement Agent, to apply for a modification of the existing Special Exception. We have a copy of the Cellco application and site plan. According to Larry Gillian, there was little opposition to the Cellco application and very few people attended the public hearing. The procedure is set forth below.

2. A Special Exception may be needed pursuant to Section 40J if the antenna exceeds permissible height limitations. See below.

B. *Zoning Permit*

A Zoning Permit is required, in addition to the special exception, for any new improvement or change in an existing improvement, unless it is an accessory improvement, which does not fit within the definition of "building"; i.e. unless it can be classified as a utility transmission tower (which is not defined in the Regulations). Section 121A.

A Zoning Permit is also needed before the commencement of any new nonresidential use of the premises. ("Use" is not defined in the Regulations.)

See Zoning Permit Procedure below.

III. ZONING REVIEW

A) *ZONE:* C - Commercial

B) *USES PERMITTED IN ZONE:*

No use is permitted unless expressly and specifically permitted in the Zoning Regulations. Section 40A.

Section 40L, attached hereto, sets forth the procedure to be followed when a lot is partly in different districts. It appears on the map that a portion of this lot may be in the Limited Industrial district.

A cellular telecommunications facility is permitted as a special principal use and building in a commercial district only when specifically authorized by the Zoning Commission as a special exception. Section 80A.2(W).

C) *LOT, AREA, YARD, AND HEIGHT REQUIREMENTS:*

Section 80C	Required	Proposed
Minimum lot area	30,000 Square Feet	
Minimum lot width	150 Feet	
Maximum building coverage	15%	
Front setback	30 feet	
Side yard setback	15 feet	
Rear yard setback	30 feet	
Maximum building height	30 feet *	

* The building height is determined by measuring vertically from the average ground level at the base to the average roof height. Ten percent of the footprint area may exceed the 30 foot height limitation not to exceed an overall height of 45 feet. Any improvement over 8 feet high is a building, unless it is a utility transmission tower (which is not defined in the Regulations). The general prohibition on building height set forth in Section 40J contains an exception for radio or television towers and antennas which may be erected to a reasonable and necessary height provided they not exceed "15 feet in height above the highest point of the highest ground elevation of the lot or 15 feet in height above the highest point of the highest building on the lot, whichever is the higher".

D) *SITE PLAN REQUIREMENTS*

A Site Development Plan must accompany the application for Special Exception. The requirements are set forth in Section 120C.4 and attached hereto.

A waiver or modification of any of the requirements may be made in writing, pursuant to Section 120.C.8, and submitted with the application and Site Development Plan. The Commission will act upon this request within 21 days, and if granted this will relate back to the

date of filing the application. A waiver of certain items may be granted when these items are not reasonably necessary or appropriate to disposition of the application.

Larry Gillian has indicated that we should be able to get a waiver of most of the site plan requirements.

E) *SPECIAL EXCEPTION PROCEDURE*

Pursuant to Section 120, a lessee may apply for a Special Exception with the written consent of the owner of the premises.

The application form must be accompanied by the signed checklist, supporting information (see below) and the \$75.00 fee, and submitted to the Zoning Enforcement Agent for transmittal to the Zoning Commission.

Supporting information includes (1) metes and bounds description of the premises, (2) list of neighboring owners, (3) statement describing the proposed use and all improvements, and (4) Site Plan (see above re: waiver).

All maps and drawings are to be prepared by a registered professional engineer or registered land surveyor. Any proposed improvement shall be drawn by a licensed professional engineer. Section 120D.

A copy of the application must be filed with the Town Clerk at least ten (10) days before the Public Hearing. Notice of the hearing must be published as a legal advertisement. The hearing, on the record, will be held within 65 days of the filing of the application.

The next meeting of the Zoning Commission is November 25, 1996 and we will have to submit the application on or before November 22, 1996. At the November 25th meeting, the Commission may schedule the public hearing for its next meeting which will be held on December 16, 1996.

The Commission will consider the probable effect on the enjoyment, usefulness and value of neighboring premises, including the extent of any radio or television interference resulting from the granting of the exception, which must be by a concurring vote of the majority of the Commission. A decision will be rendered within 65 days of the first Public Hearing.

The granting of a Special Exception is subject to the conditions set forth in Section 130: (Section 130A.1 & 2) the architectural design of buildings and the site plan shall harmonize with the neighborhood and (Section 130A.3-5) the proposed use and improvements shall not adversely affect the enjoyment, usefulness and value of neighboring premises or the pattern and flow of traffic, not shall it unsafely increase building density.

The Commission may impose conditions as needed to prevent any adverse effects upon the health, safety and welfare of the community, the suitability of the land for its general principal use and to prevent any undue annoyance or disturbance to neighbors.

F) *ZONING PERMIT PROCEDURE*

Pursuant to Section 121B, a lessee may apply for a Zoning Permit, with the written consent of the owner of the premises.

The application form must be accompanied by (1) a site plan showing the tax map lot number; (2) a statement describing the improvement or change and the use made thereof, (3) identification of adjacent property owners; and (4) the \$20.00 fee, and submitted to the Zoning Enforcement Agent.

The Zoning Enforcement Agent may require any other necessary documentation such as that set forth in Section 120C.1-7 (Special Exception requirements), a title summary or a certified A2 plot plan.

The permit will be granted, within 30 days after receipt of the application, if it complies with the Regulations. The permit may be denied if the land is in a subdivision which has not been approved by the Planning Commission. Notice must be mailed to adjacent property owners when a zoning permit issues.

G) *IMPORTANT DEFINITIONS*

(1) Accessory Improvement - Any improvement which is attendant, subordinate and customarily incidental to the principal improvement on the same premises.

(2) Improvement - Any structural addition to, or other change in the condition of land including the underground installation of utility lines.

(3) Improvement is also defined with regard to zoning permits at Section 121A to include any surfaced outdoor facility exceeding 10 square feet in area.

(4) Cellular Telecommunications Facility - Consists of 1) a building not used for human occupancy which will contain mobile radio telephone transmitting, receiving and related equipment, and 2) antennae attached to an existing structure and connecting cables necessary to permit the broadcasting of mobile two-way radio telephone communications.

(5) Building - Any improvement having a roof and intended for the shelter, housing or enclosure of persons, animals, or materials. Any other improvement more than 8 feet high shall be considered as a building, including a solid fence or wall, but excluding trees, shrubs and utility transmission towers, or an electric light, telephone or telegraph pole, highway or railroad bridge or flagpole; also considered as a building shall be anything located on, above, or beneath the water which is not primarily utilized or intended for navigation.

IV. INLAND WETLANDS REVIEW

There may be a water course on the property. In addition to the Inland Wetlands Map, the Flood Insurance Rate Map and the Water Resource Districts Map must be checked.

V. ZONING BOARD OF APPEALS

If a Special Exception does not issue for the Sprint antenna as a cellular telecommunications facility and/or if a Special Exception does not issue permitting the antenna in excess of the height requirement, then an application for a variance can be made to the Zoning Board of Appeals. A showing that enforcement of the regulations would result in exceptional difficulty or unusual hardship must be made.

VI. OTHER REGULATIONS

VII. MEETING DATES AND SUBMISSION DATES

<u>BOARD OR COMMISSION</u>	<u>MEETING DATES</u>	<u>SUBMISSION DEADLINES</u>
Zoning Board of Appeals	3rd Tuesday of month	
Zoning Commission	3rd Monday of month	
Inland Wetlands Commission	2nd Tuesday of month	

VIII. FILING FEES

<u>TYPE OF PERMIT</u>	<u>FEE</u>
Special Exception	\$ 75.00
Zoning Permit	\$11.00 to town and \$9.00 to DEP
Variance	\$40.00 to town and \$10.00 to town clerk

IX. NAMES AND TELEPHONE NUMBERS

<u>OFFICIAL</u>	<u>NAME</u>	<u>TELEPHONE NO.</u>
Zoning Enforcement Agent	Larry Gillian	
Town Planner		
Zoning Comm. Chairman	Gregory Ellis	
Planning Comm. Chairman	Russell Smith	
Zoning Bd. of Appeal Chairman	Stuart Ingersoll	
Inland Wetlands Comm. Chairman	Daniel Lapman	

X. GENERAL COMMENTS

n:land-use/sprint/esx-zrpt

ATTACHMENT 4

6 MAIN ST CTBK

Location 6 MAIN ST CTBK

Mblu 33/ 028/ //

Acct# 00200100

Owner MACBETH VENTURES LLC

Assessment \$2,840,100

Appraisal \$4,057,100

PID 1860

Building Count 4

Current Value

Appraisal	
Valuation Year	Total
2023	\$4,057,100

Assessment	
Valuation Year	Total
2023	\$2,840,100

Owner of Record

Owner	MACBETH VENTURES LLC	Sale Price	\$1,250,000
Co-Owner	C/O HT PARTNER LLC	Certificate	
Address	6 MAIN ST SUITE 312 CENTERBROOK, CT 06409	Book & Page	0180/0285
		Sale Date	05/25/1999
		Instrument	07

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
MACBETH VENTURES LLC	\$1,250,000		0180/0285	07	05/25/1999

Building Information

Building 1 : Section 1

Year Built: 1910
Living Area: 20,371
Building Percent Good: 61

Building Attributes	
Field	Description

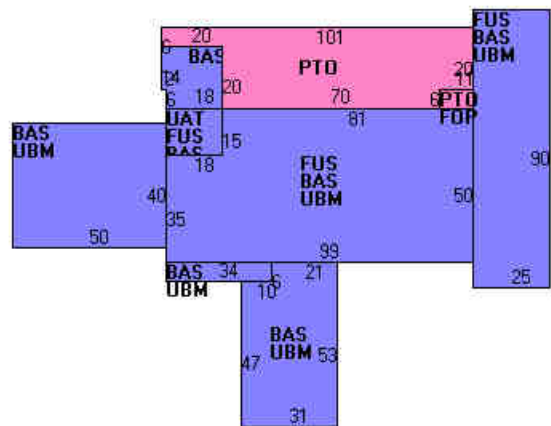
Style:	Office
Model	Comm/Ind
Grade	C+
Stories:	2 Stories
Occupancy	6.00
Ext Wall 1	Brick
Exterior Wall 2	Asbestos
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	Hardwood
Heating Fuel	Oil
Heating Type	Hot Water
AC Type	Central
Struct Class	
Bldg Use	Commercial MDL-94
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	Heat/AC Packag
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	Average
Wall Height	10.00
% Comn Wall	

Building Photo



(<https://images.vgsi.com/photos/EssexCTPhotos/A0100\28\11.jpg>)

Building Layout



(https://images.vgsi.com/photos/EssexCTPhotos/Sketches/1860_1860.jpg)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	11,171	11,171
FUS	Full Upper Story	9,200	9,200
FOP	Open Porch	66	0
PTO	Patio	2,226	0
UAT	Unfinished Attic	270	0
UBM	Basement	10,783	0
UST	Storage	204	0
		33,920	20,371

Building 2 : Section 1

Year Built: 1910
 Living Area: 1,742
 Building Percent Good: 61

Building Attributes : Bldg 2 of 4	
Field	Description

Style:	Office
Model	Comm/Ind
Grade	C+
Stories:	1 Story
Occupancy	1.00
Ext Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air
AC Type	Heat Pump
Struct Class	
Bldg Use	Commercial MDL-94
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	Heat Only
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	Light
Wall Height	12.00
% Comn Wall	

Building Photo



<https://images.vgsi.com/photos/EssexCTPhotos/A01002812.jpg>

Building Layout



https://images.vgsi.com/photos/EssexCTPhotos/Sketches/1860_5518.jpg

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	1,742	1,742
		1,742	1,742

Building 3 : Section 1

Year Built: 1910
 Living Area: 11,932
 Building Percent Good: 61

Building Attributes : Bldg 3 of 4	
Field	Description
Style:	Office
Model	Comm/Ind
Grade	C+
Stories:	1 Story
Occupancy	9.00

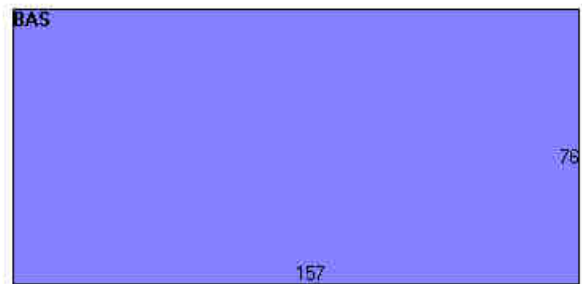
Ext Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air
AC Type	Central
Struct Class	
Bldg Use	Commercial MDL-94
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	Heat/AC Packag
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	Average
Wall Height	12.00
% Comn Wall	

Building Photo



<https://images.vgsi.com/photos/EssexCTPhotos/A0100\28\13.jpg>

Building Layout



https://images.vgsi.com/photos/EssexCTPhotos/Sketches/1860_5519.jpg

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	11,932	11,932
		11,932	11,932

Building 4 : Section 1

Year Built: 1999
Living Area: 624
Building Percent Good: 86

Building Attributes : Bldg 4 of 4	
Field	Description
Style:	Support Shed
Model	Comm/Ind
Grade	B
Stories:	1 Story
Occupancy	
Ext Wall 1	Concr/Cinder

Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	
Heating Type	None
AC Type	None/partial
Struct Class	
Bldg Use	Commercial MDL-94
Total Rooms	
Total Bedrms	
Total Baths	
1st Floor Use:	
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	None
Ceiling/Wall	None
Rooms/Prtns	Light
Wall Height	8.00
% Comn Wall	

Building Photo



<https://images.vgsi.com/photos/EssexCTPhotos/default.jpg>

Building Layout

 Building Layout

https://images.vgsi.com/photos/EssexCTPhotos/Sketches/1860_5807.jpg

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	624	624
		624	624

Extra Features

Extra Features				Legend
Code	Description	Sub Code	Sub Description	Size
SPR1	Sprinklers-Wet			11932.00 S.F.
SPR1	Sprinklers-Wet			20575.00 S.F.
ELV1	Elevator-Pass			3.00 STOPS
GEN	Generator			1.00 UNITS

Land

Land Use

Use Code	200
Description	Commercial MDL-94
Zone	C
Neighborhood	CI4

Land Line Valuation

Size (Acres)	8.52
Depth	
Assessed Value	\$672,800
Appraised Value	\$961,100

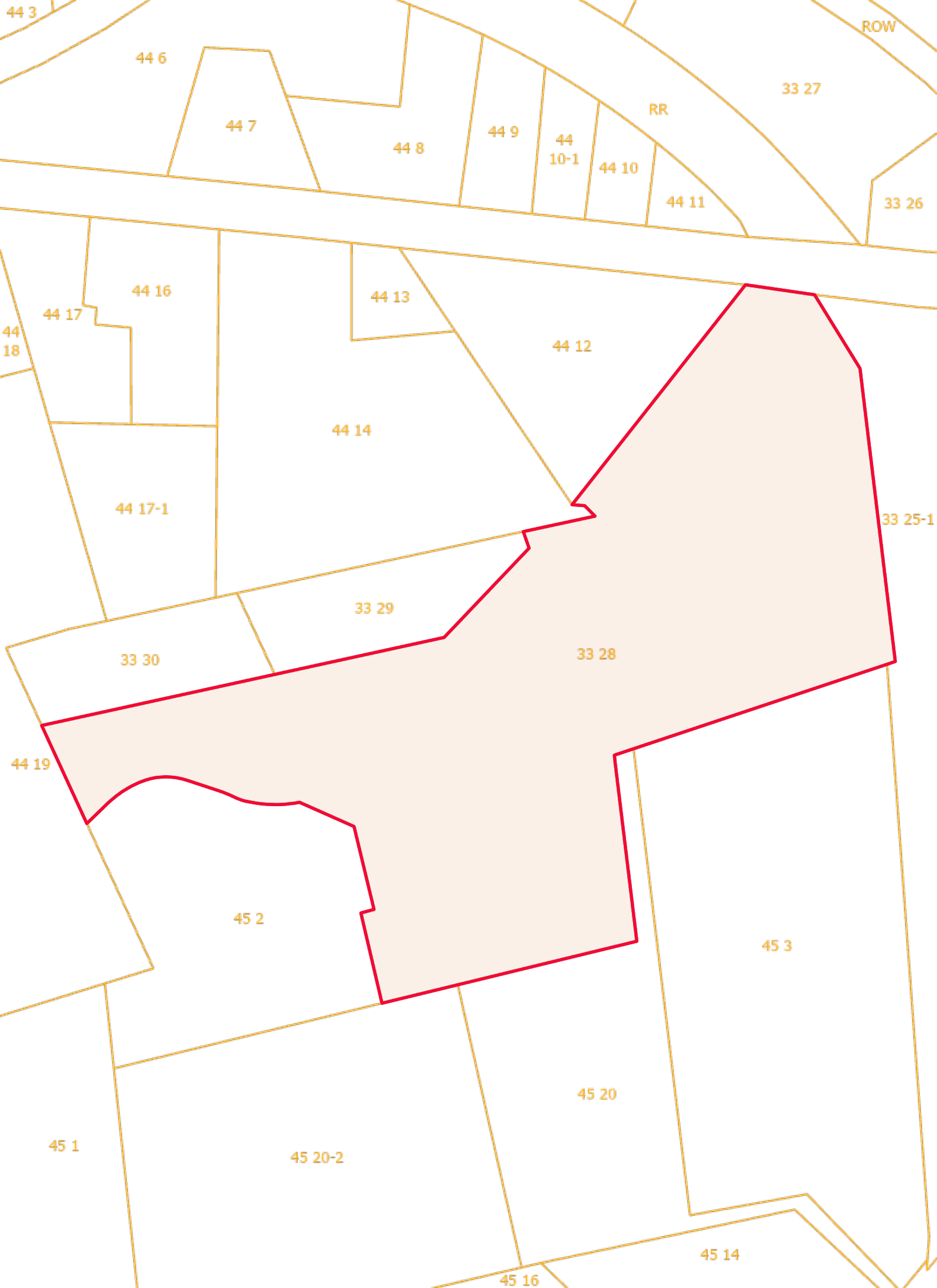
Outbuildings

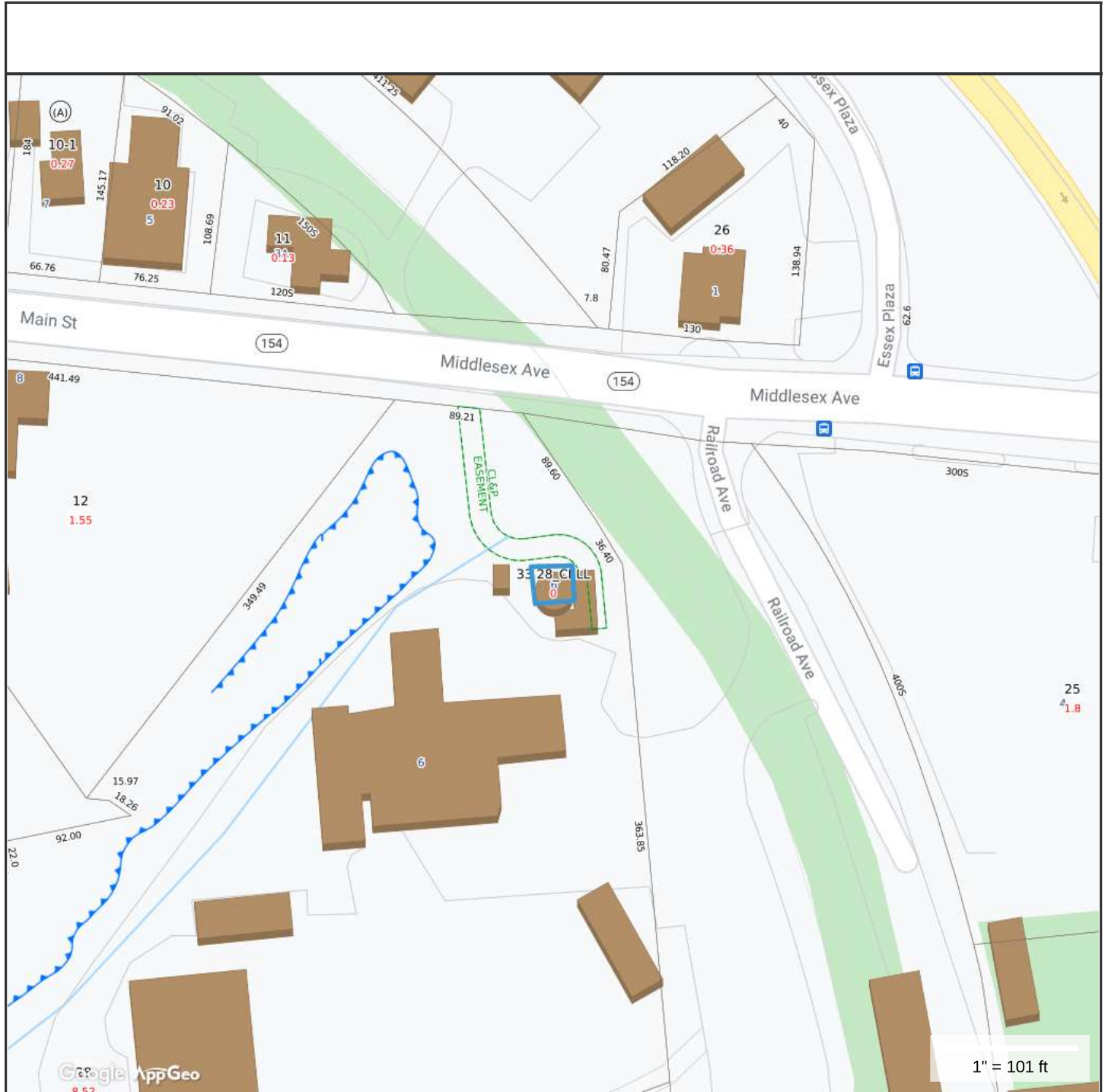
Outbuildings				<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size
SHD1	Shed-utility			180.00 S.F.
FGR1	Garage-Ave			1350.00 S.F.
SHD1	Shed-utility			1000.00 S.F.
PAV1	Paving			40000.00 S.F.
SHD1	Shed-utility			180.00 S.F.
SHD1	Shed-utility			48.00 S.F.
PAT1	Patio			2465.00 S.F.
CAN1	Pavilion			225.00 S.F.
MSC2	CELL SITE			3.00 UNIT
MSC5	GENERATOR			1.00 UNIT
SHP2	Workshop-Good			100.00 S.F.
MSC6	IGSTORAGE			100000.00 UNIT
CELL	Cell Arrays			3.00 UNITS

Valuation History

Appraisal	
Valuation Year	Total
2022	\$3,479,400

Assessment	
Valuation Year	Total
2022	\$2,435,600





Property Information

Property ID 33 28-CELL
Location 6 MAIN ST CTBK
Owner MACBETH VENTURES LLC



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

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

Geometry updated 4/13/2021
Data updated daily

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

ATTACHMENT 5



DISH Wireless L.L.C. SITE ID:
BOBDL00219A

DISH Wireless L.L.C. SITE ADDRESS:
**6 MAIN STREET
CENTERBROOK, CT 06409**

CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

SHEET INDEX

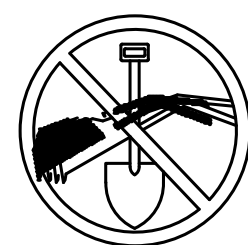
SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
C-1	OVERALL SITE PLAN
C-2	ELEVATION, ANT. LAYOUT AND SCHEDULE
C-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
C-4	EQUIPMENT LOCATION PLAN AND FENCE DETAIL
C-5	TYPICAL EQUIPMENT DETAILS
C-6	TYPICAL EQUIPMENT DETAILS
S-1	STRUCTURAL FRAMING PLAN & DETAILS
E-1	ELECTRICAL AND FIBER ROUTING PLAN WITH NOTES
E-2	TELCO CABINET DETAILS
E-3	ELECTRICAL RISER, PANEL SCHEDULE, AND SCHEMATIC
G-1	COMPOUND/ANTENNA GROUNDING PLAN AND NOTES
G-2	TYPICAL GROUNDING DETAILS
G-3	TYPICAL GROUNDING DETAILS
G-4	ELECTRICAL SPECIFICATIONS
GN-1	CENTEK NOTES AND SPECIFICATIONS
GN-1.1	LEGEND AND ABBREVIATIONS
GN-1.2	DISH RF SIGNAGE
GN-1.3	DISH GENERAL NOTES
GN-1.4	DISH GENERAL NOTES
GN-1.5	DISH GENERAL NOTES
RF-1	RF CABLE COLOR CODES

SCOPE OF WORK

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

- TOWER SCOPE OF WORK:**
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
 - INSTALL (4) PROPOSED UNIVERSAL RING MOUNTS ON WATER TANK LEGS WITH PROPOSED STEEL CROSS MEMBERS. REFER TO SHEETS S-1/BOM-1 FOR ADDITIONAL DETAILS.
 - INSTALL PROPOSED JUMPERS
 - INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
 - INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
 - INSTALL (1) PROPOSED HYBRID CABLE
- GROUND SCOPE OF WORK:**
- INSTALL A 8' x 6' CONCRETE PAD TO ACCOMMODATE THE PROPOSED EQUIPMENT PLATFORM
 - INSTALL (1) PROPOSED 5' x 7' STEEL EQUIPMENT PLATFORM
 - INSTALL PROPOSED WOOD FENCE AS SHOWN HEREIN. (TO BE PAINTED TO MATCH (E) CARRIER SHELTERS)
 - INSTALL PROPOSED ICE BRIDGE AS SHOWN HEREIN
 - INSTALL (1) PROPOSED PPC CABINET
 - INSTALL (1) PROPOSED EQUIPMENT CABINET
 - INSTALL (1) PROPOSED POWER CONDUIT
 - INSTALL (1) PROPOSED TELCO CONDUIT
 - INSTALL (1) PROPOSED TELCO-FIBER BOX
 - INSTALL (1) PROPOSED GPS UNIT
 - INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
 - INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)
 - INSTALL (1) PROPOSED 200A RATED UTILITY METER

SITE PHOTO



UNDERGROUND SERVICE ALERT
UTILITY NOTIFICATION CENTER OF (CT)
1-800-922-4455



CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

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

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

SITE INFORMATION

PROPERTY OWNER: MACBETH VENTURES LLC
ADDRESS: 6 MAIN ST
CENTERBROOK, CT 06409

SITE TYPE: WATER TANK
COUNTY: MIDDLESEX
LATITUDE (NAD 83): 41° 21' 04" N
LONGITUDE (NAD 83): 72° 24' 22" W

ZONING JURISDICTION: CML
ZONING CODE: C14
PARCEL NUMBER: 1860
OCCUPANCY GROUP: N/A
CONSTRUCTION TYPE: N/A
POWER COMPANY: EVERSOURCE
TELEPHONE COMPANY: TBD

PROJECT DIRECTORY

APPLICANT: DISH Wireless L.L.C.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SITE DESIGNER: CENTEK ENGINEERING, INC.
63-2 NORTH BRANFORD ROAD
BRANFORD, CT. 06405
(203) 488-0580

SITE ACQUISITION: DAVID GOODFELLOW
(860) 305-3841

CONSTRUCTION MANAGER: TBD

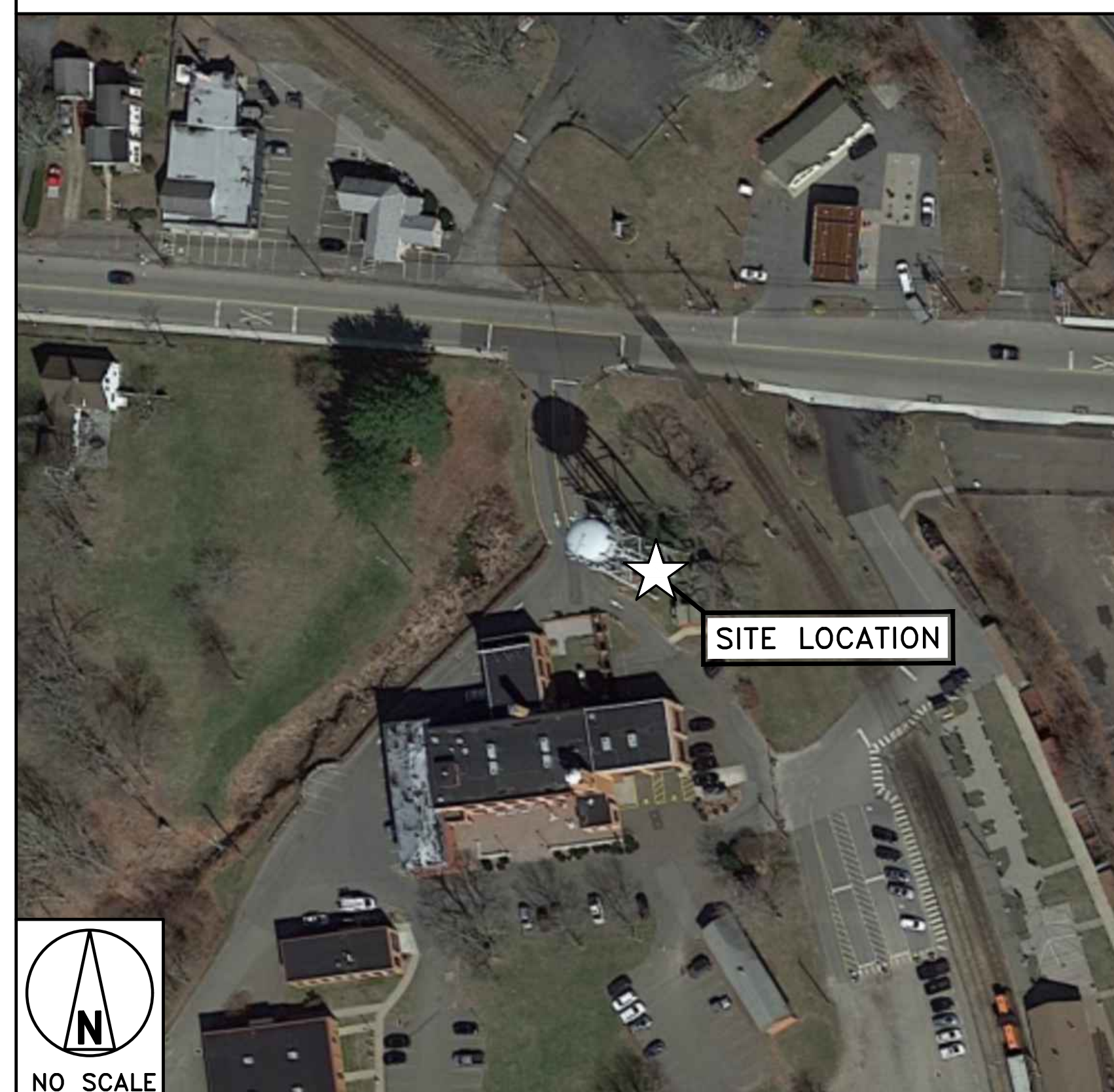
RF ENGINEER: DIPESH PARIKH
(312) 929-9086

DIRECTIONS

DIRECTIONS FROM BRADLEY AIRPORT TO 6 MAIN STREET, CENTERBROOK CT, 06409

1. HEAD NORTHWEST ON BRADLEY INTL AIRPORT. GO FOR 0.03 MI.
2. KEEP RIGHT ONTO BRADLEY INTL AIRPORT TOWARD DEPARTURES A. GO FOR 0.7 MI.
3. CONTINUE ON BRADLEY FIELD CONN TOWARD I-91/CT-20. GO FOR 0.2 MI.
4. KEEP RIGHT TOWARD CT-20/I-91. GO FOR 0.1 MI.
5. CONTINUE ON BRADLEY FIELD CONN. GO FOR 0.5 MI.
6. CONTINUE ON CT-20 E (BRADLEY FIELD CONN). GO FOR 3.2 MI.
7. TAKE THE EXIT TOWARD HARTFORD ONTO I-91 S (RICHARD P HORAN MEMORIAL HWY). GO FOR 1.3 MI.
8. KEEP RIGHT ONTO I-91 S (RICHARD P HORAN MEMORIAL HWY) TOWARD I-91. GO FOR 19.1 MI.
9. TAKE LEFT EXIT 22S TOWARD MIDDLETOWN/OLD SAYBROOK ONTO CT-9 S. GO FOR 6.3 MI.
10. CONTINUE ON CT-9 S. GO FOR 19.2 MI
11. TAKE EXIT 3 TOWARD CT-154/ESSEX/CT-153/WESTBROOK. GO FOR 0.3 MI.
12. TURN SHARP RIGHT ONTO SAYBROOK RD (CT-154). GO FOR 0.05 MI.
13. TURN LEFT INTO 6 MAIN STREET, CENTERBROOK, CT 06442

VICINITY MAP



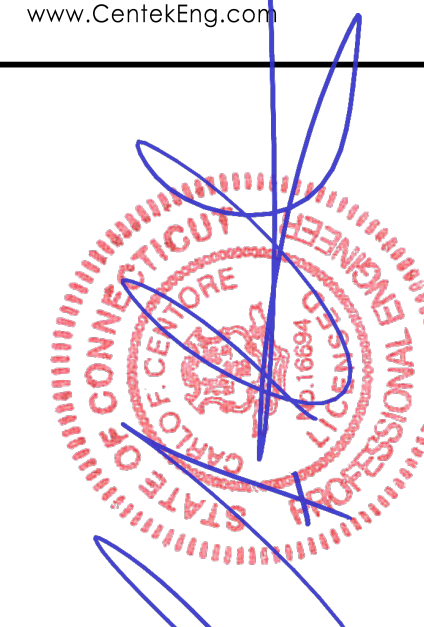
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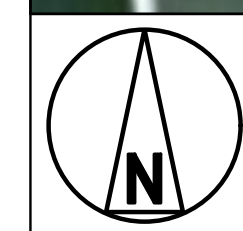
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CENTERBROOK CT, 06409

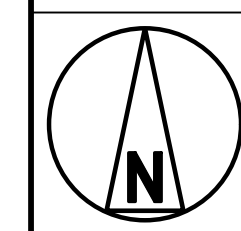
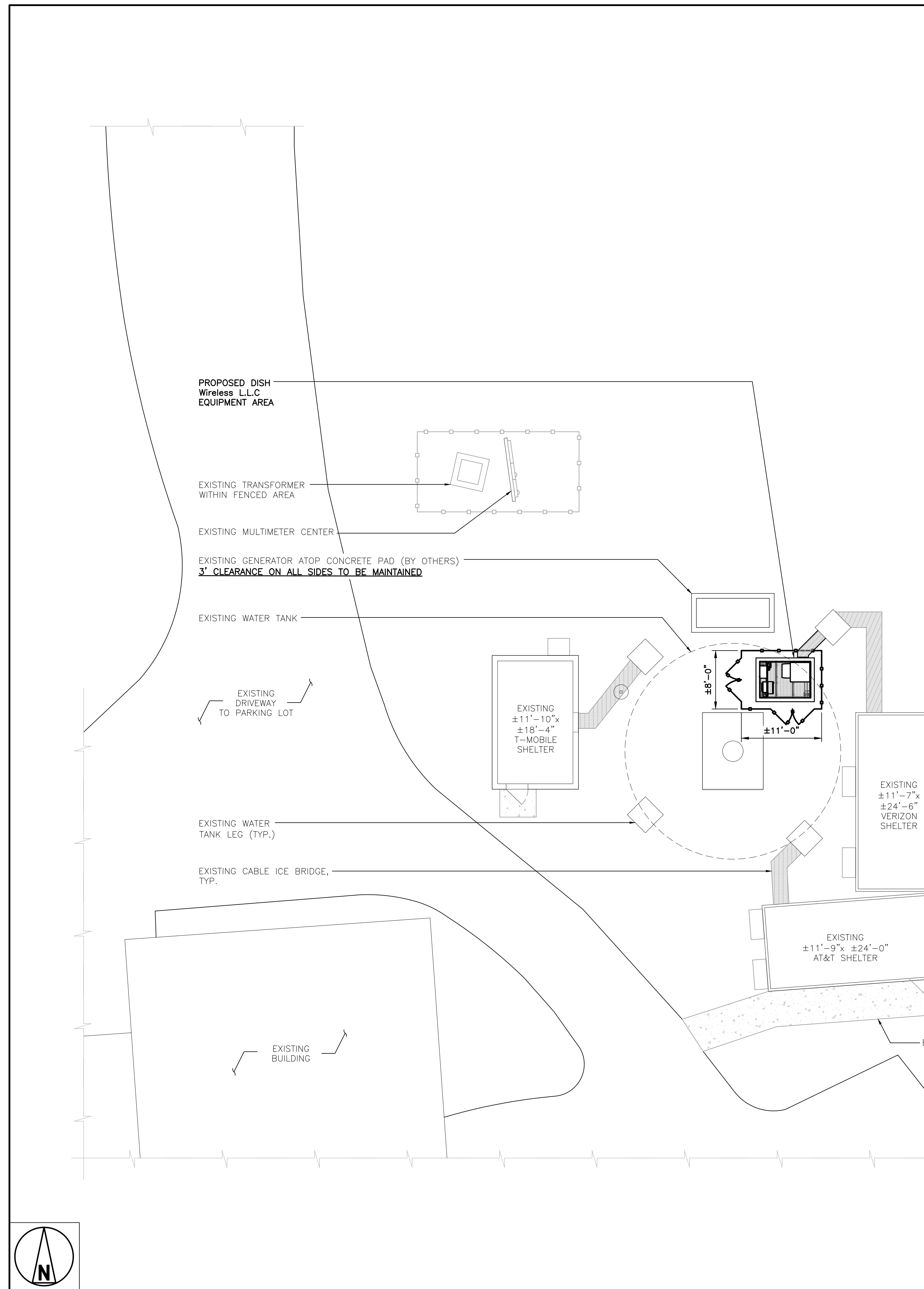
SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

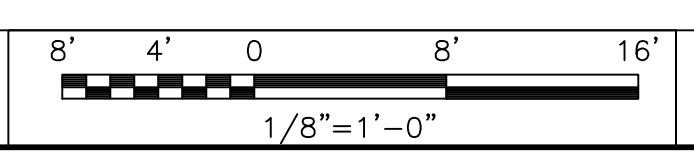


AERIAL VIEW PLAN

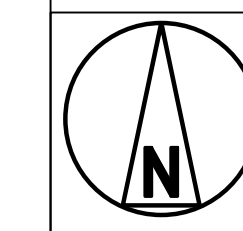
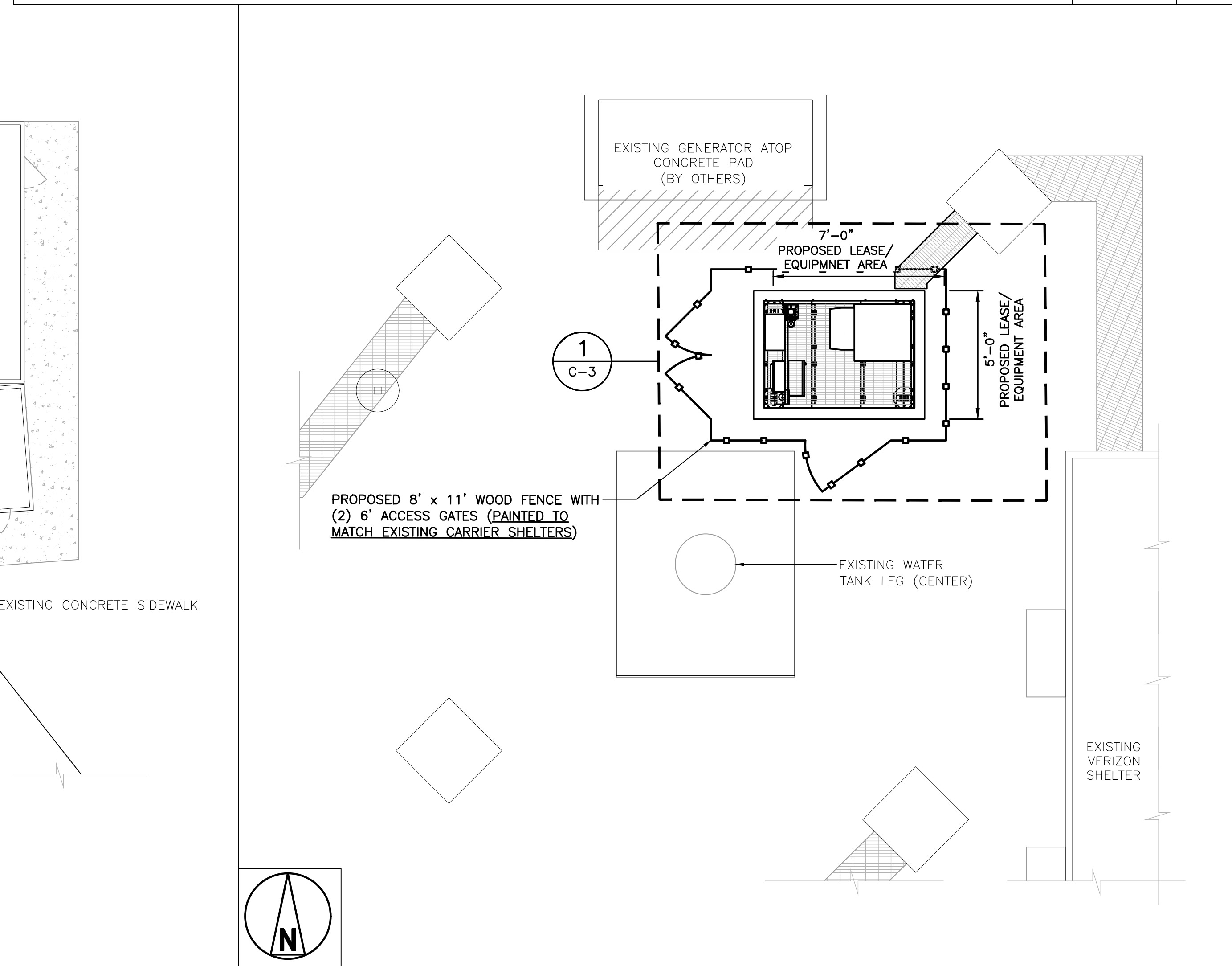
NO SCALE 2



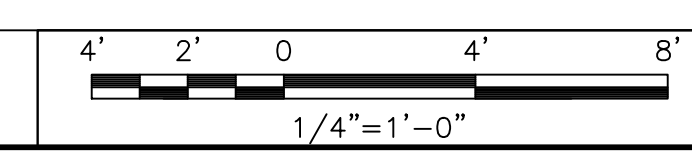
OVERALL SITE PLAN



1



ENLARGED SITE PLAN



3



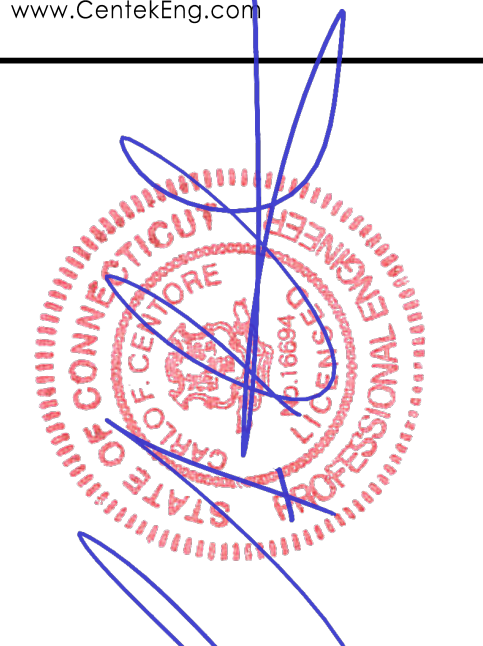
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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
C-1

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

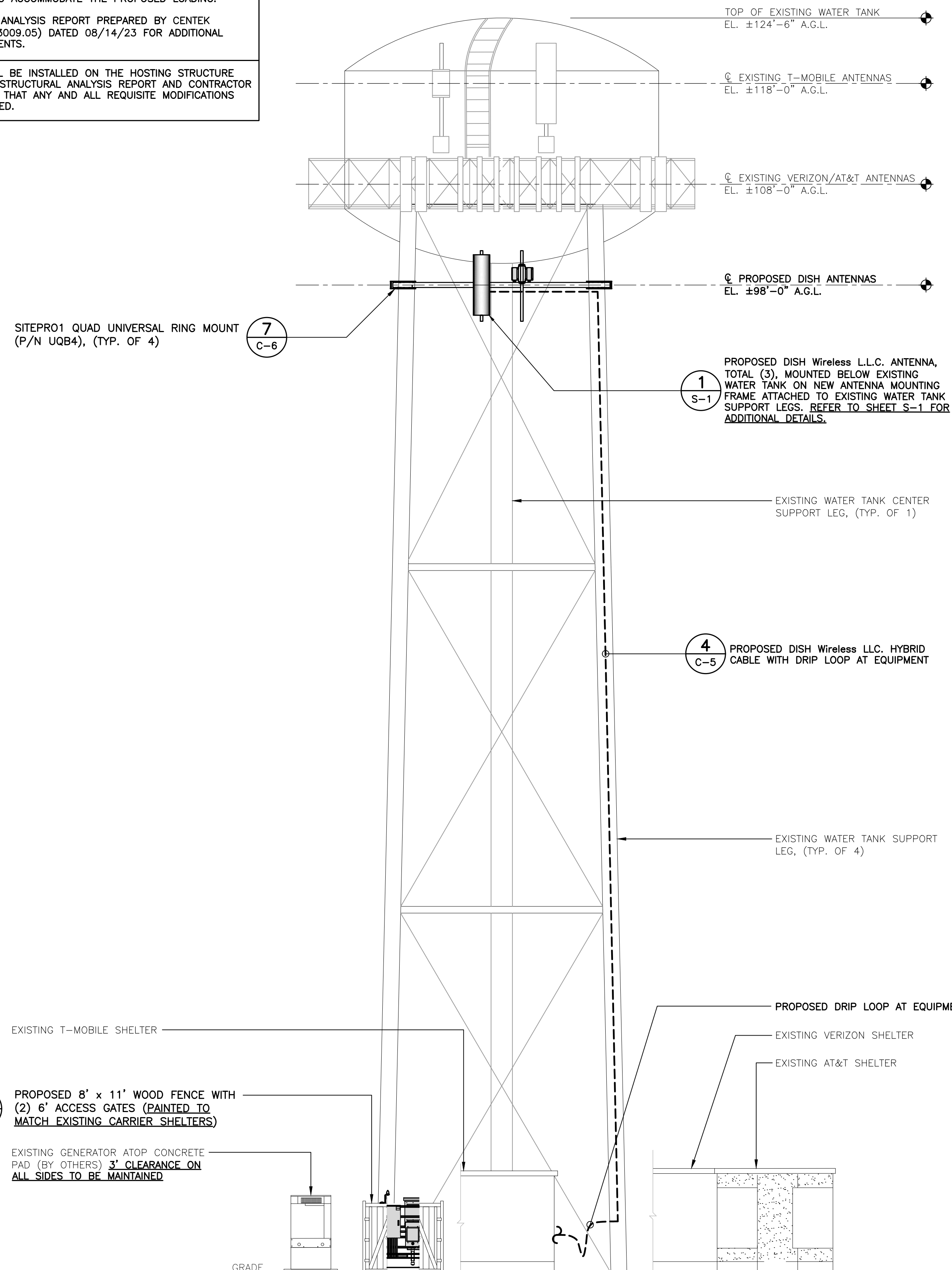
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 23009.05) DATED 08/14/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

WATER TANK

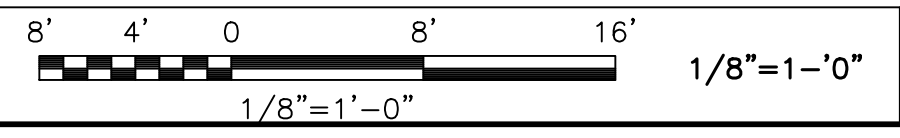
A STRUCTURAL ANALYSIS OF THE WATER TANK WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 23009.05) DATED 08/14/23 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

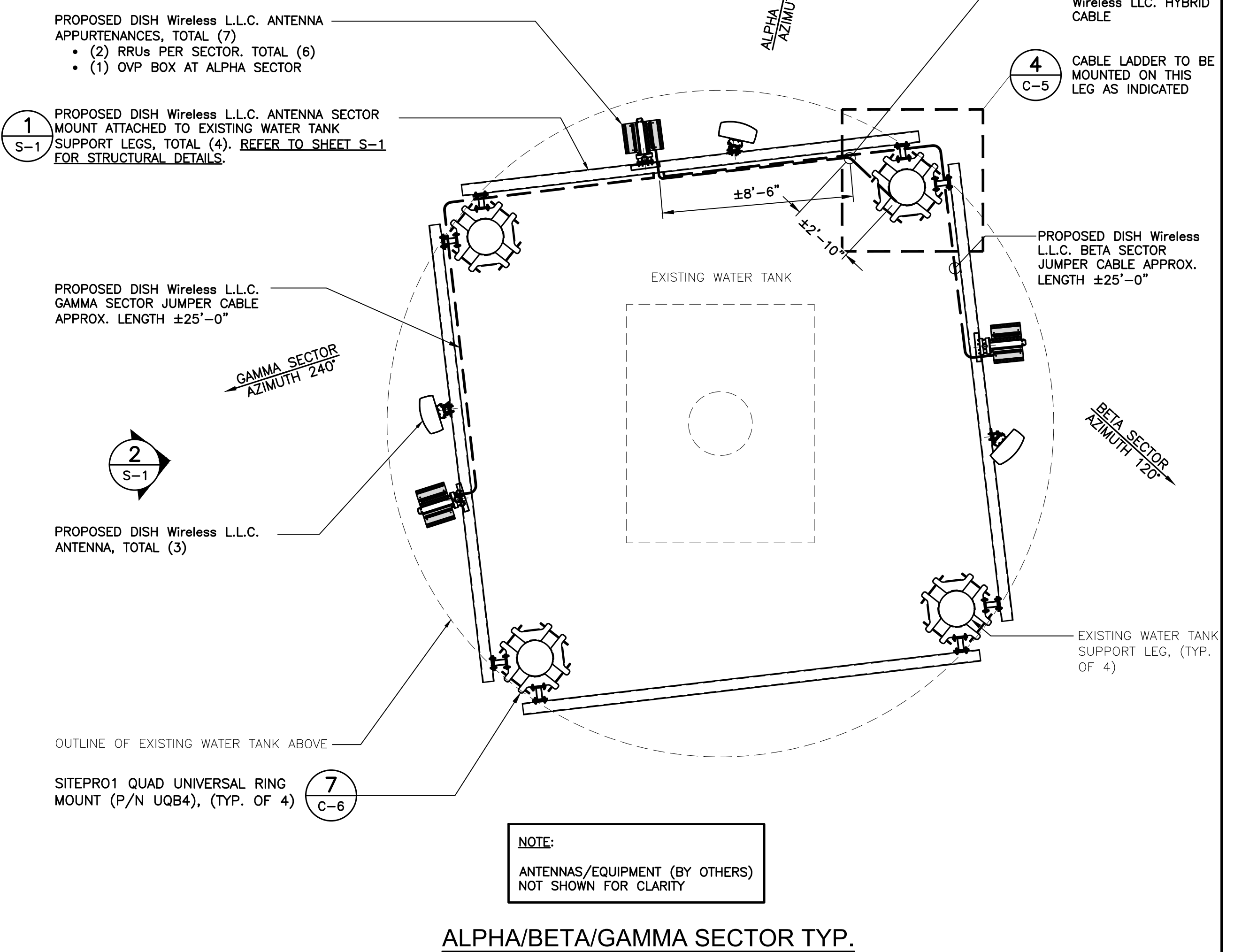
NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



TOWER ELEVATION

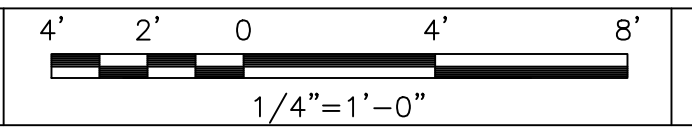


2



ALPHA/BETA/GAMMA SECTOR TYP.

ANTENNA CONFIGURATION PLAN

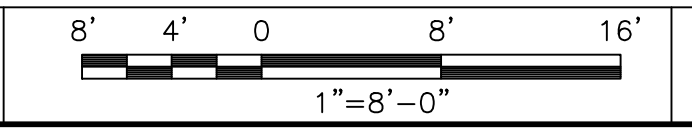


1

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	
ALPHA	A2	PROPOSED	JMA - MX08FRO665-21	n70, n71, n66	72.0" x 20.0"	0°	98'-0"	CU12PSM9P6XXX_6AWG APPROX. 140FT	
BETA	B2	PROPOSED	JMA - MX08FRO665-21	n70, n71, n66	72.0" x 20.0"	120°	98'-0"	APPROX. 170FT	
GAMMA	C2	PROPOSED	JMA - MX08FRO665-21	n70, n71, n66	72.0" x 20.0"	240°	98'-0"	APPROX. 200FT	

SECTOR	POSITION	RRH		NOTES
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY	
ALPHA	A2	FUJITSU - TA08025-B605	n71	NOTES 1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES. 3. ALL HYBRID/COAX LENGTHS TO BE MEASURED AND VERIFIED IN FIELD BEFORE ORDERING.
	A2	FUJITSU - TA08025-B604	n70 n66	
BETA	B2	FUJITSU - TA08025-B605	n71	
	B2	FUJITSU - TA08025-B604	n70 n66	
GAMMA	C2	FUJITSU - TA08025-B605	n71	
	C2	FUJITSU - TA08025-B604	n70 n66	

ANTENNA SCHEDULE



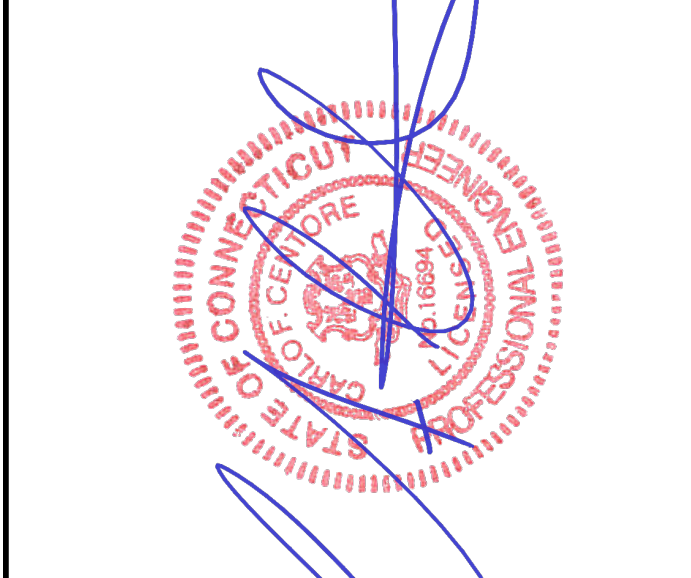
3



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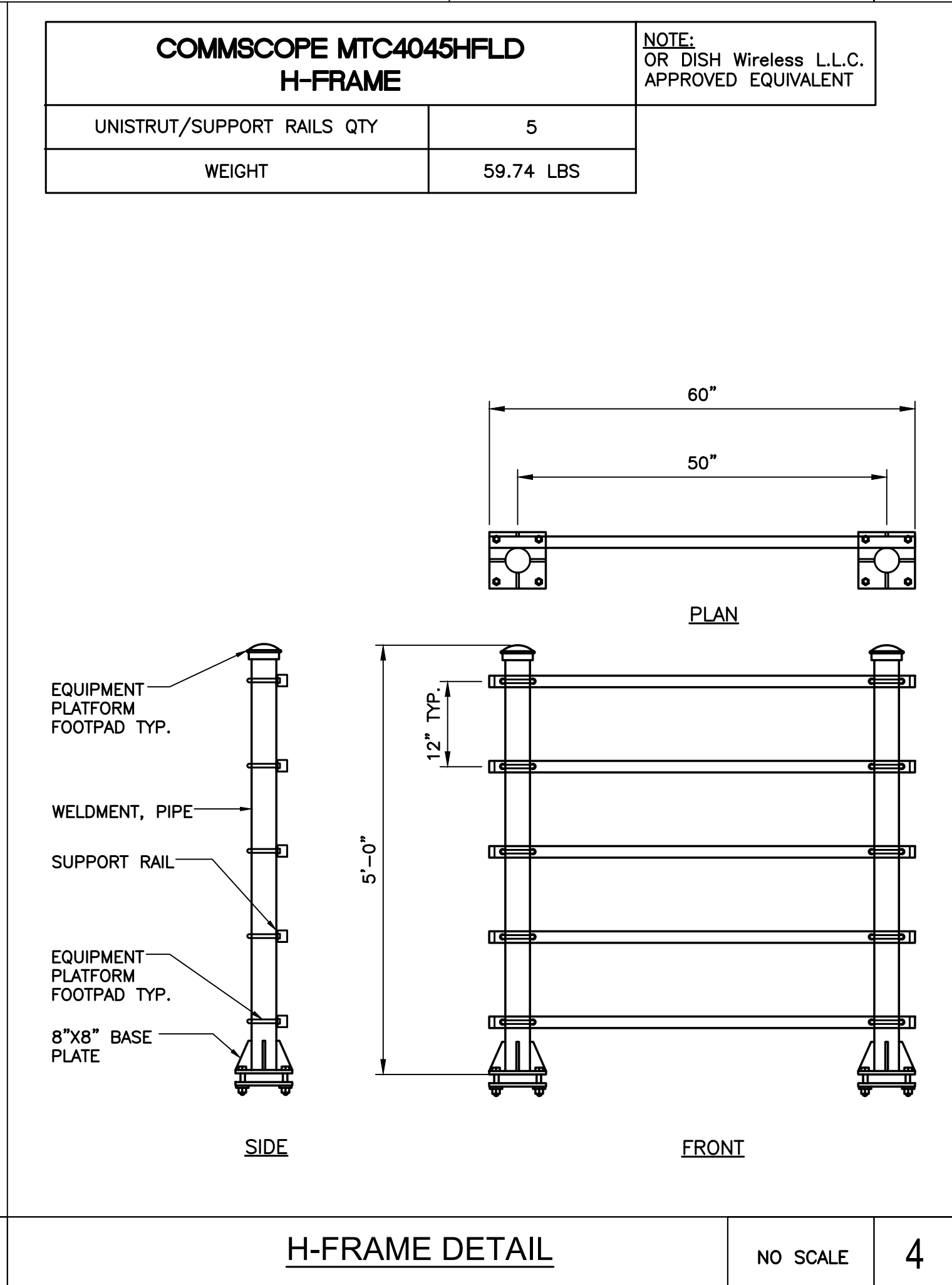
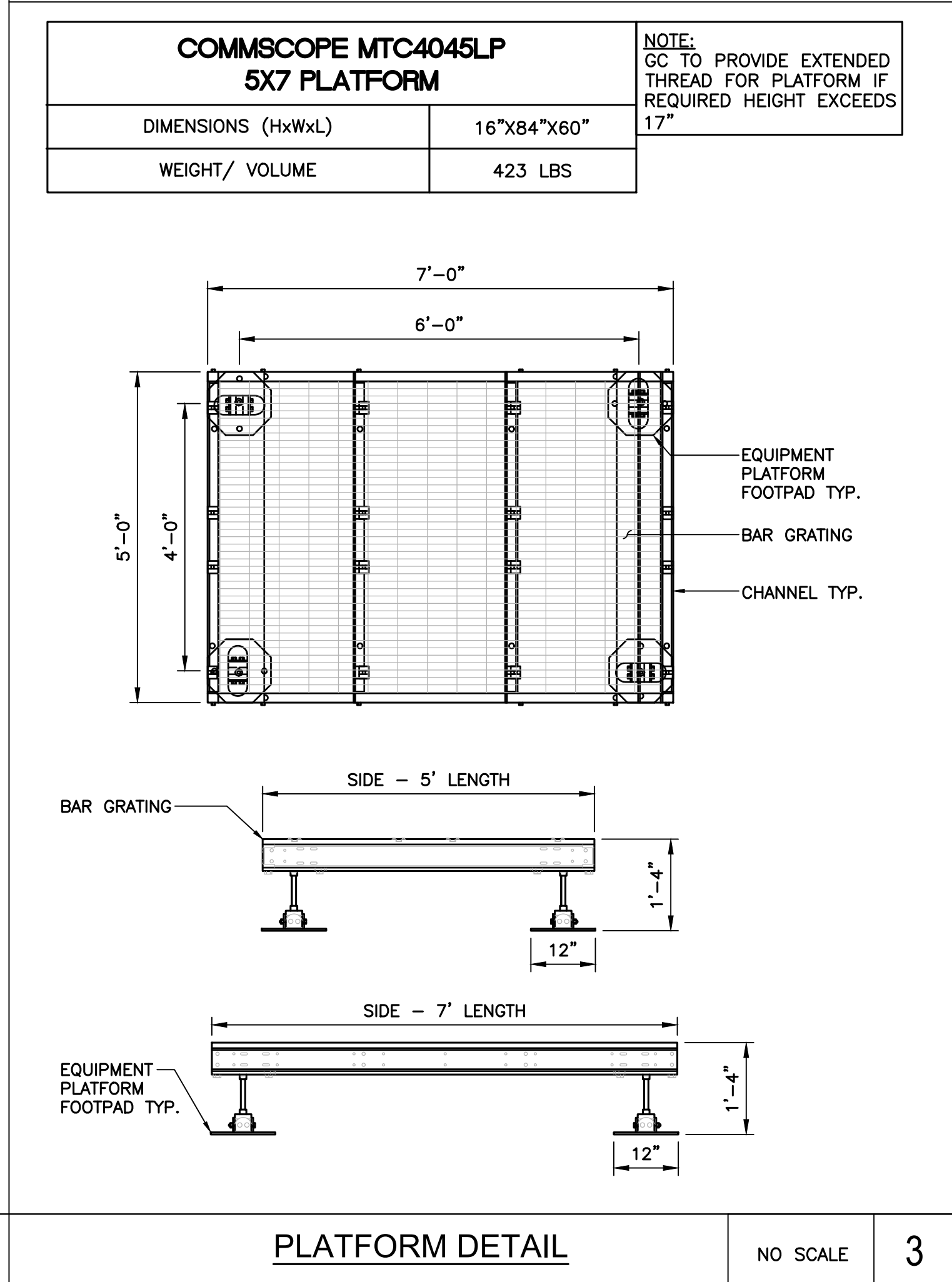
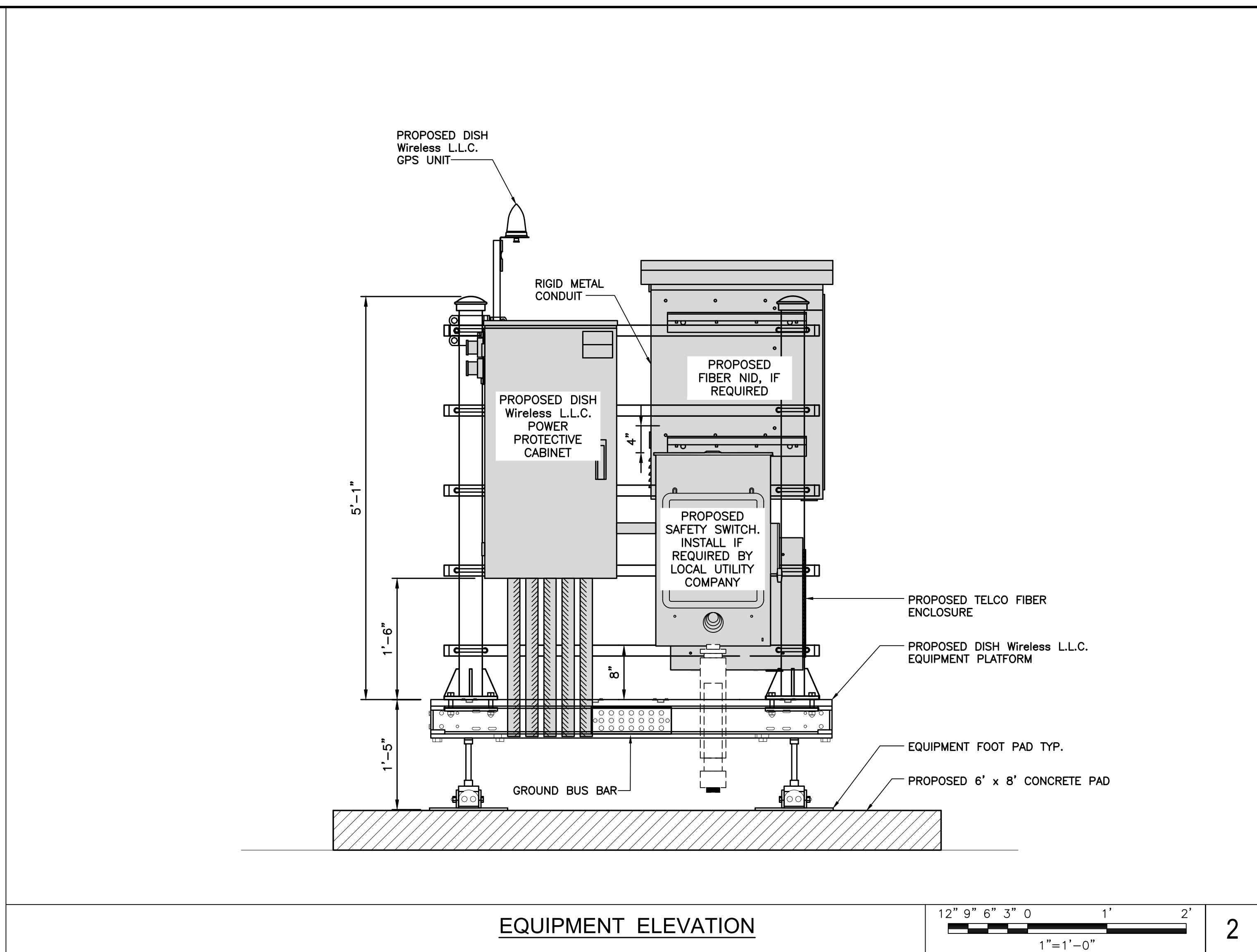
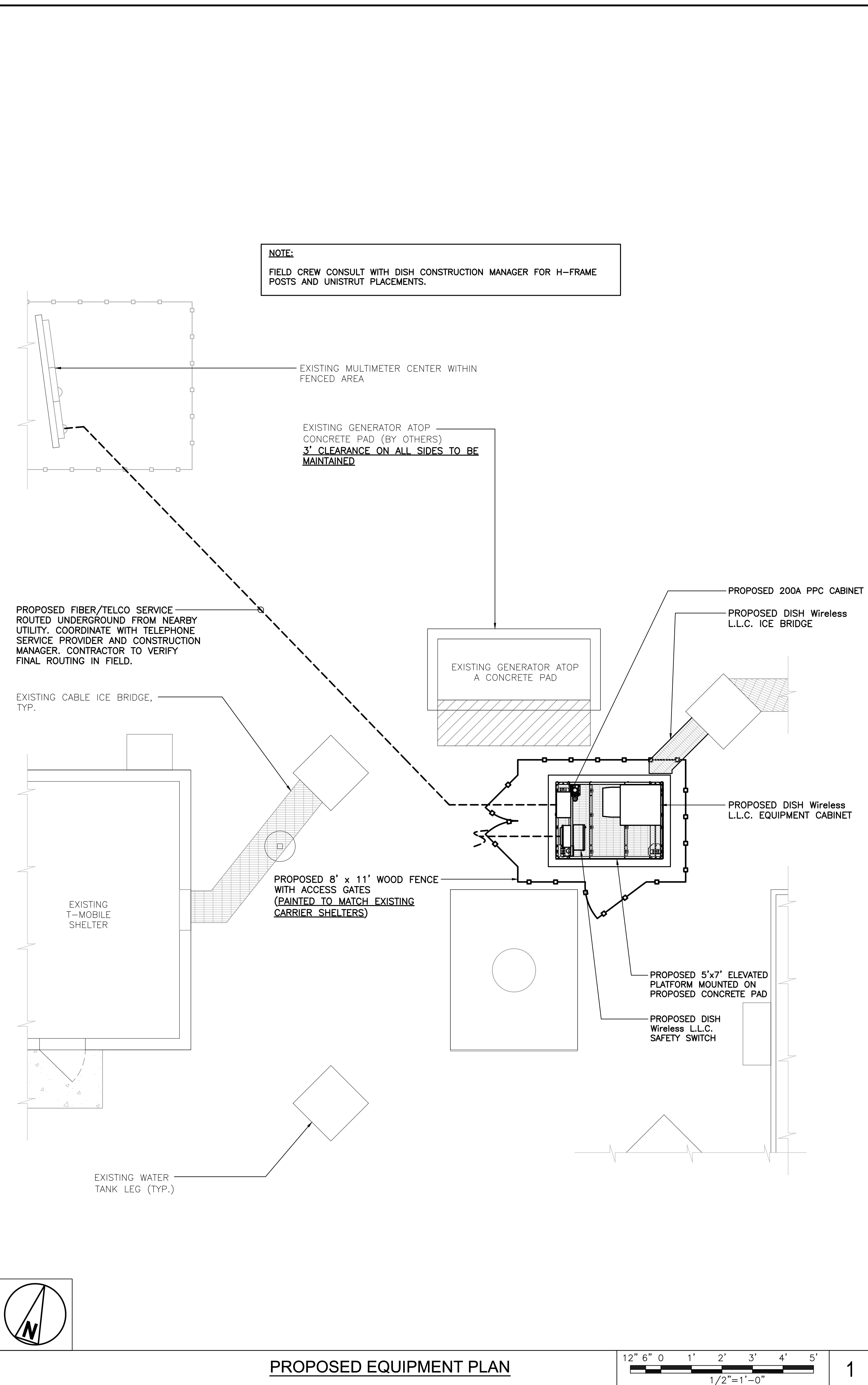
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DISH Wireless L.L.C.
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BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
ELEVATION, ANT. LAYOUT
AND SCHEDULE

SHEET NUMBER
C-2



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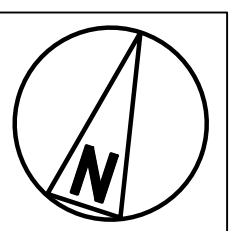
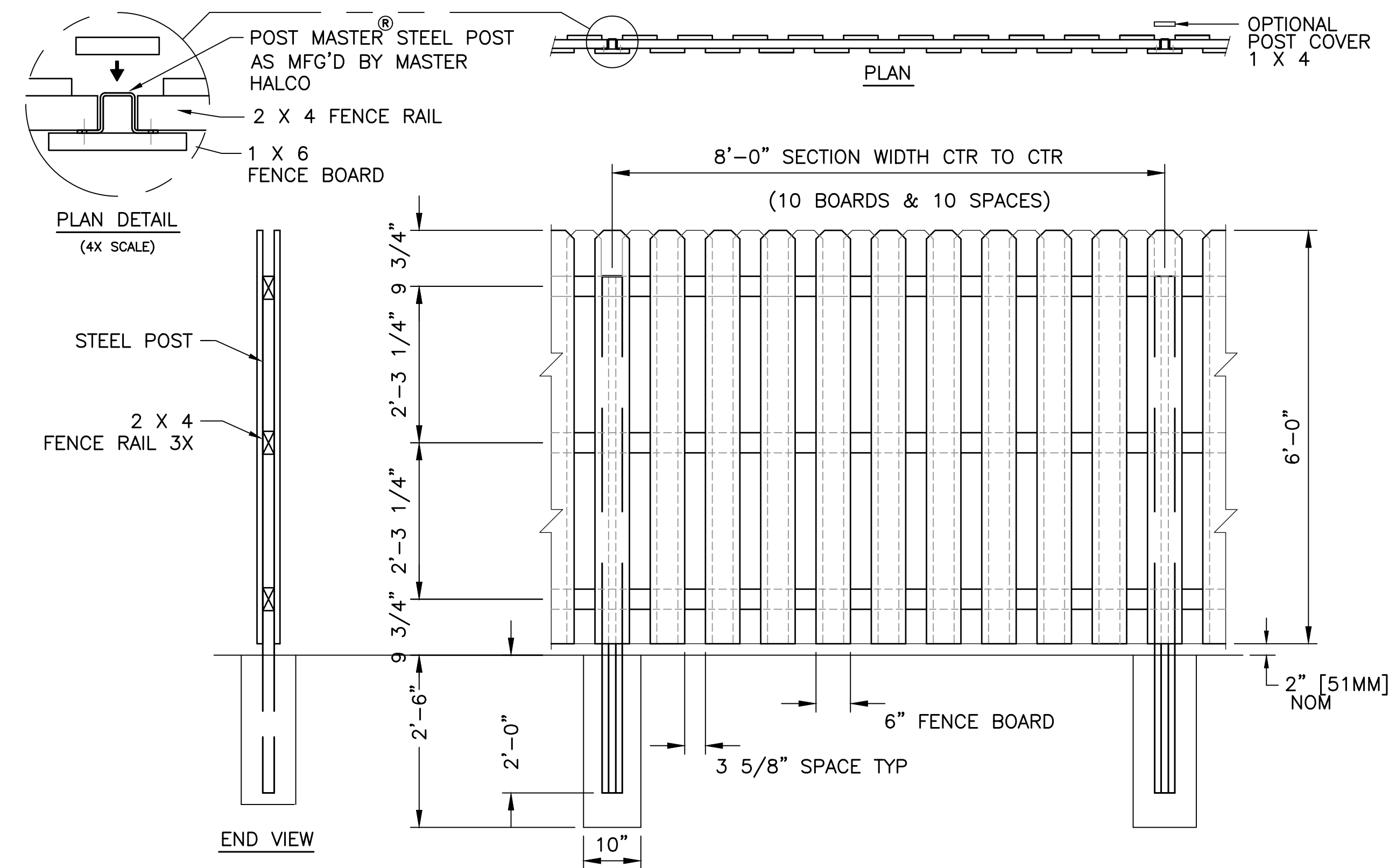
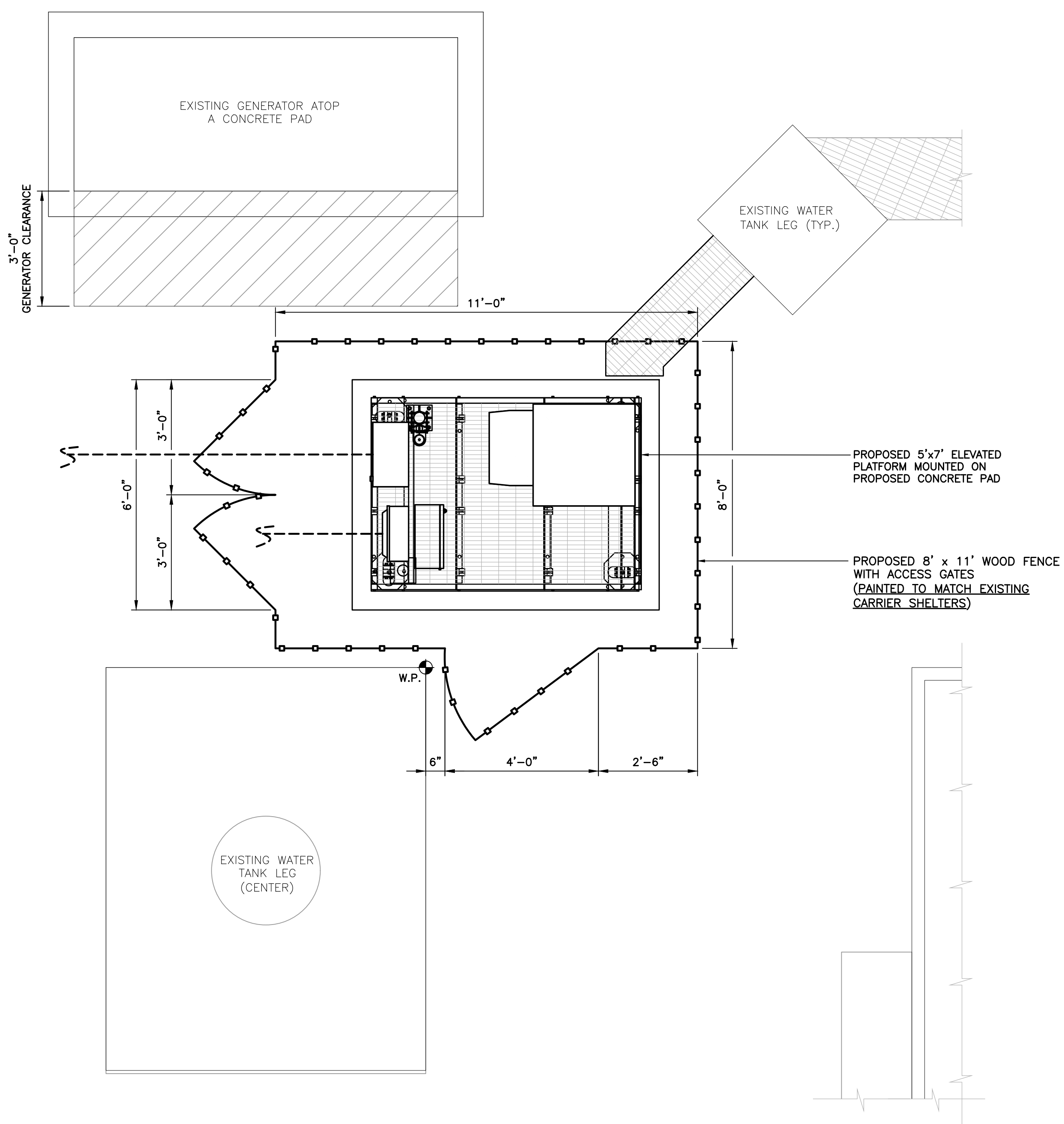
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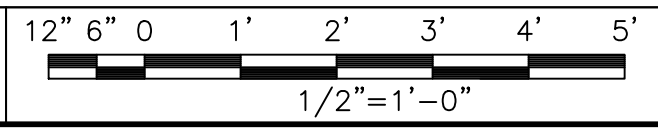
SHEET TITLE
EQUIPMENT PLATFORM
AND H-FRAME DETAILS

SHEET NUMBER
C-3

- FENCE NOTES:**
1. ALL STEEL FENCE GATE COMPONENTS SHALL BE GALVANIZED. STEEL FENCE GATE MEMBERS SHALL BE SHOP WELDED AND GALV'D AFTER FABRICATION.
 2. ALL WOOD COMPONENTS SHALL BE WHITE CEDAR. DIMENSIONS SHOWN ARE NOMINAL.
 3. ALL METAL FENCE POSTS AND ASSOCIATED ACCESSORIES AND SCREWS ARE TO BE POST MASTER BY MASTER HALCO OR APPROVED EQUAL.
 4. ALL VERTICAL GATE FRAMING MEMBERS SHALL HAVE 1/4" WELDED END PLATE CAPS.
- WOOD FENCE COMPONENT FINISH:**
- ALL WOOD COMPONENTS TO RECEIVE MINIMUM (2) COATS OF VALSPAR PREMIUM PENETRATING OIL DECK & SIDING TONER OR APPROVED EQUAL. FIRST COAT TO BE APPLIED PRIOR TO ASSEMBLY. APPLY COATING PER MANUFACTURER'S WRITTEN RECOMMENDATIONS.
- FASTENERS:**
- WOOD-TO-STEEL: 1 1/2" LNG #8-25 GA., FLUSH HEAD HILTI KWIK-PRO GALV'D SELF-DRILLING SCREWS (2 SCREWS AT EA. RAIL LOCATION, TYP.)
- WOOD-TO-WOOD: REFER TO POST MASTER BY HALCO FOR REQUIRED FASTENERS.



EQUIPMENT LOCATION PLAN



1

WOOD FENCE DETAIL

NO SCALE

2



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6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
ENLARGED EQUIPMENT PLAN
AND FENCE DETAIL

SHEET NUMBER
C-4

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

TOP

SIDE

FRONT

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

TOP

BACK

SIDE

FRONT

SIDE

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

PLAN

SIDE

BACK

SIDE

FRONT

SAFETY SWITCH DETAIL NO SCALE 1

POWER PROTECTIVE CABINET DETAIL NO SCALE 2

CABINET DETAIL NO SCALE 3

SITEPROT: CABLE LADDER	
DIMENSIONS (LxW) (PER CABLE LADDER SECTION)	237.5" x 29.5"
WEIGHT/ VOLUME	81.5 LBS
CABLE RUN (QTY)	9
MODEL	WCL9

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

TOP

BACK

SIDE

MINIMUM OF 75% OR 270° IN ANY DIRECTION

GPS

GPS UNIT

OBSTRUCTIONS MUST BE BELOW 10°

CABLE LADDER DETAIL NO SCALE 4

GPS DETAIL NO SCALE 5

GPS MINIMUM SKY VIEW REQUIREMENTS NO SCALE 6

CHARLES CFIT-PF2020D5H1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4

FRONT

SIDE

BACK

FRONT

1.75"φ

27" MIN BEND RADIUS

CU12PSM6P4XXX (4 AWG CONDUCTORS)

1.60"φ

24" MIN BEND RADIUS

CU12PSM9P6XXX (6 AWG CONDUCTORS)

1.41"φ

22" MIN BEND RADIUS

CU12PSM9P8XXX (8 AWG CONDUCTORS)

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

PLAN

FRONT

SIDE

BACK

FIBER TELCO ENCLOSURE DETAIL NO SCALE 7

CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUS NO SCALE 8

FIBER NID ENCLOSURE DETAIL NO SCALE 9

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Turnkey Wireless Development

CEN^{TEK}engineering
Centered on Solutions™

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63-2 North Branford Road
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BSP	TJR	

RFDS REV #: 1 - 07/28/2023

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	08/18/23	ISSUED FOR CLIENT REVIEW
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C	11/01/23	REVISED PER CLIENT COMMENTS
D	11/22/23	ISSUED FOR CONSTRUCTION

CEN^{TEK} PROJECT NUMBER
23009.05

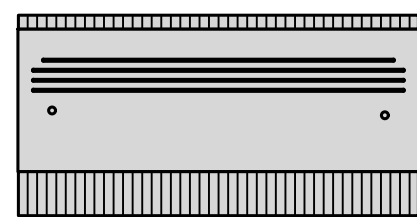
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
TYPICAL EQUIPMENT
DETAILS

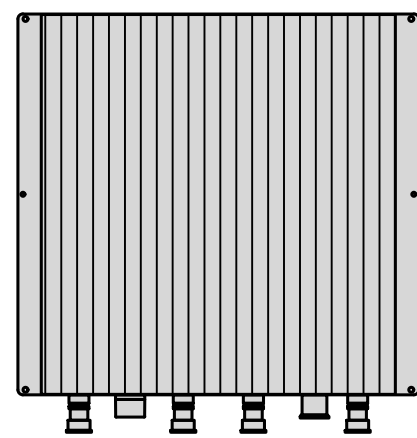
SHEET NUMBER
C-5

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

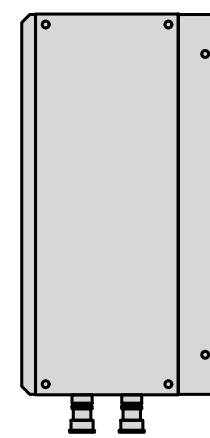


PLAN

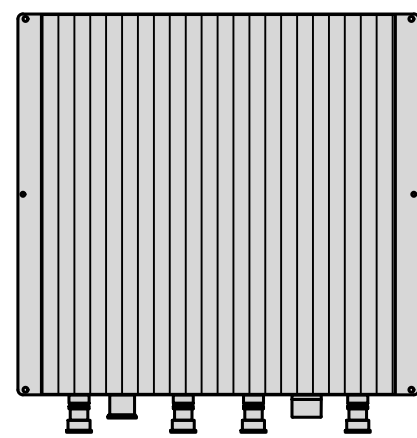
NOTE:
ALL VISIBLE RRH'S SHALL BE WRAPPED IN CONCEALFAB MMW VINYL FILM WRAP (PART #900864-99 OR APPROVED EQUAL



BACK



SIDE

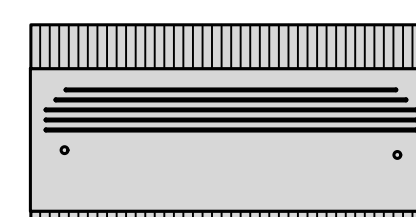


FRONT

RRH DETAIL

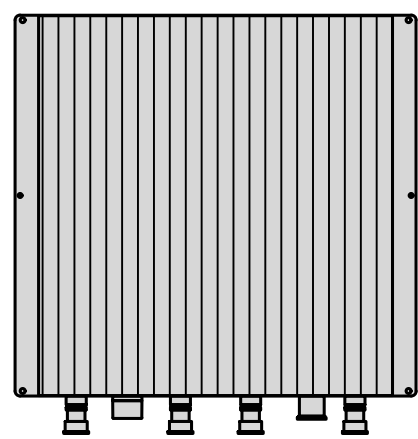
NO SCALE 1

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

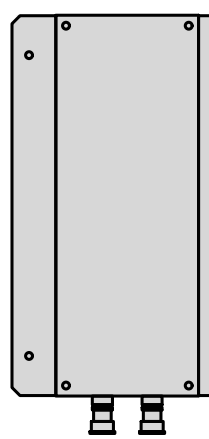


PLAN

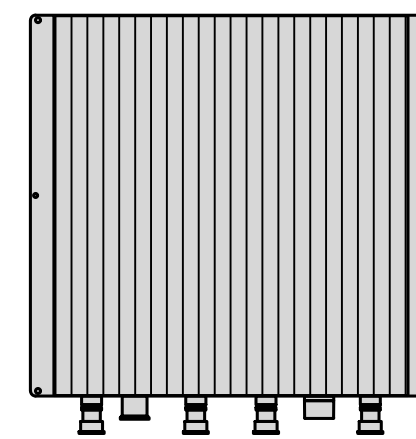
NOTE:
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BACK



SIDE



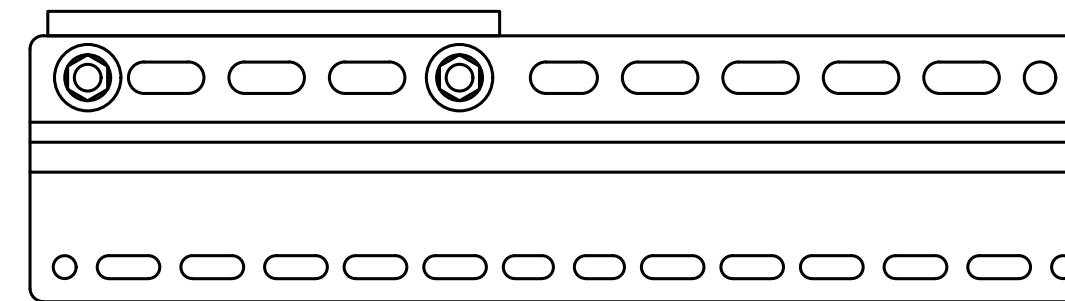
FRONT

RRH DETAIL

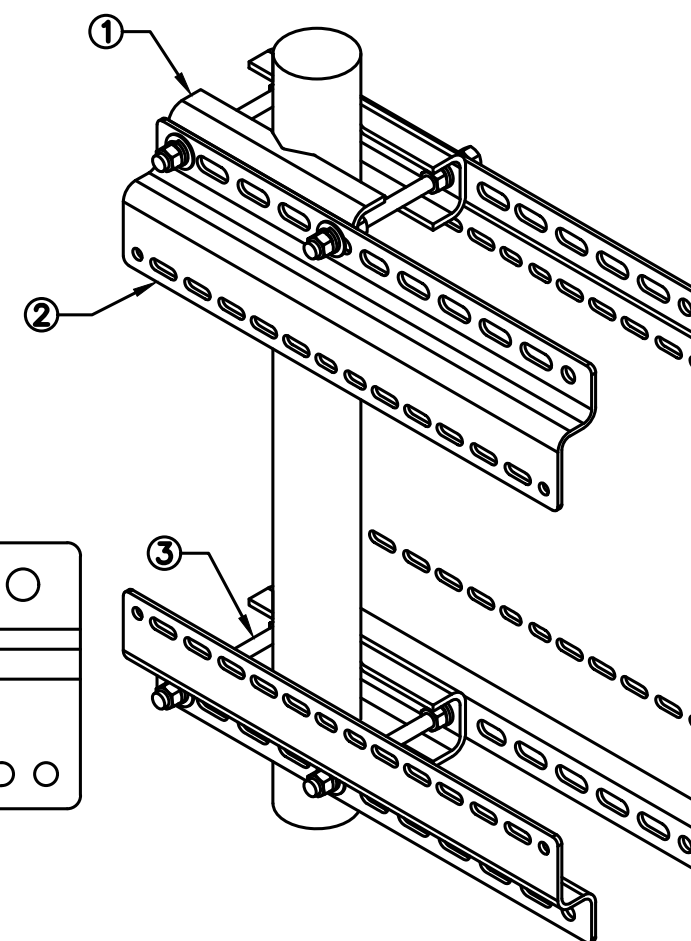
NO SCALE 2

SABRE DOUBLE Z-BRACKET C1023155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

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



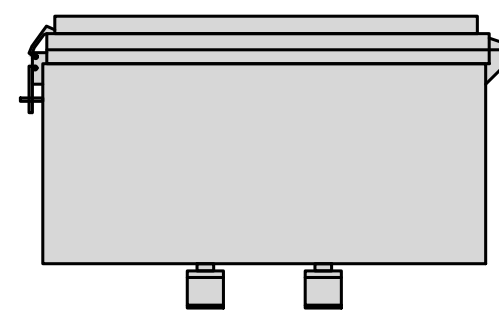
NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT



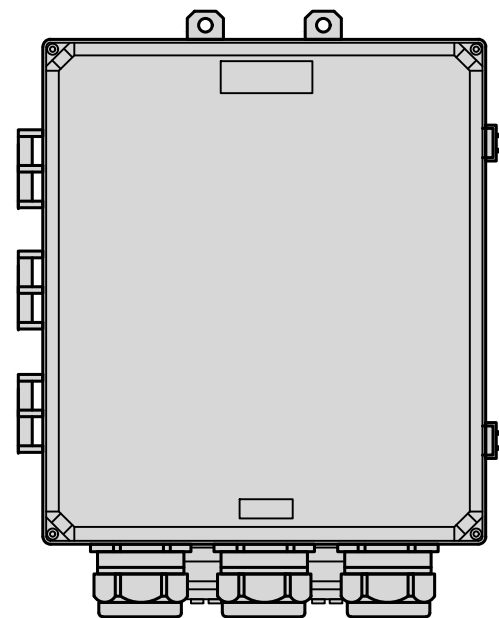
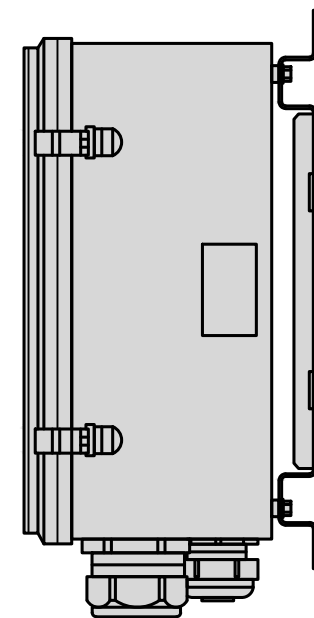
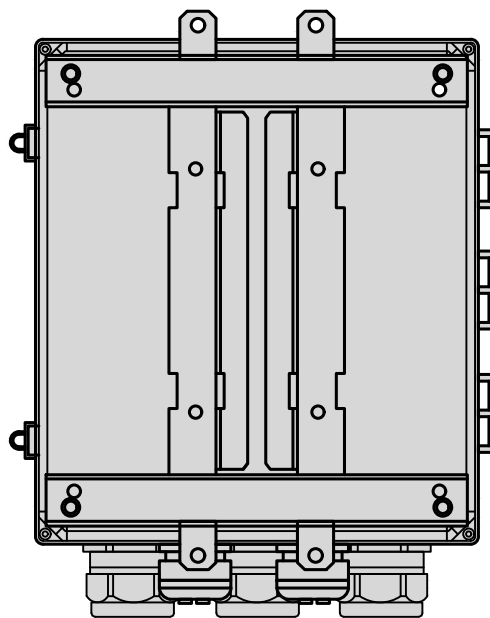
RRH MOUNT DETAIL

NO SCALE 3

RAYCAP RDIDC-9181-PF-48 SURGE PROTECTION DEVICE (OVP)	
DIMENSIONS (HxWxD)	18.97"x16.21"x9.64"
WEIGHT	21 lbs



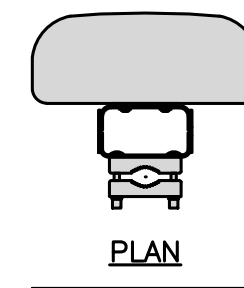
PLAN



SURGE PROTECTION DEVICE DETAIL (OVP)

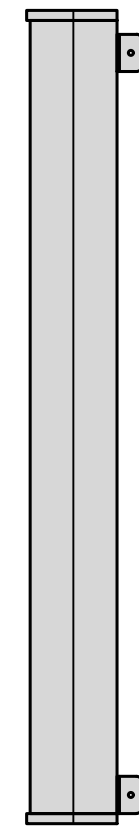
NO SCALE 4

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

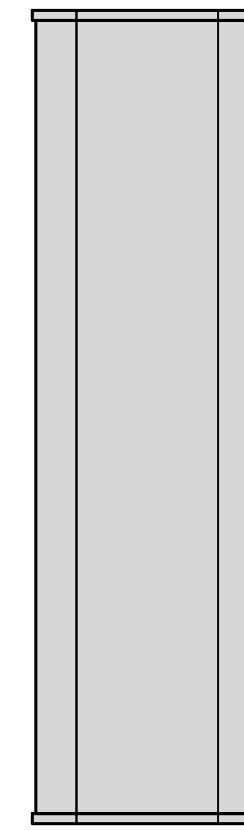


PLAN

NOTE:
ALL VISIBLE ANTENNAS SHALL BE WRAPPED IN CONCEALFAB MMW VINYL FILM WRAP (PART #900864-99 OR APPROVED EQUAL



SIDE



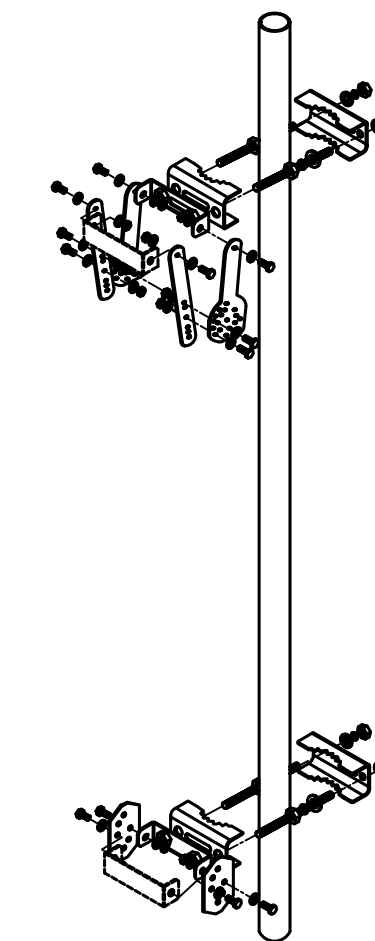
FRONT

ANTENNA DETAIL

NO SCALE 5

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

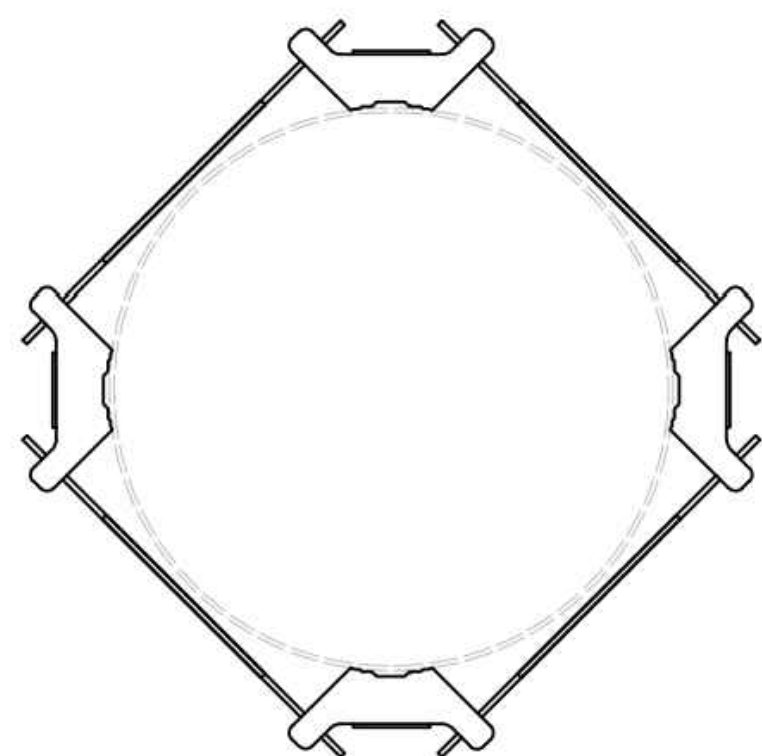
NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-, 6-, AND 8-FOOT ANTENNAS
ANTENNA BRACKET NOT PART OF KIT



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

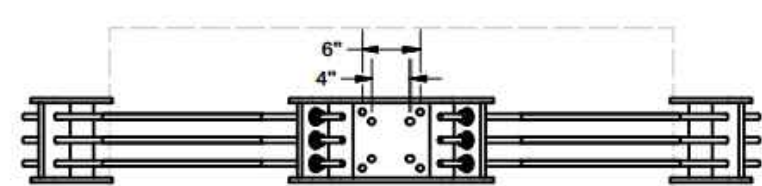
ANTENNA BRACKET DETAIL

NO SCALE 6



SITEPRO: UQB4
QUAD UNIVERSAL RING MOUNT

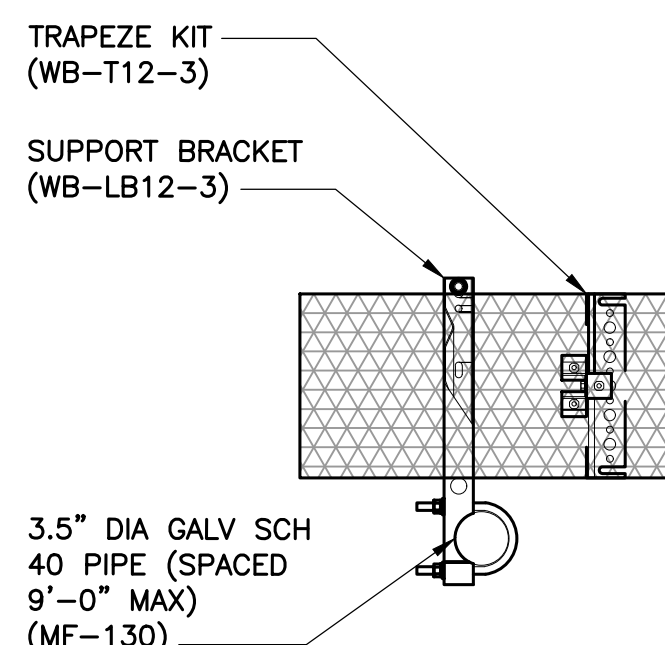
NOTE:
SEE SHEET S-1 FOR ADDITIONAL DETAILS



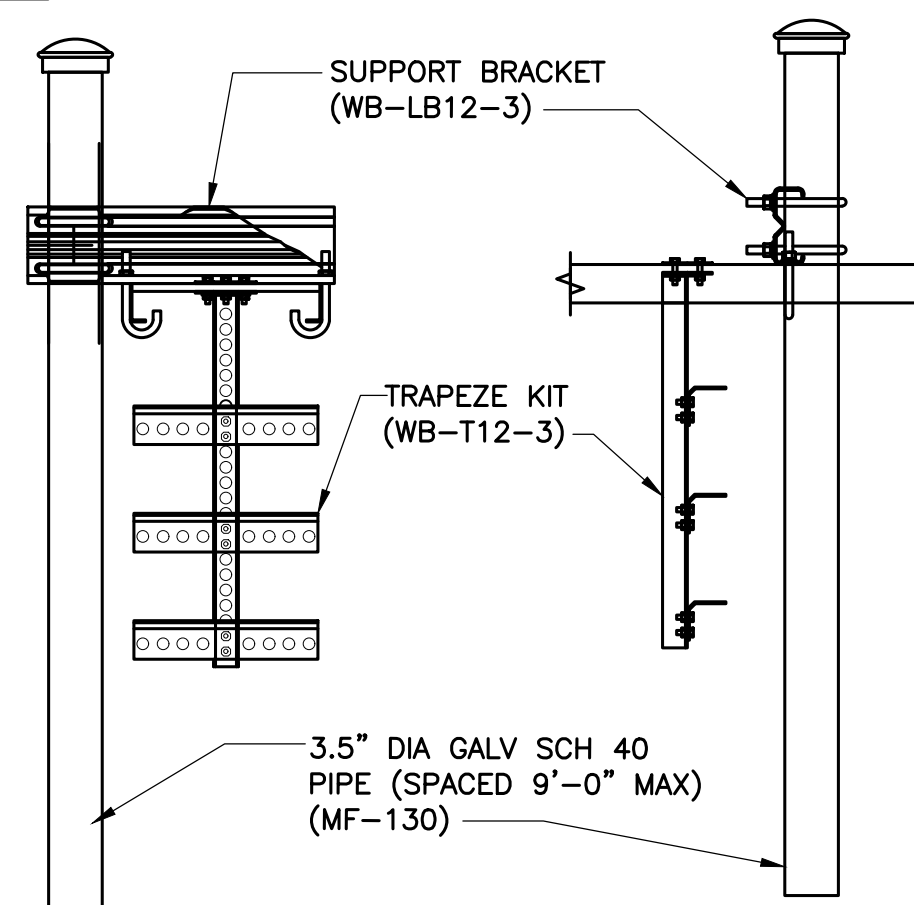
ANTENNA RING MOUNT DETAIL

NO SCALE 7

COMMSCOPE: WB-K110-B WAVEGUIDE BRIDGE KIT		INCLUDED PRODUCTS:
DIMENSIONS (HxL)	160"x10"	WB-T12-3 TRAPEZE KIT, 3 RUNGS
WEIGHT/VOLUME	325 lbs	WB-LB12-3 SUPPORT BRACKET
CABLE RUN (QTY)	12	MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"

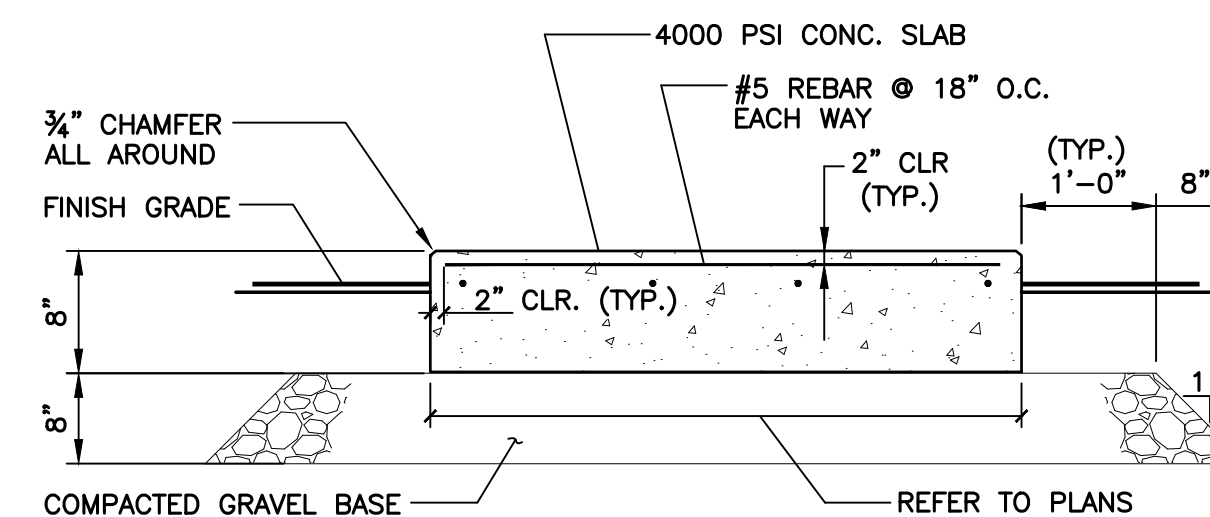


3.5" DIA GALV SCH 40 PIPE (SPACED 9'-0" MAX) (MF-130)



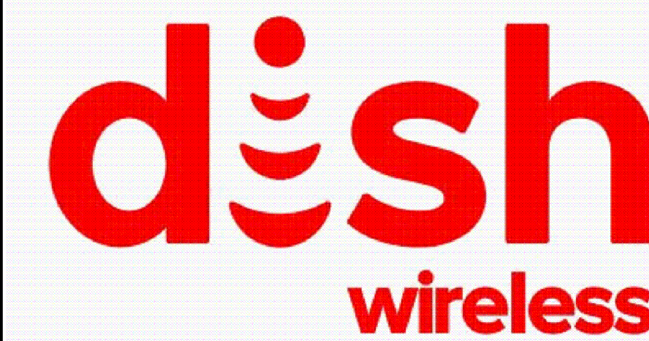
ICE-BRIDGE DETAIL

NO SCALE 8



CONCRETE PAD DETAIL

NO SCALE 9



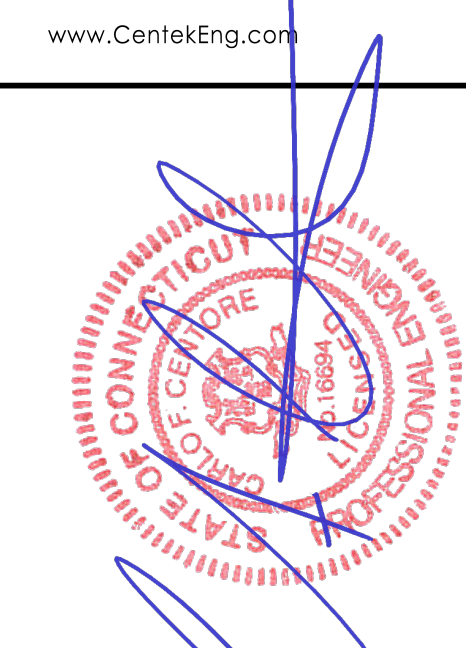
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



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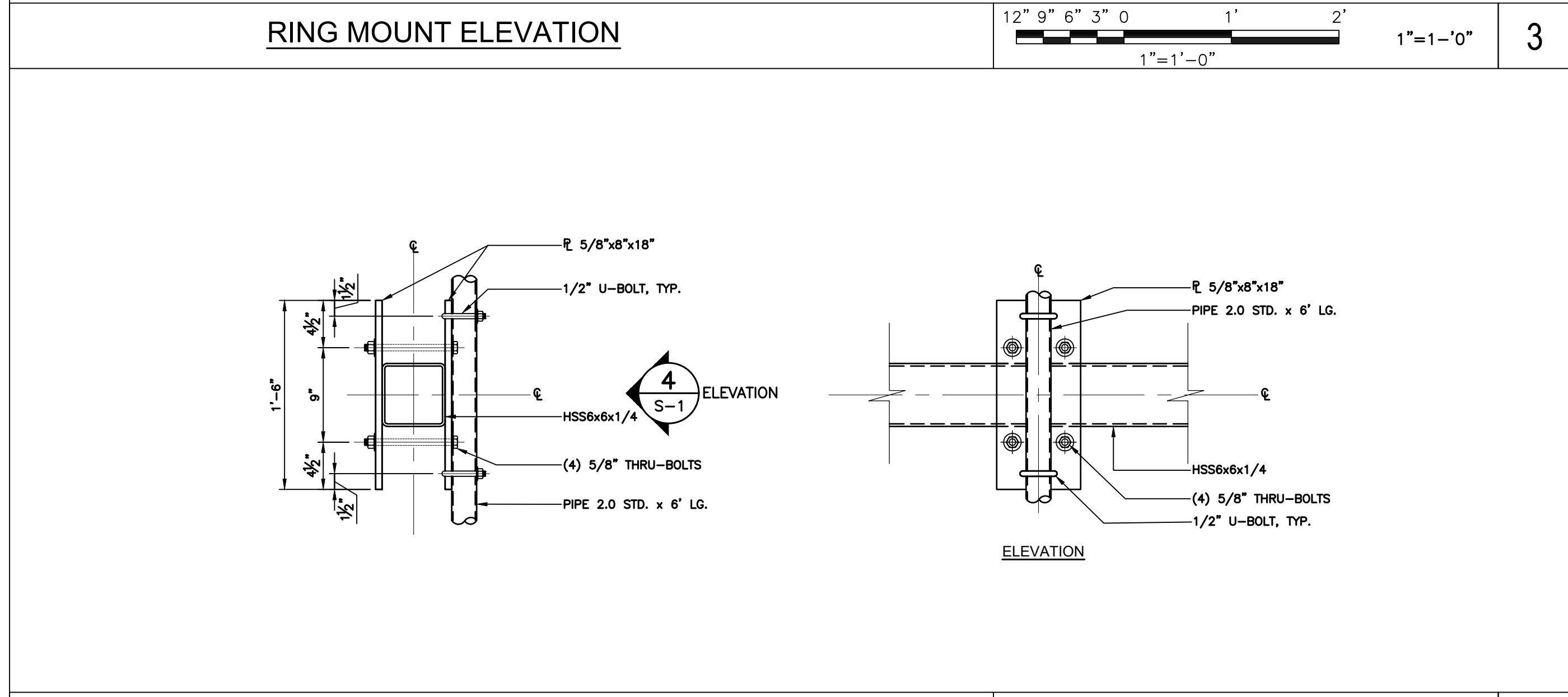
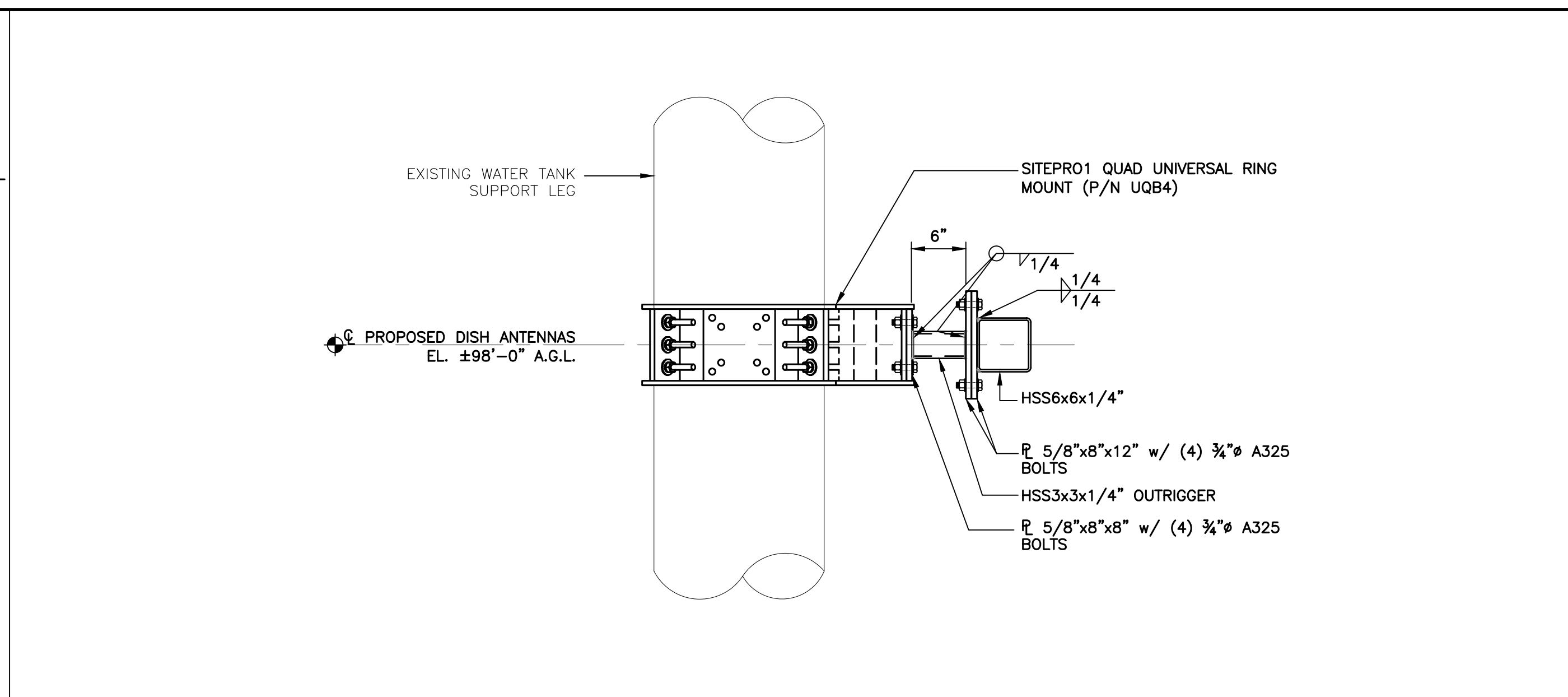
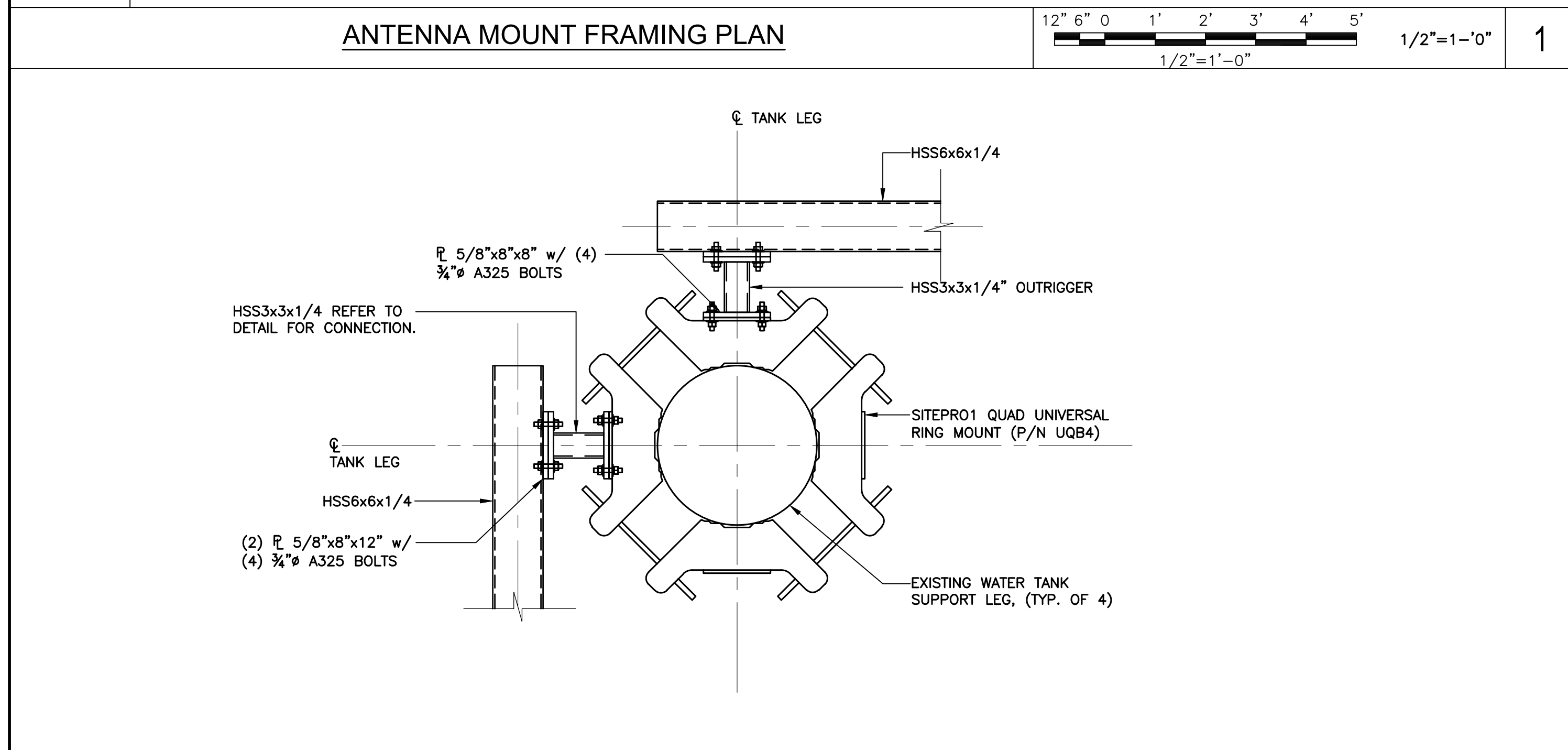
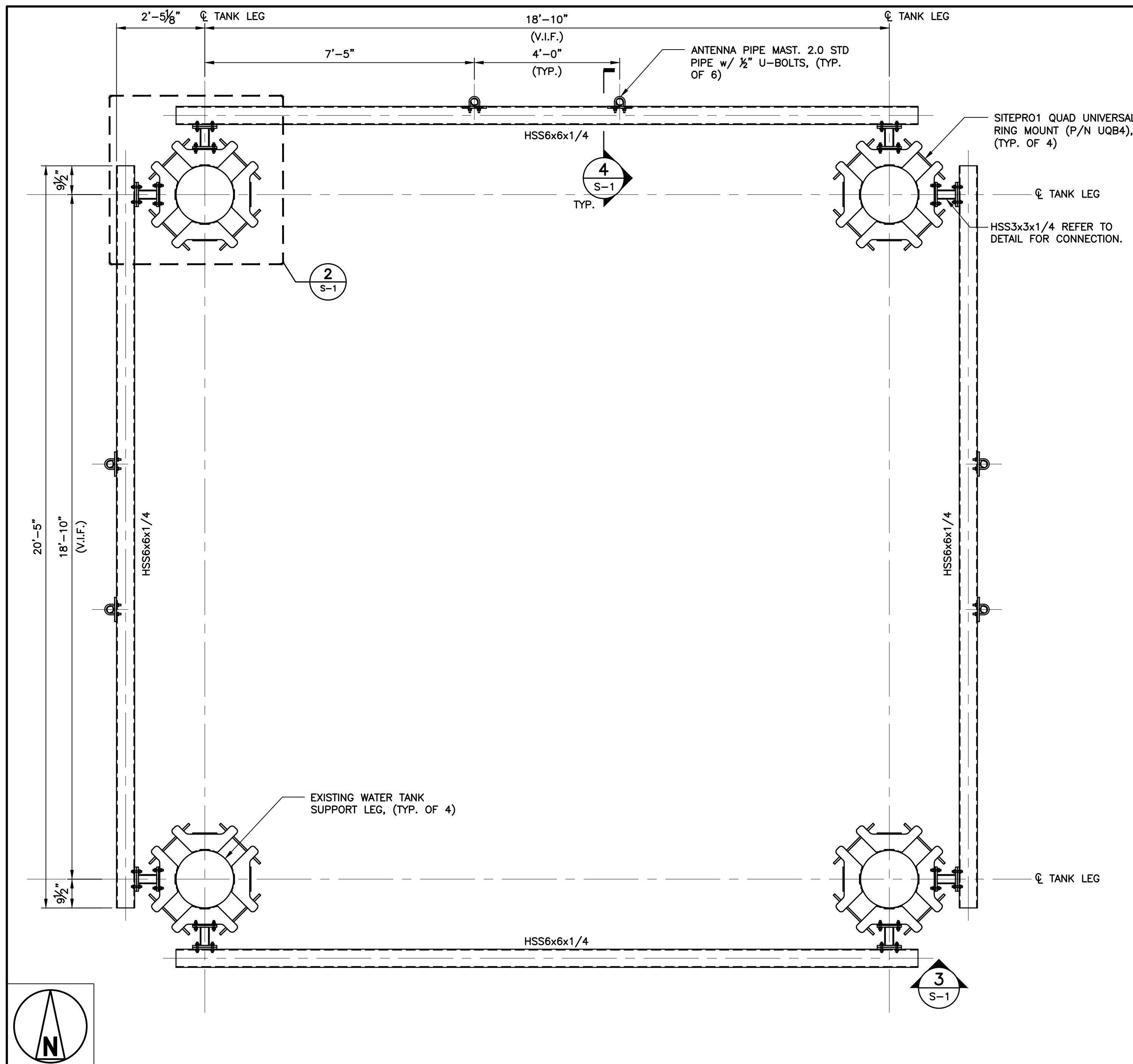
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
TYPICAL EQUIPMENT
DETAILS

SHEET NUMBER

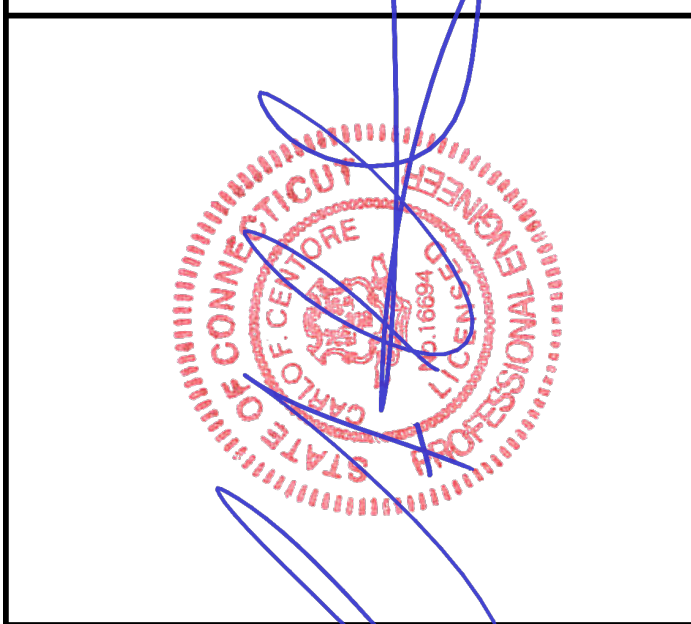
C-6



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DISH Wireless L.L.C.
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BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
STRUCTURAL FRAMING
PLAN & DETAILS

SHEET NUMBER
S-1



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

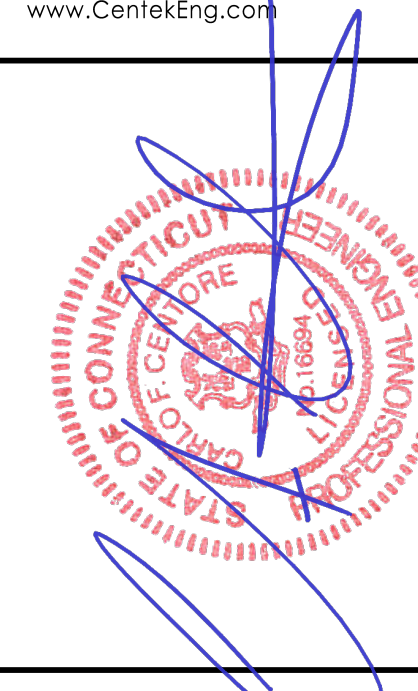


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Turning Wireless Development

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DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
BILL OF MATERIALS

SHEET NUMBER

BOM-1

BILL OF MATERIALS

ALPHA SECTOR						
QTY	PROFILE	GRADE	LENGTH	UNIT WEIGHT (lbs)	TOTAL WEIGHT (lbs)	COMMENTS
(4)	FL1 3/8"x8"	A36	1'-6"	25.5	102	
(2)	PIPE 2.0 STD	A53	6'-0"	22	44	
				TOTAL 48 (lbs)	TOTAL 146 (lbs)	
(4)	SITEPRO1 (P/N UB1212)					(HARDWARE INCLUDED)

QTY	ALL BOLTS ARE TO BE GALVANIZED	WEIGHT (lbs)
(8)	THREADED ROD 5/8" DIA A307 0'-9"	5
		TOTAL 5 (lbs)
(16)	WASHERS 5/8" HARDENED PLAIN	
(16)	NUT 5/8" HEAVY HEX	

BETA SECTOR						
QTY	PROFILE	GRADE	LENGTH	UNIT WEIGHT (lbs)	TOTAL WEIGHT (lbs)	COMMENTS
(4)	FL1 3/8"x8"	A36	1'-6"	25.5	102	
(2)	PIPE 2.0 STD	A53	6'-0"	22	44	
				TOTAL 48 (lbs)	TOTAL 146 (lbs)	
(4)	SITEPRO1 (P/N UB1212)					(HARDWARE INCLUDED)

QTY	ALL BOLTS ARE TO BE GALVANIZED	WEIGHT (lbs)
(8)	THREADED ROD 5/8" DIA A307 0'-9"	5
		TOTAL 5 (lbs)
(16)	WASHERS 5/8" HARDENED PLAIN	
(16)	NUT 5/8" HEAVY HEX	

GAMMA SECTOR						
QTY	PROFILE	GRADE	LENGTH	UNIT WEIGHT (lbs)	TOTAL WEIGHT (lbs)	COMMENTS
(4)	FL1 3/8"x8"	A36	1'-6"	25.5	102	
(2)	PIPE 2.0 STD	A53	6'-0"	22	44	
				TOTAL 48 (lbs)	TOTAL 146 (lbs)	
(4)	SITEPRO1 (P/N UB1212)					(HARDWARE INCLUDED)

QTY	ALL BOLTS ARE TO BE GALVANIZED	WEIGHT (lbs)
(8)	THREADED ROD 5/8" DIA A307 0'-9"	5
		TOTAL 5 (lbs)
(16)	WASHERS 5/8" HARDENED PLAIN	
(16)	NUT 5/8" HEAVY HEX	

NOTE:

1. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF NOTED SIZES AND QUANTITIES BASED ON FIELD VERIFICATION AND FINAL APPROVED STEEL FABRICATOR SHOP DRAWINGS. NO FABRICATION IS TO PROCEED WITHOUT PRIOR REVIEW AND APPROVAL OF STEEL SHOP DRAWINGS BY THE E.O.R.
2. REFER TO GN-1 FOR ALL MATERIAL SPECIFICATIONS.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PROVIDING ANY AND ALL FLASHING/ROOFING REQUIREMENTS FOR STRUCTURAL MEMBER PENETRATING THE HOST BUILDING ENVELOPE.
4. LENGTH IS CONTINGENT ON SPACING BETWEEN WATER TOWER LEGS DUE TO LEG TAPER. VERIFY IN FIELD PRIOR TO DETAILING AND MEMBER FABRICATION.

BILL OF MATERIALS

MULTI SECTOR MOUNTING FRAME						
QTY	PROFILE	GRADE	LENGTH	WEIGHT (lbs)	TOTAL WEIGHT (lbs)	COMMENTS
(8)	FL2 3/8"x8"	A36	0'-8"	11.3	90	
(16)	FL3 3/8"x8"	A36	1'-0"	17	272	
(4)	HSS6x6x1/4	A500 GR. B	20'-5"	388.3	1553	REFER TO NOTE 4.
(8)	HSS3x3x1/4	A500 GR. B	0'-6"	4.4	35	
				TOTAL 421 (lbs)	TOTAL 1950 (lbs)	
(4)	SITEPRO1 QUAD UNIVERSAL RIN MOUNT (P/N UQB4)					(HARDWARE INCLUDED)

QTY	ALL BOLTS ARE TO BE GALVANIZED	WEIGHT (lbs)
(32)	BOLT 3/4" DIA A325 0'-2 1/4"	19.7
(32)	BOLT 3/4" DIA A325 0'-2 1/2"	20.7
		TOTAL 45.4 (lbs)
(64)	WASHERS 3/4" HARDENED PLAIN	
(64)	NUT 3/4" HEAVY HEX	

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4. LENGTH IS CONTINGENT ON SPACING BETWEEN WATER TOWER LEGS DUE TO LEG TAPER. VERIFY IN FIELD PRIOR TO DETAILING AND MEMBER FABRICATION.

NOTES

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

NOTE

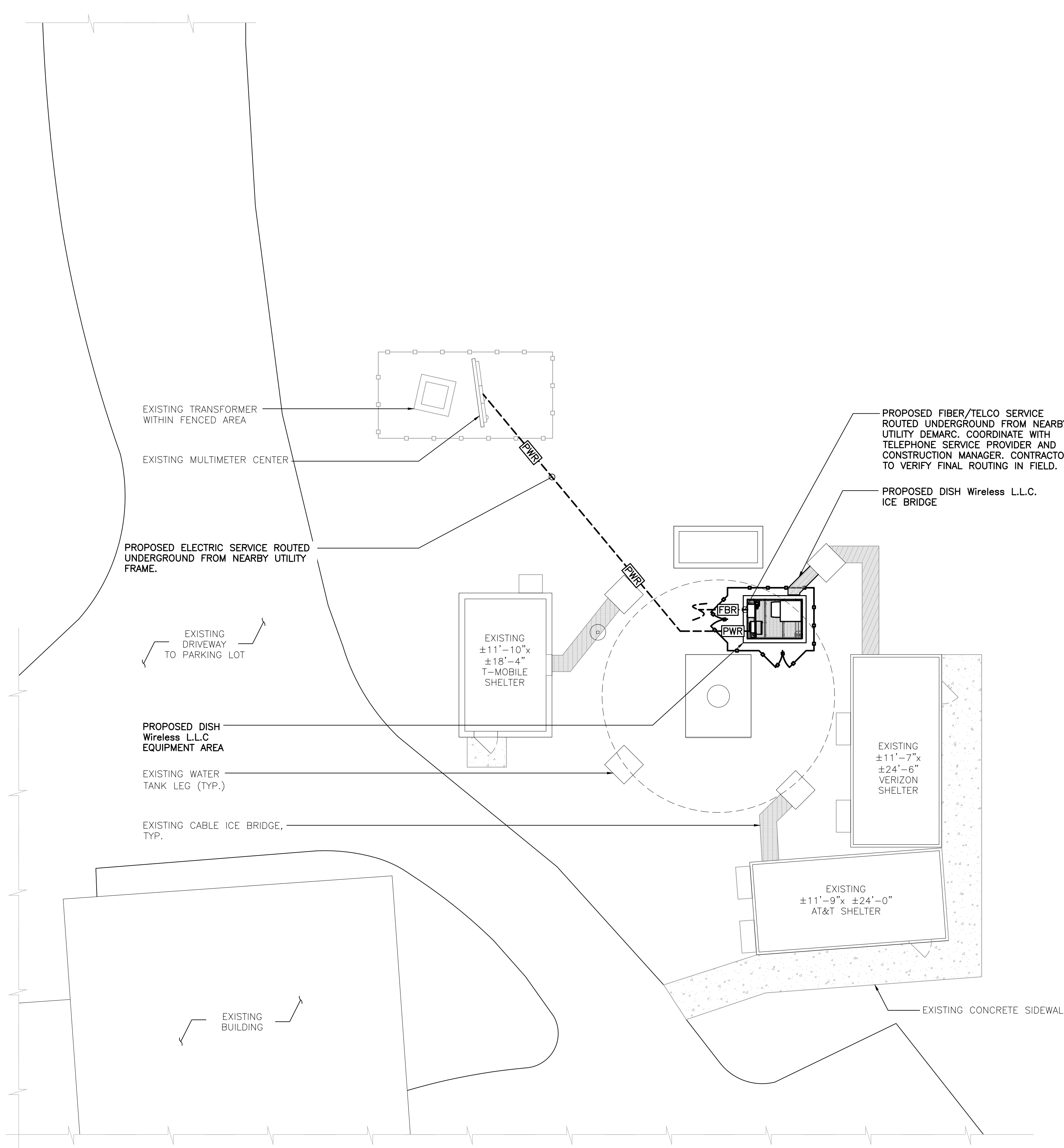
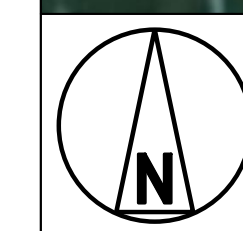
CONTRACTOR IS RESPONSIBLE TO VERIFY FINAL CONDUIT ROUTING, LENGTH OF RUN, AND FEASIBILITY.



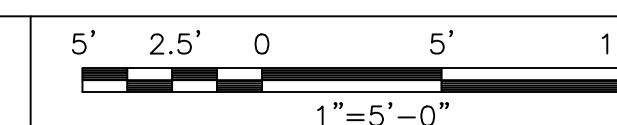
CONDUIT ROUTING AERIAL VIEW PLAN

NO SCALE

2



UTILITY ROUTING PLAN



1



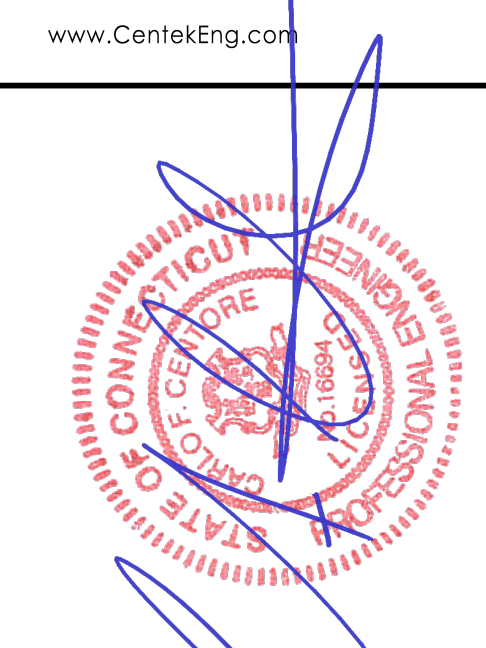
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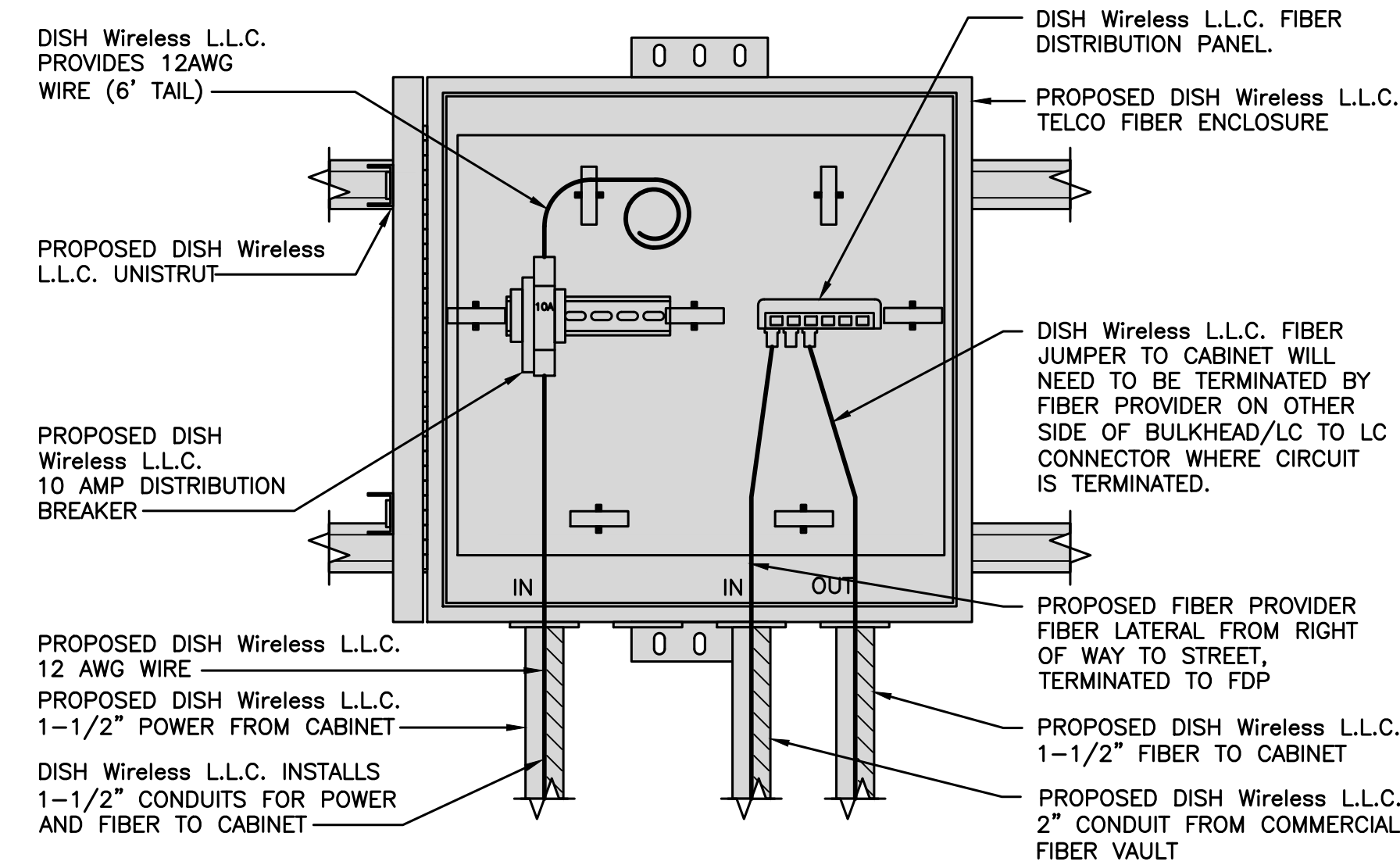
SHEET TITLE
ELECTRICAL AND FIBER
ROUTING PLAN WITH NOTES

SHEET NUMBER

E-1

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

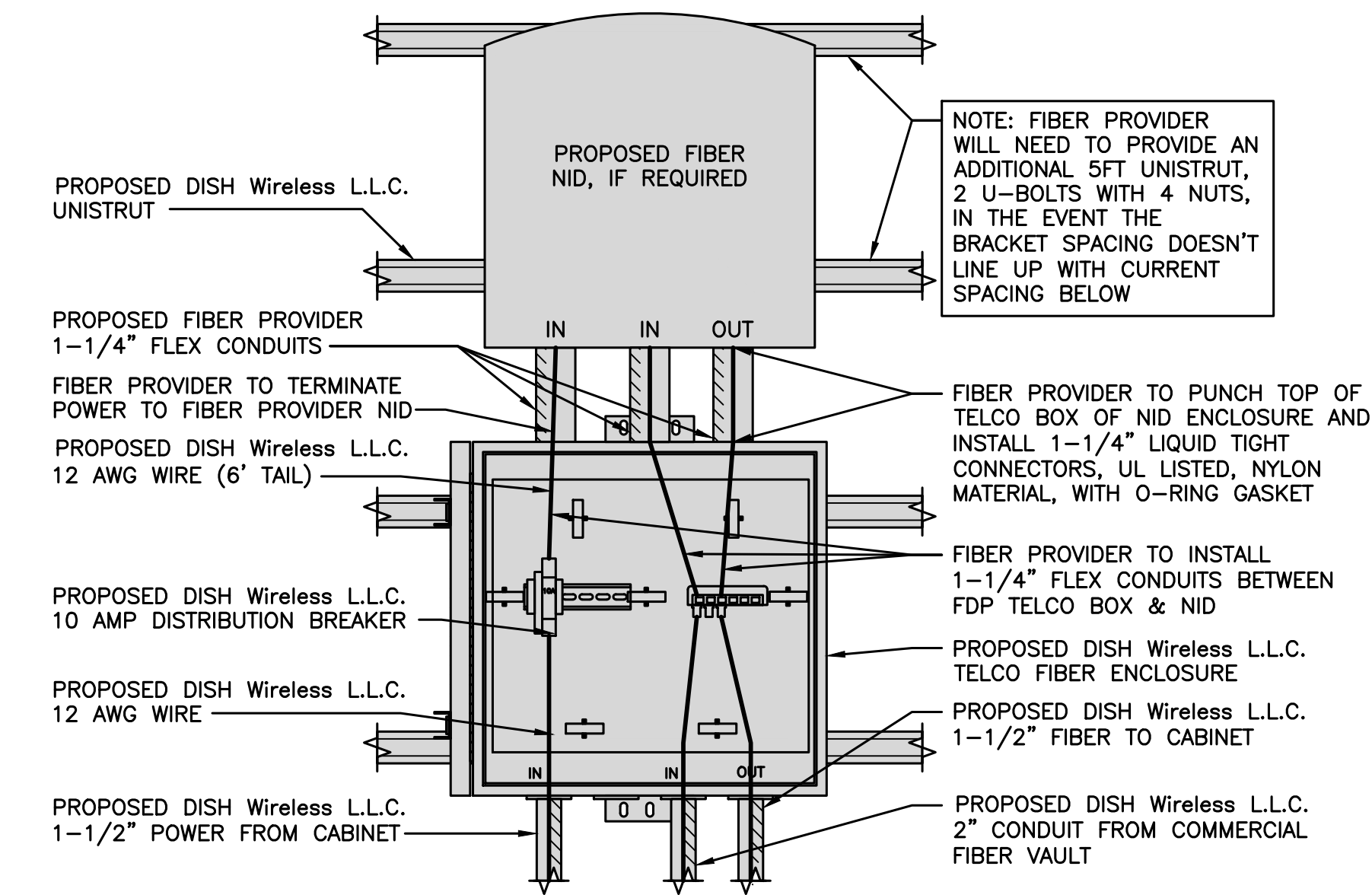
- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- 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.
- LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
- CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
- CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
- CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
- CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
- 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.
- 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.
- ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.



DARK TELCO BOX - INTERIOR WIRING LAYOUT

NO SCALE

2



LIT TELCO BOX - INTERIOR WIRING LAYOUT (OPTIONAL)

NO SCALE

3

ELECTRICAL NOTES

NO SCALE

1

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8



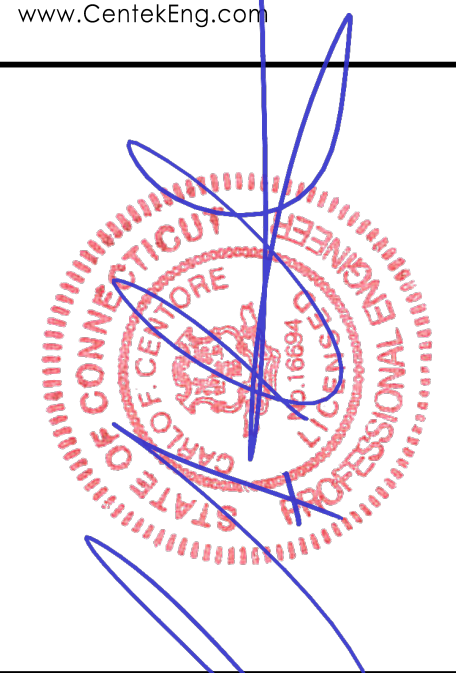
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CEN TEK PROJECT NUMBER
23009.05

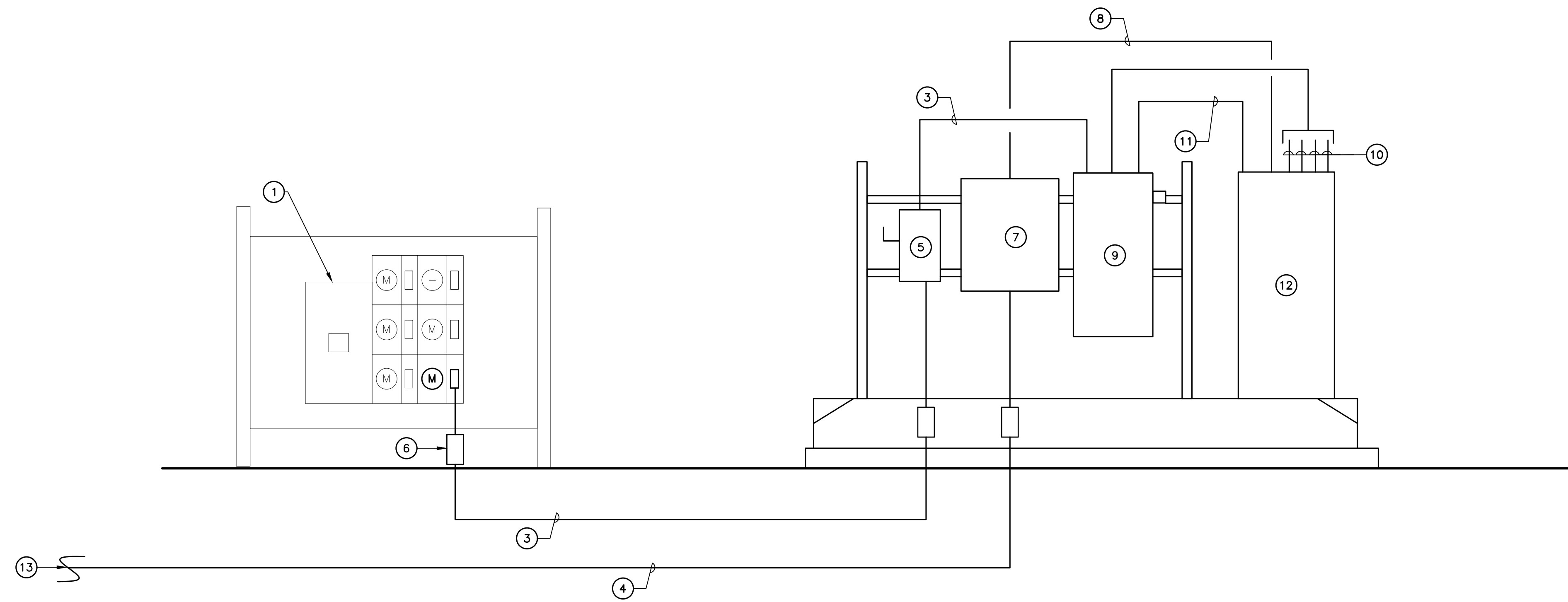
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
TELCO CABINET
DETAILS

SHEET NUMBER

E-2



RISER NOTES

- ① EXISTING 800A, TWO GANG MULTIMETER CENTER TO REMAIN. INSTALL NEW 200A, SINGLE PHASE, 240V RATED UTILITY METER WITH 200A/2P CIRCUIT BREAKER IN AVAILABLE POSITION. ALL EQUIPMENT TO BE UTILITY APPROVED.
- ② EXISTING EQUIPMENT TO REMAIN.
- ③ (3) 3/0 AWG, (1) #6 AWG GROUND, 2" CONDUIT.
- ④ (1) 4" CONDUIT WITH PULL ROPES FOR TELEPHONE COMPANY CONDUCTORS. CONDUCTORS PROVIDED BY TELEPHONE COMPANY FROM EXISTING DEMARC TO EQUIPMENT PLATFORM. PROVIDE ALL COUPLINGS, ADAPTERS, SWEEPS, AND ASSOCIATED HARDWARE. MATERIAL SHALL BE PER TELEPHONE COMPANY SPECIFICATIONS.
- ⑤ NEW HEAVY DUTY NEMA-3R, 200A/240V, NON FUSED DISCONNECT.
- ⑥ EXPANSION COUPLING TYP.
- ⑦ NEW DISH Wireless L.L.C. TELCO/FIBER CABINET.
- ⑧ CONDUITS AND CONDUCTORS FOR TELCO CONNECTION TO EQUIPMENT CABINET AS REQUIRED BY MANUFACTURER AND CONSTRUCTION MANAGER FOR PROPER OPERATION OF EQUIPMENT
- ⑨ NEW 120/240V, 200A, SINGLE PHASE PPC CABINET.
- ⑩ 4 SETS OF (3) #10 AWG, (1) #10 AWG GROUND, 3/4" CONDUIT.
- ⑪ (1) #12 AWG, (1) #10 AWG GROUND, 3/4" CONDUIT. FOR CONVENIENCE OUTLET
- ⑫ NEW DISH Wireless L.L.C. EQUIPMENT CABINET.
- ⑬ ROUTED TO EXISTING FIBER DEMARC. CONTRACTOR TO VERIFY LOCATION IN FIELD.

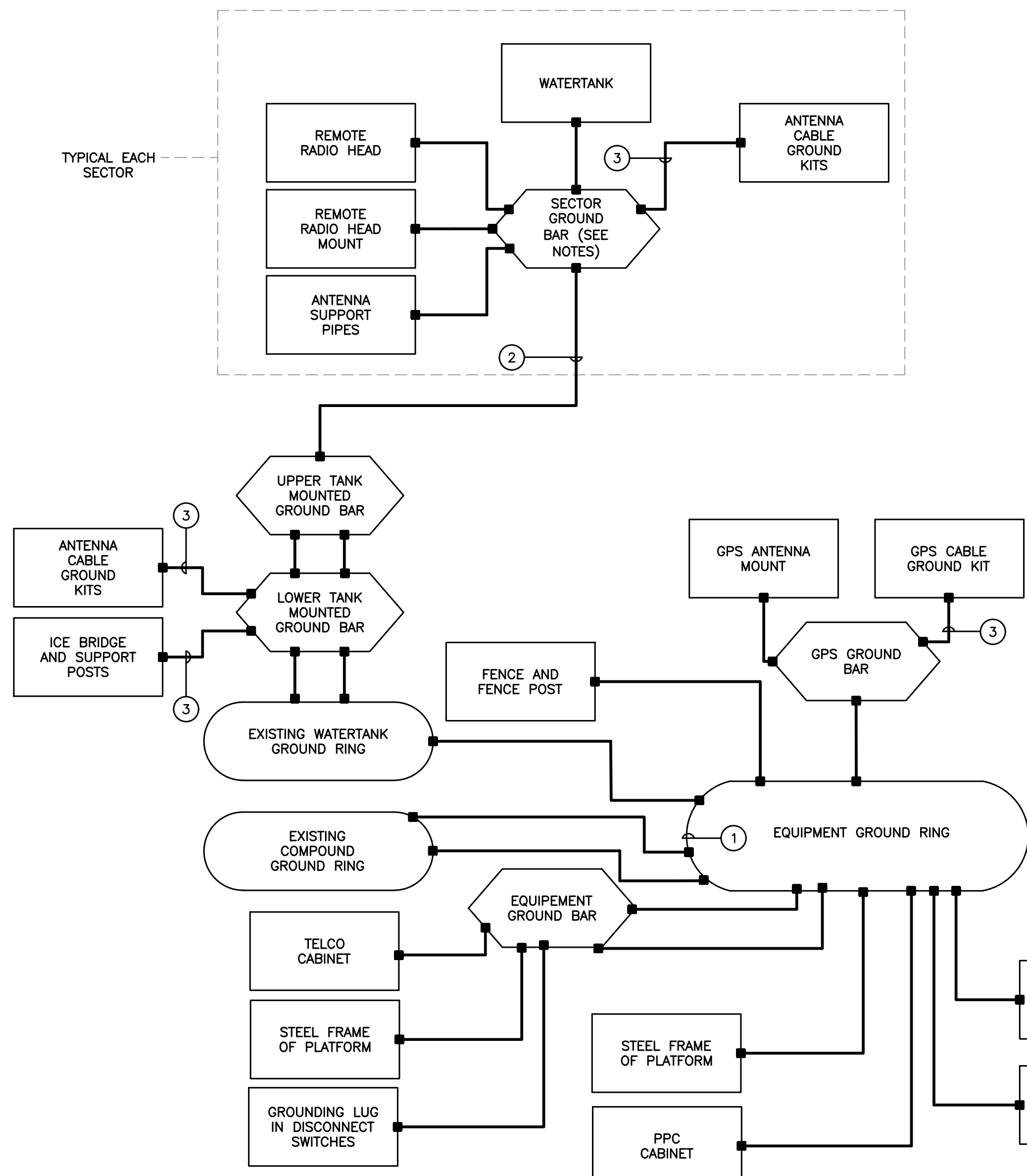
ELECTRICAL RISER DIAGRAM

NO SCALE 1

VOLTAGE:		120/240		PHASE:	1	WIRE:	3	PANEL NO.	MDP		
MAIN BUS:		200		AMPS		TOTAL WATTS, L1		11,700			
MAIN BREAKER:		200		A FRAME	200	A TRIP	TOTAL WATTS, L2		11,700	LOC:	EQUIPMENT FRAME
MOUNTING:		SURFACE		TOTAL WATTS		23,400					
NOTES: A) PPC SHALL BE 200A, 120/240V, SINGLE PHASE, 3W, 65 KAIC, 200A MCB, 24 POSITION, NEMA 3R ENCLOSURE, LAMINATED ENGRAVED BAKELITE NAMEPLATE, COPPER EQUIPMENT GROUND KIT, INSULATED COPPER SOLID NEUTRAL BAR. B) BRANCH CIRCUIT BREAKER AND CONDUCTOR SIZE BASED ON SPECIFIC EQUIPMENT. CONFIRM ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION.											
DIRECTORY	WIRE & CONDUIT	WATTS LOAD		CKT.	AMPS	L1	L2	AMPS	CKT.	WATTS LOAD	DIRECTORY
RECTIFIER #1	3/4" C, 2 #10, #10GND	2,880	2,880	1	30/2P			20	2	180	CONVENIENCE GFCI OUTLET
RECTIFIER #2	3/4" C, 2 #10, #10GND	2,880	2,880	3	30/2P			20	4	180	PPC GFCI OUTLET
RECTIFIER #3	3/4" C, 2 #10, #10GND	2,880	2,880	5	30/2P			8	6	-	SPACE
RECTIFIER #4	3/4" C, 2 #10, #10GND	2,880	2,880	7	30/2P			8	8	-	SPACE
SPACE	-	2,880	2,880	9	30/2P			10	10	-	SPACE
SPACE	-	2,880	2,880	11	30/2P			12	12	-	SPACE
SPACE	-	2,880	2,880	13	30/2P			14	14	-	SPACE
SPACE	-	2,880	2,880	15	30/2P			16	16	-	SPACE
SPACE	-	-	-	17	-			18	18	-	SPACE
SPACE	-	-	-	19	-			20	20	-	SPACE
SPACE	-	-	-	21	-			22	22	-	SPACE
SPACE	-	-	-	23	-			24	24	-	SPACE

ELECTRICAL PANEL SCHEDULE

NO SCALE 2



GROUNDING SCHEMATIC NOTES

- ① GROUND RING, #2 AWG BCW
 - ② #2/0 GREEN INSULATED
 - ③ #6 AWG
- GENERAL NOTES:
- ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
 - UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW - EXTERIOR; STRANDED GREEN INSULATED - INTERIOR).
 - BOND CABLE TRAY AND ICE BRIDGE SECTIONS TOGETHER WITH #6 AWG STRANDED GREEN INSULATED JUMPERS.
 - ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
 - BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
 - ALL BONDS TO TOWER SHALL BE MADE IN STRICT ACCORDANCE WITH SPECIFICATIONS OF TOWER MANUFACTURER OR STRUCTURAL ENGINEER.
 - REFER TO GROUNDING PLAN FOR LOCATION OF GROUNDING DEVICES.
 - REFER TO ALL ELECTRICAL AND GROUNDING DETAILS.
 - COORDINATE ALL TOWER MOUNTED EQUIPMENT WITH OWNER.
 - ALL TOWER MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
 - ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
 - COORDINATE WITH TOWER OWNER BEFORE INSTALLING ANY GROUNDING ELEMENTS ON TOWER OR BONDING TO EXISTING TOWER GROUND RING.

ELECTRICAL SCHEMATIC DIAGRAM

NO SCALE 3



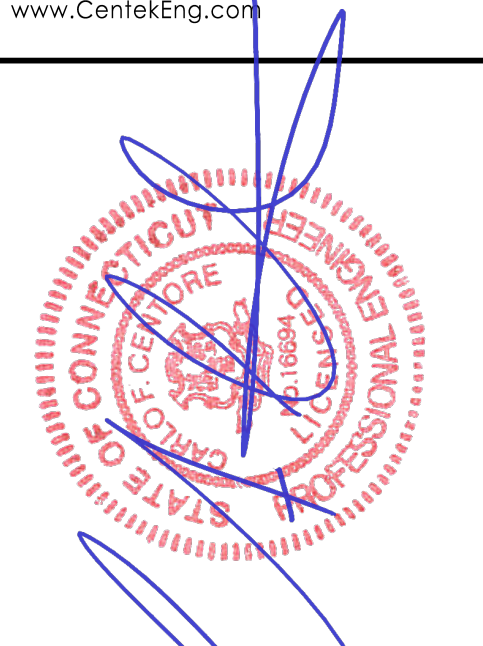
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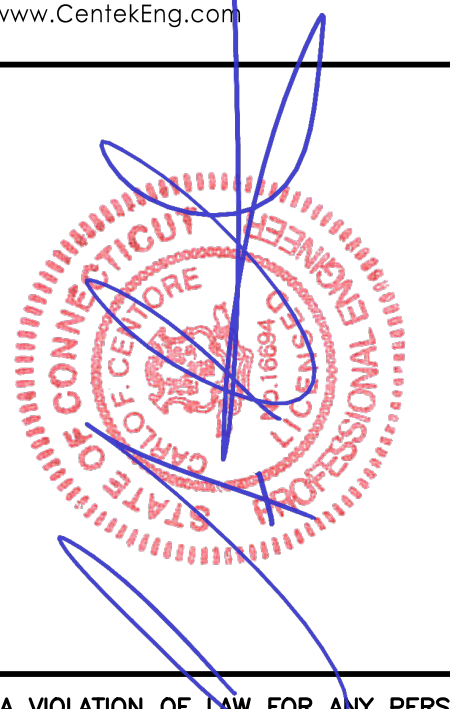
CEN TEK PROJECT NUMBER
23009.05

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
ELECTRICAL RISER, PANEL
SCHEDULE, AND SCHEMATIC

SHEET NUMBER

E-3



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CENTERBROOK CT, 06409

SHEET TITLE
COMPOUND/ANTENNA
GROUNDING PLAN AND NOTES

SHEET NUMBER

G-1

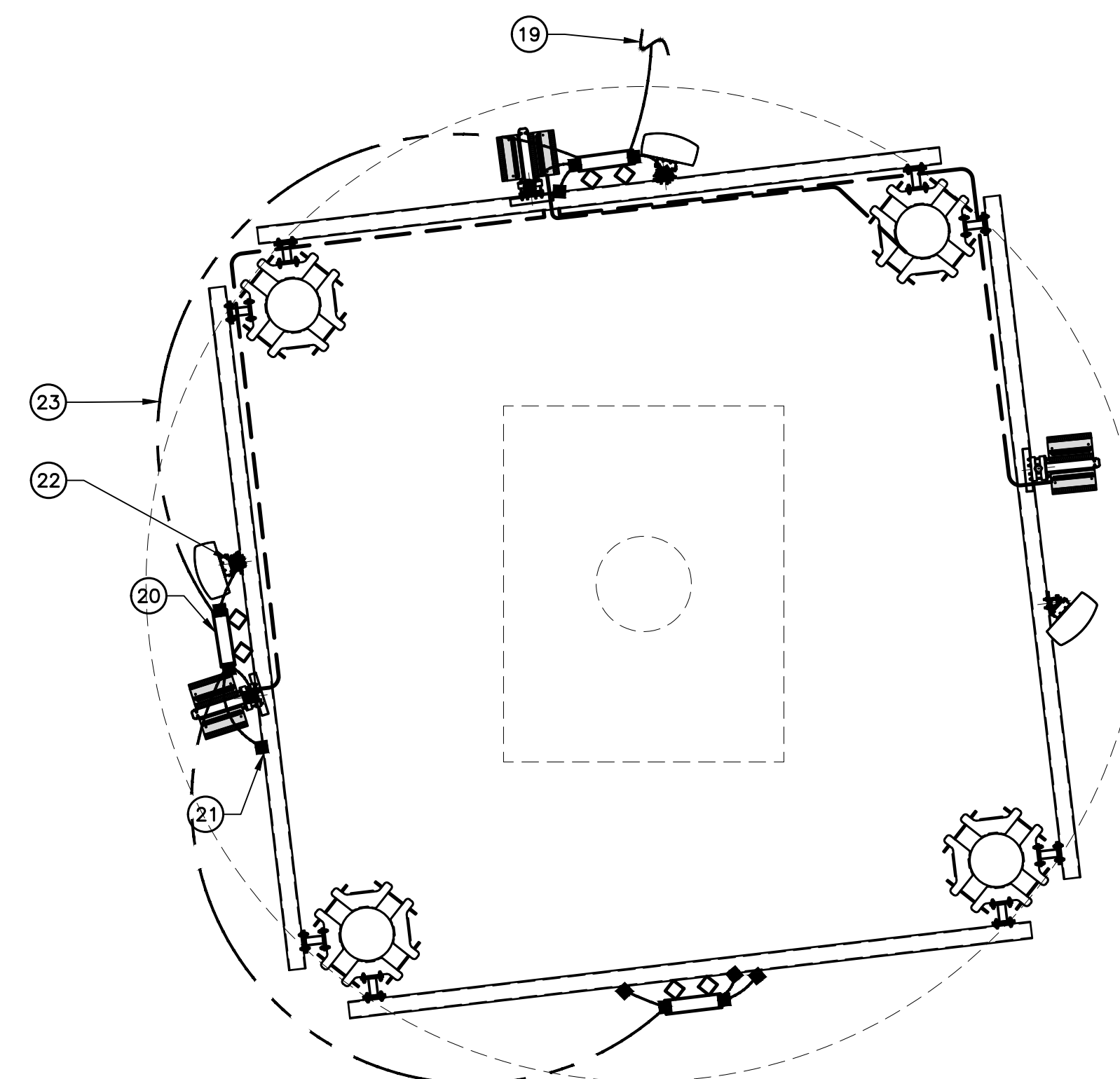
GROUNDING PLAN NOTES:

- 1 LOWER TANK LEG MOUNTED GROUND BAR.
- 2 UPPER TANK LEG MOUNTED GROUND BAR.
- 3 BOND LOWER TANK LEG MOUNTED GROUND BAR TO UPPER TANK LEG MOUNTED GROUND BAR TYP. 2 LEADS.
- 4 BOND LOWER TANK MOUNTED GROUND BAR TO GROUND ROD.
- 5 BOND LOWER TANK MOUNTED GROUND BAR TO ICE-BRIDGE POST.
- 6 CONNECT LOWER TANK MOUNTED GROUND BAR TO EXISTING TANK GROUND RING TYP. 2 LEADS.
- 7 BOND EQUIPMENT GROUND RING TO TANK GROUND RING.
- 8 ICE BRIDGE POST AND COVER. BOND EACH SECTION AND SUPPORT TO GROUND RING.
- 9 #2 SOLID TINNED BCW GROUND RING (2'-0" FROM OUTSIDE EDGE OF EQUIPMENT PLATFORM FOUNDATION WHEN ROUTED ALONG PLATFORM PERIMETER.) (TYP.).
- 10 GROUNDING ROD WITH ACCESS (TYP.).
- 11 GROUNDING ROD (TYP.).
- 12 MAIN EQUIPMENT GROUND BAR.
- 13 BOND MAIN GROUND BAR TO GROUND RING.
- 14 CONNECT PLATFORM TO GROUNDING RING (TYP. EACH CORNER OF GROUND RING).
- 15 BOND EQUIPMENT CABINETS TO GROUND BAR PER NEC AND MANUFACTURER REQUIREMENTS
- 16 BOND EQUIPMENT TO GROUND BAR PER NEC AND MANUFACTURER REQUIREMENTS
- 17 BOND GROUND BAR TO EQUIPMENT PLATFORM STEEL TYP.
- 18 CONNECT EQUIPMENT GROUND RING TO EXISTING COMPOUND GROUND RING. CONTRACTOR TO VERIFY LOCATION COMPOUND GROUND RING IN FIELD.
- 19 CONNECT UPPER TANK LEG MOUNTED GROUND BAR TO SECTOR GROUND BAR TYP.
- 20 SECTOR GROUND BAR TYP.
- 21 BOND SECTOR GROUND BAR TO TANK. (TYP)
- 22 BOND ANTENNA AND ANTENNA APPURTENANCES MOUNTING PIPES TO SECTOR GROUND BAR. (TYPICAL).
- 23 ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.

GROUNDING PLAN NOTES

NO SCALE

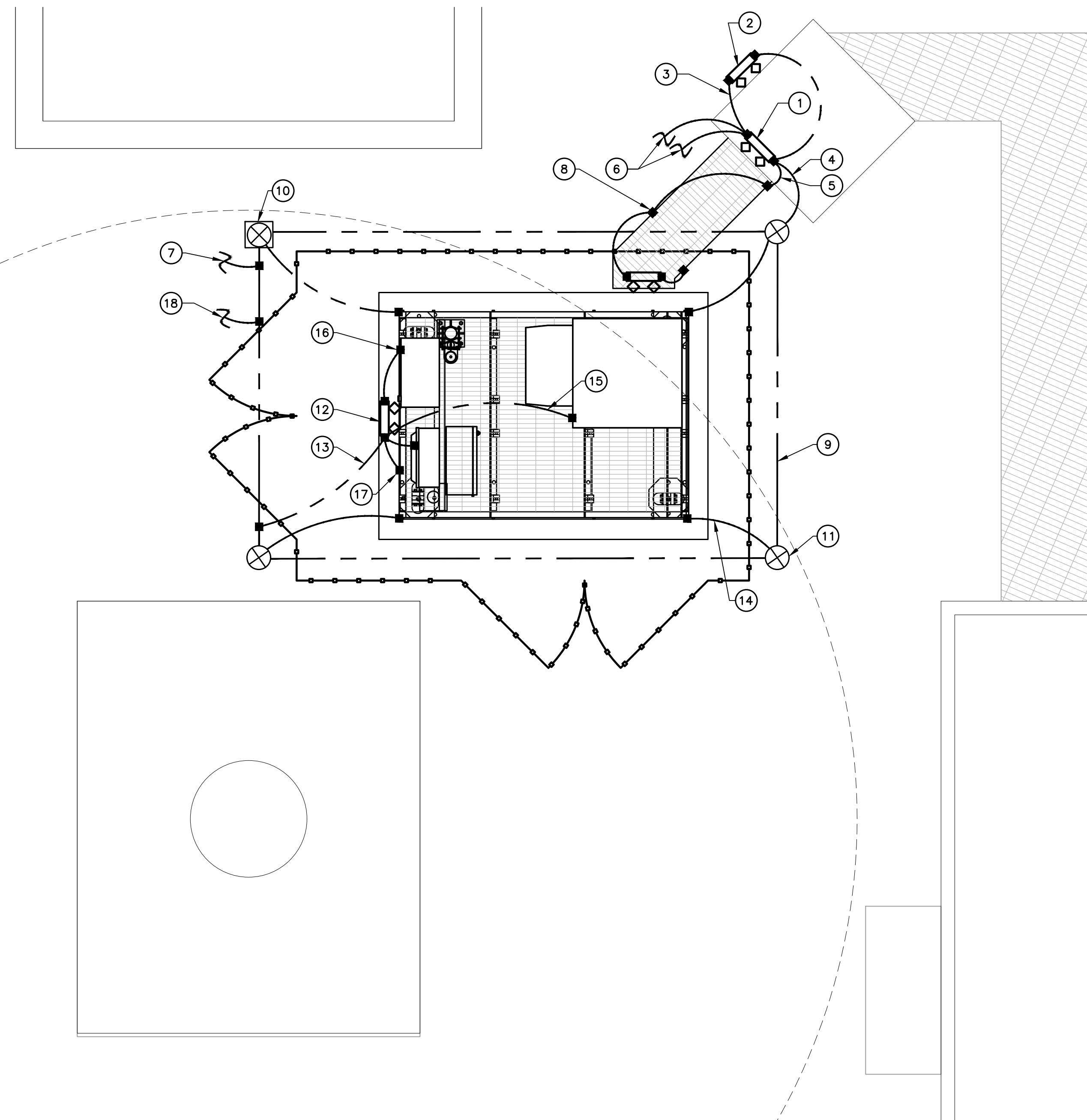
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ANTENNA GROUNDING PLAN

NO SCALE

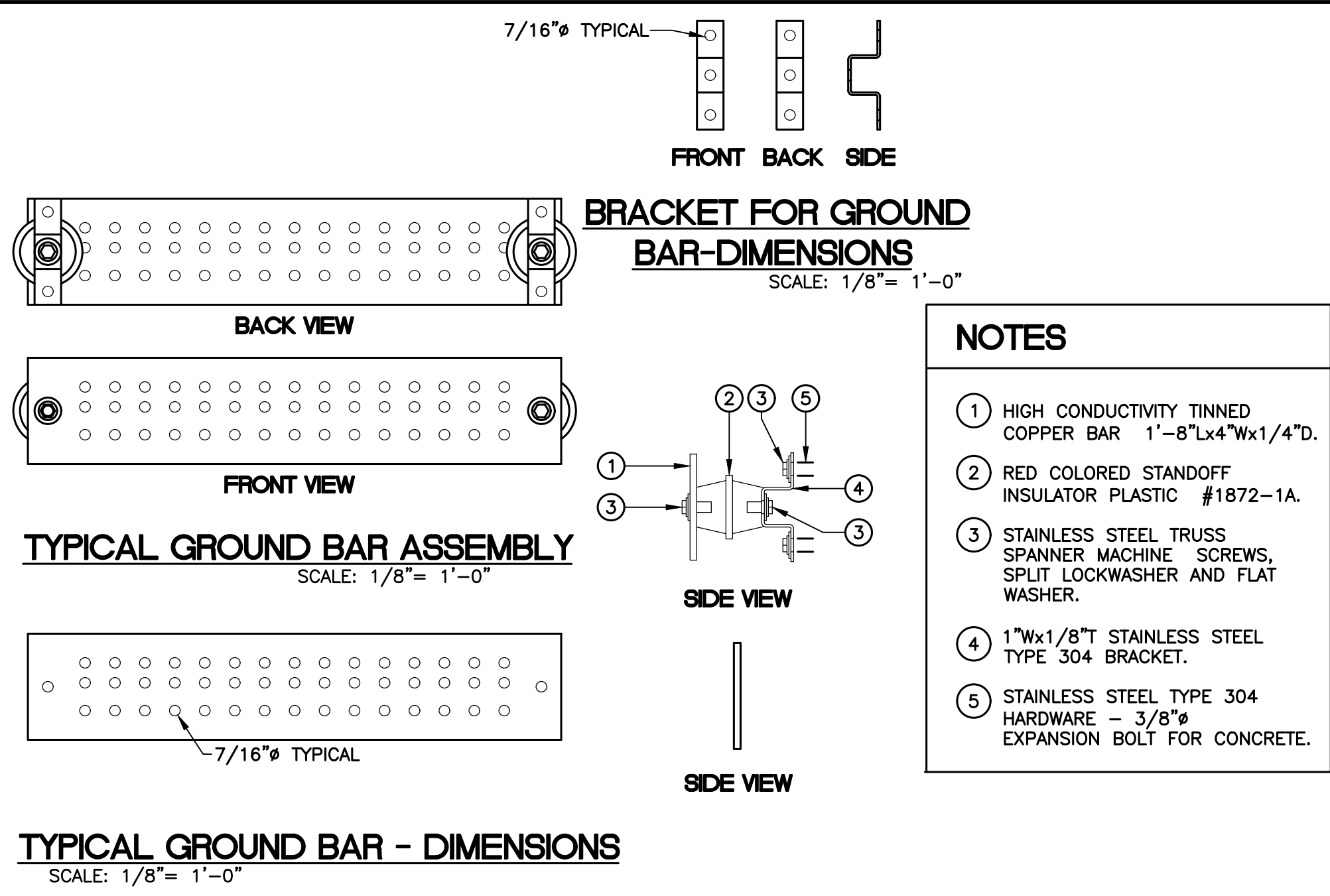
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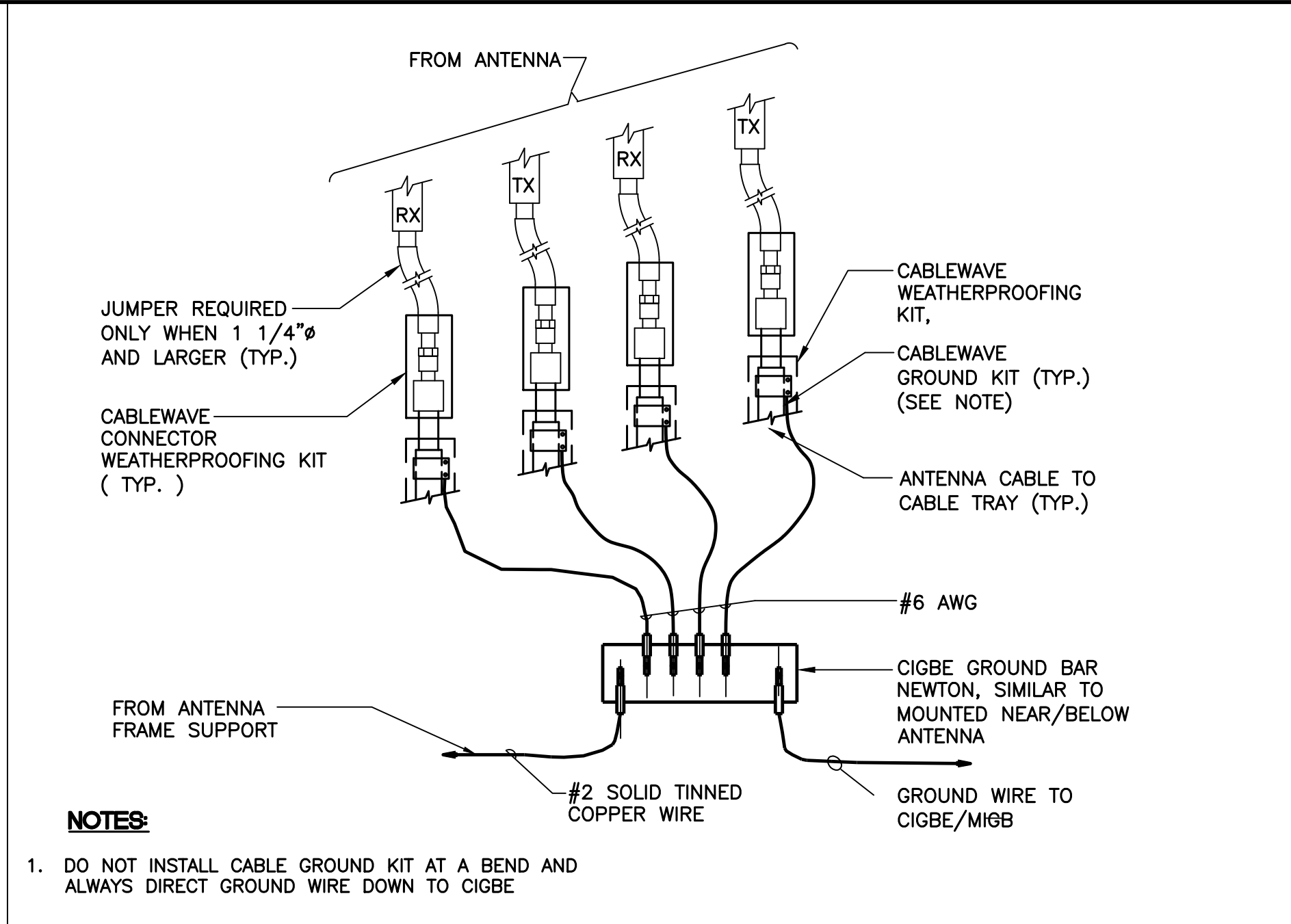
COMPOUND GROUNDING PLAN

NO SCALE

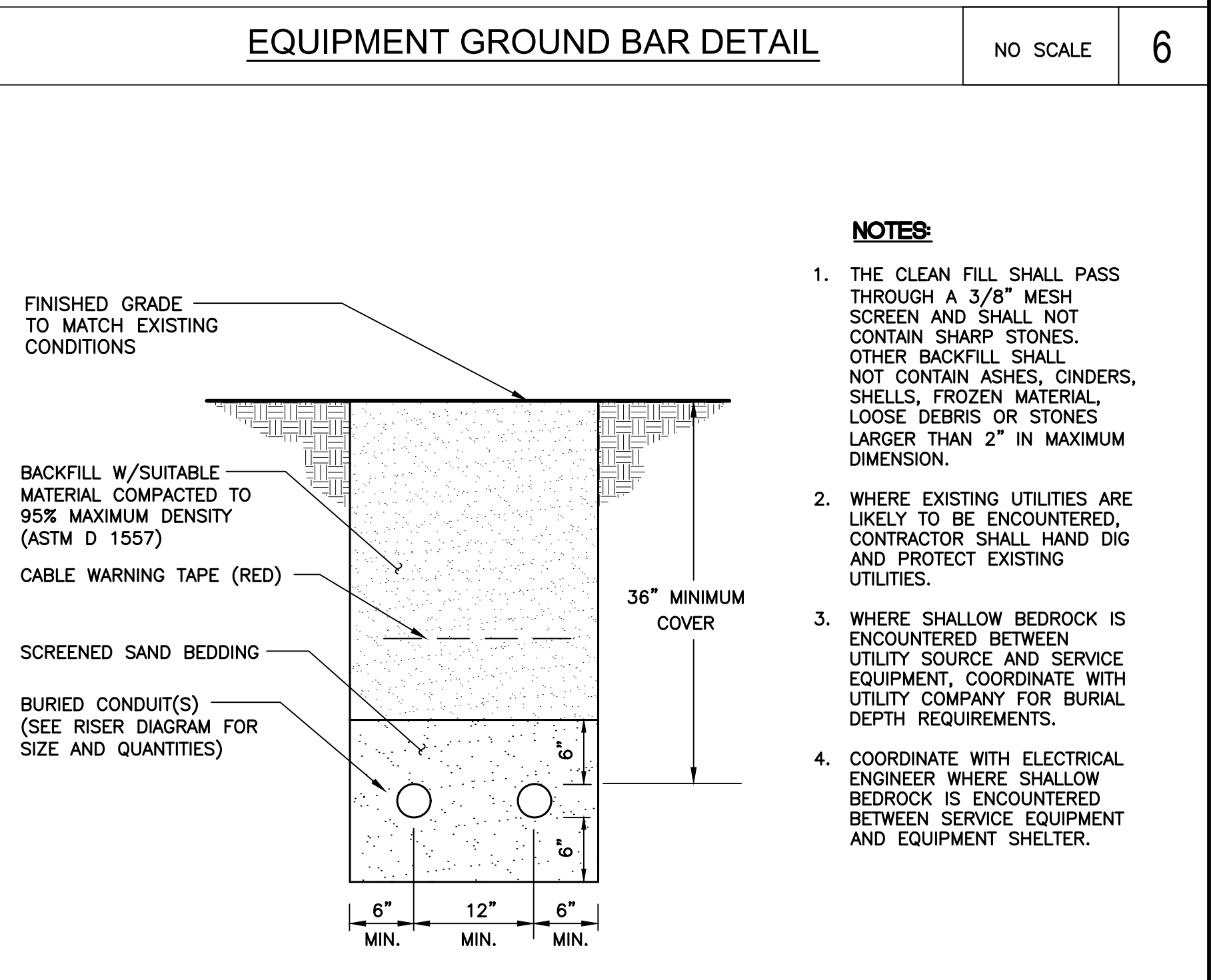
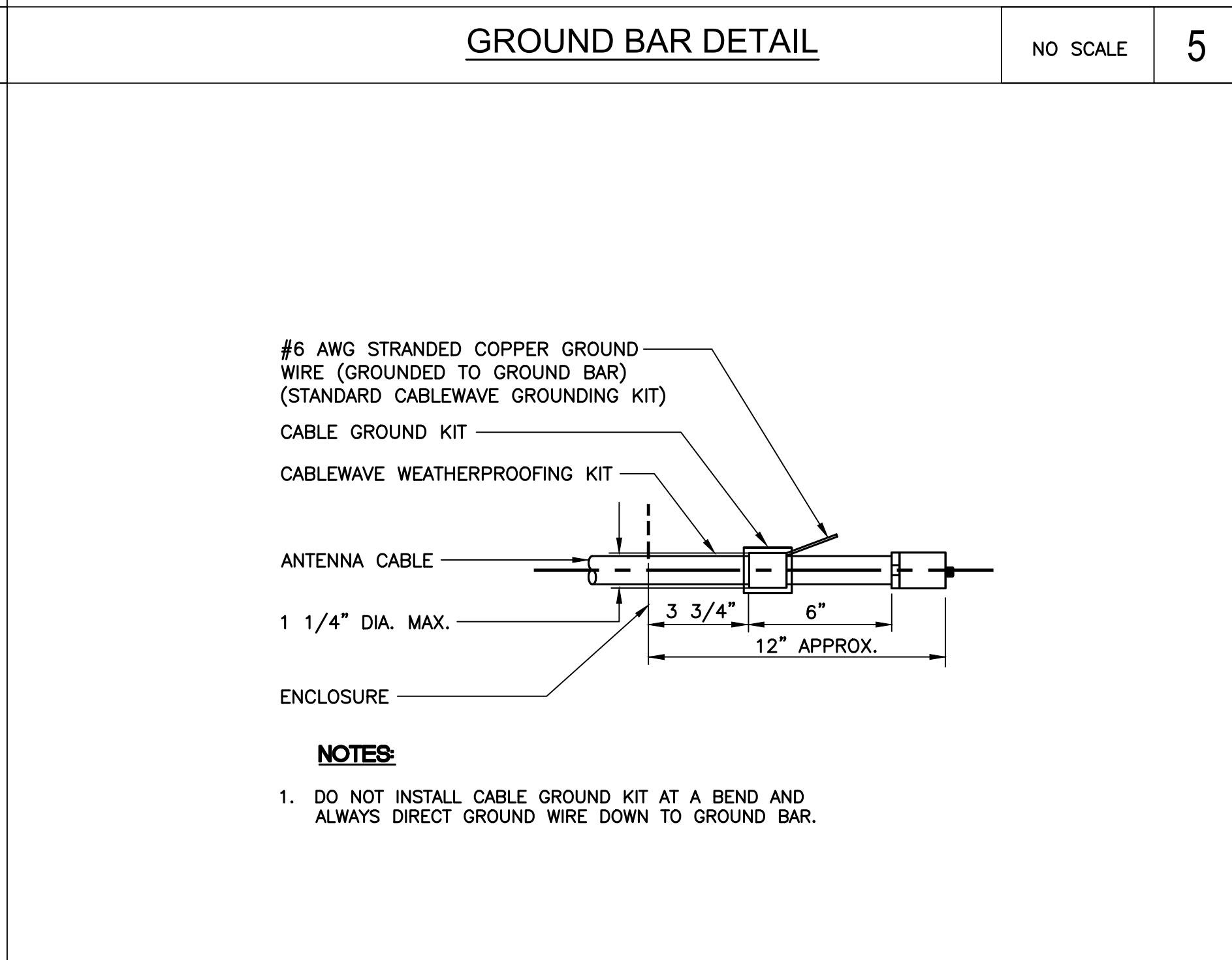
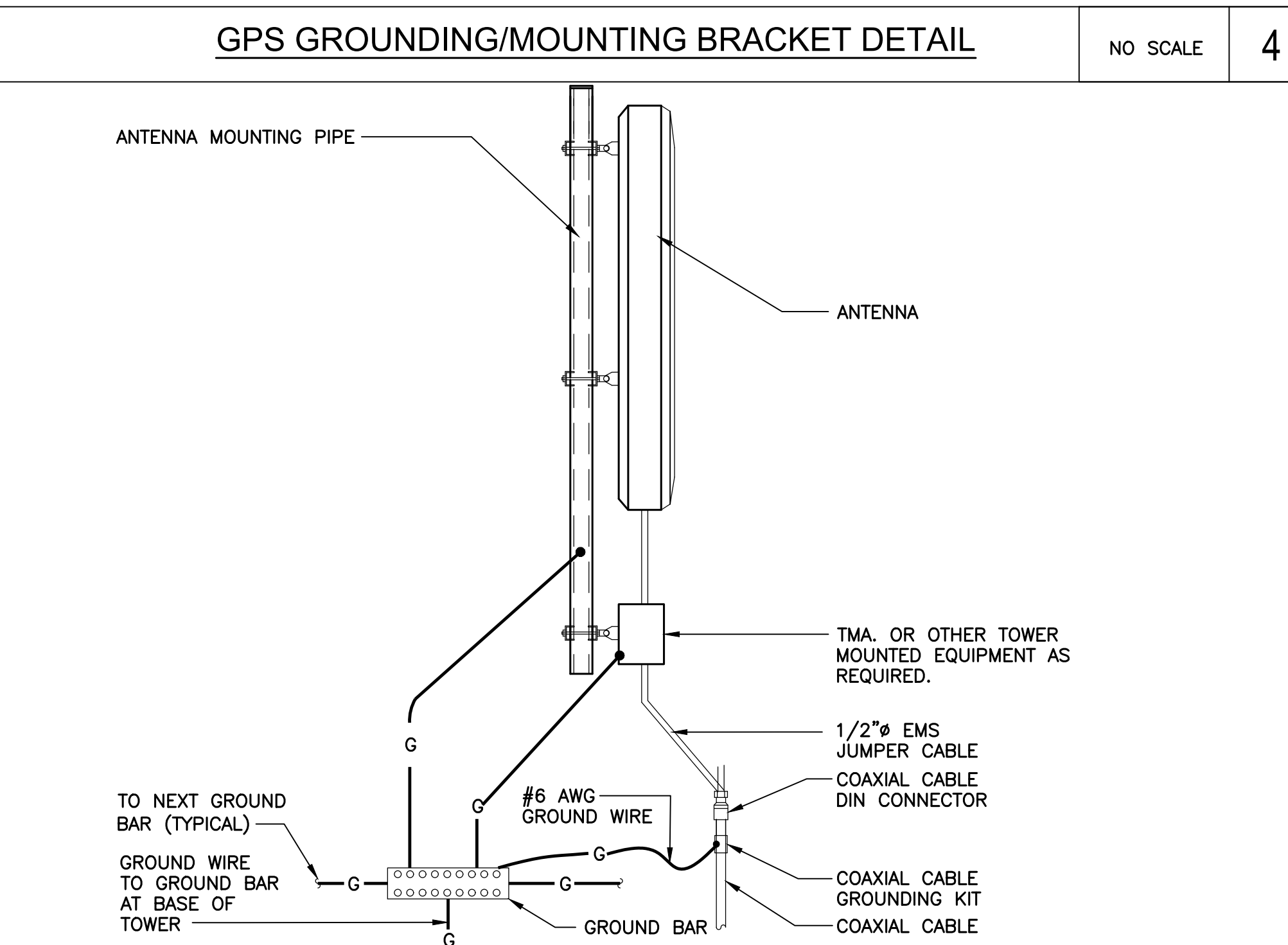
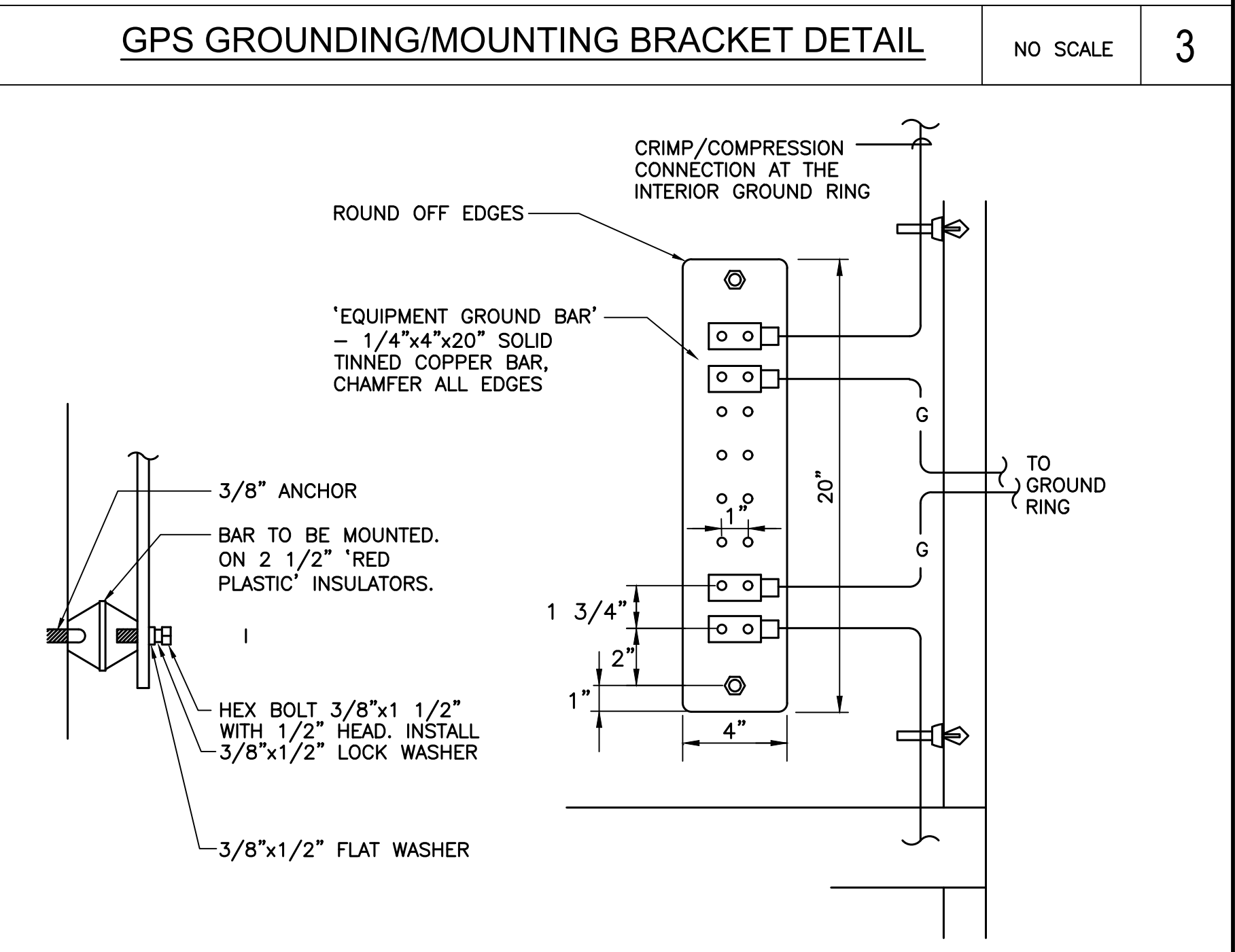
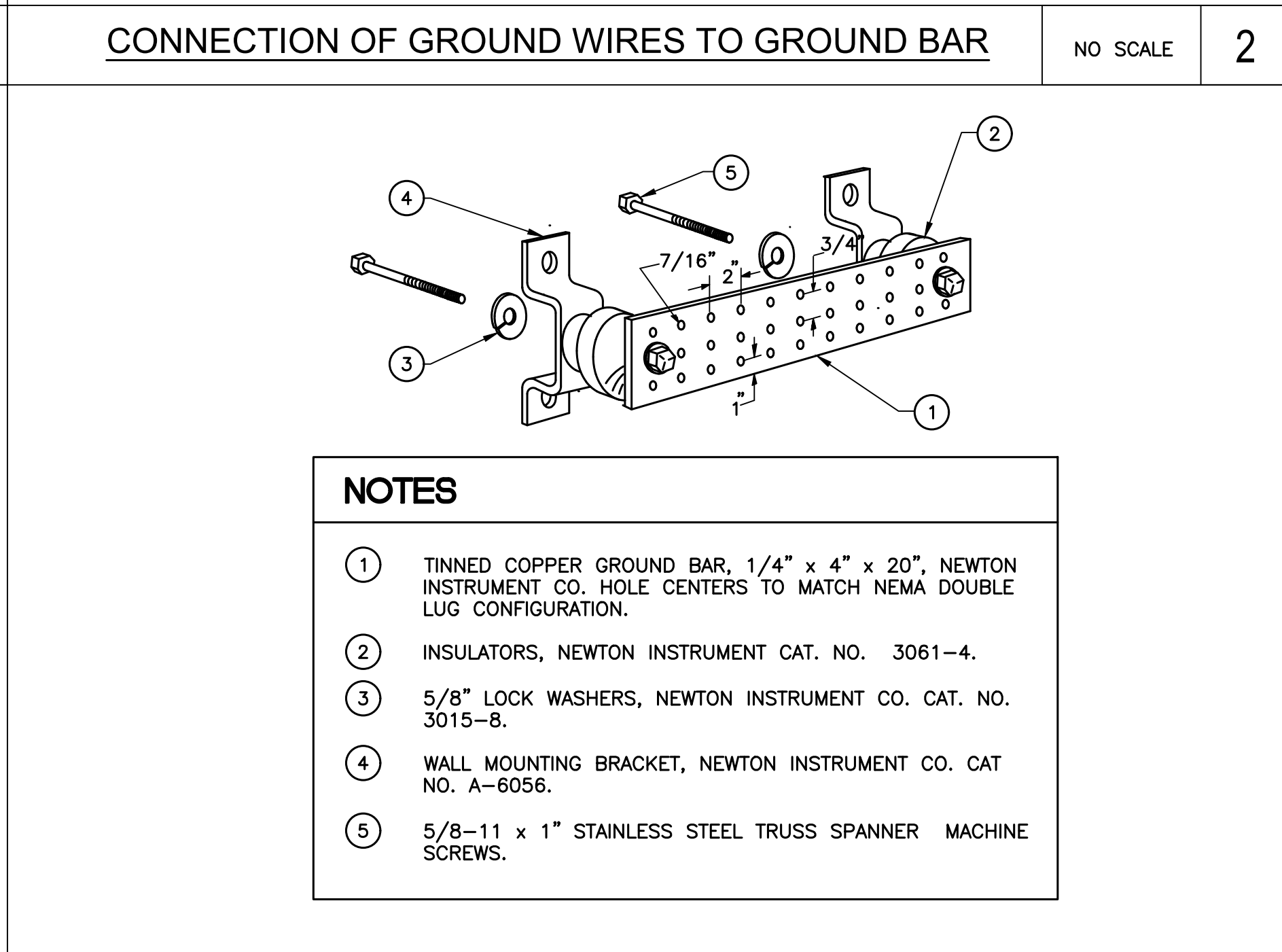
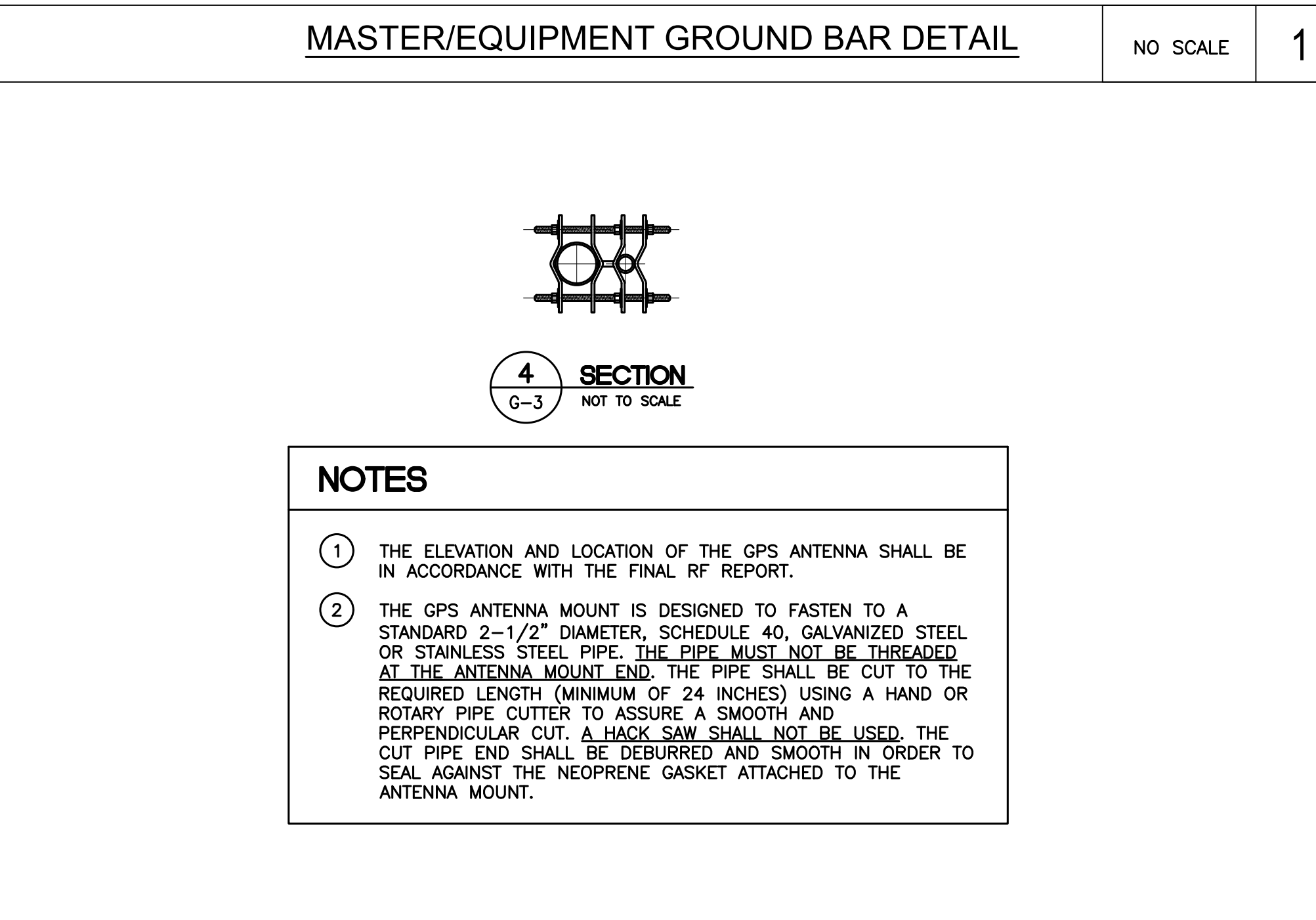
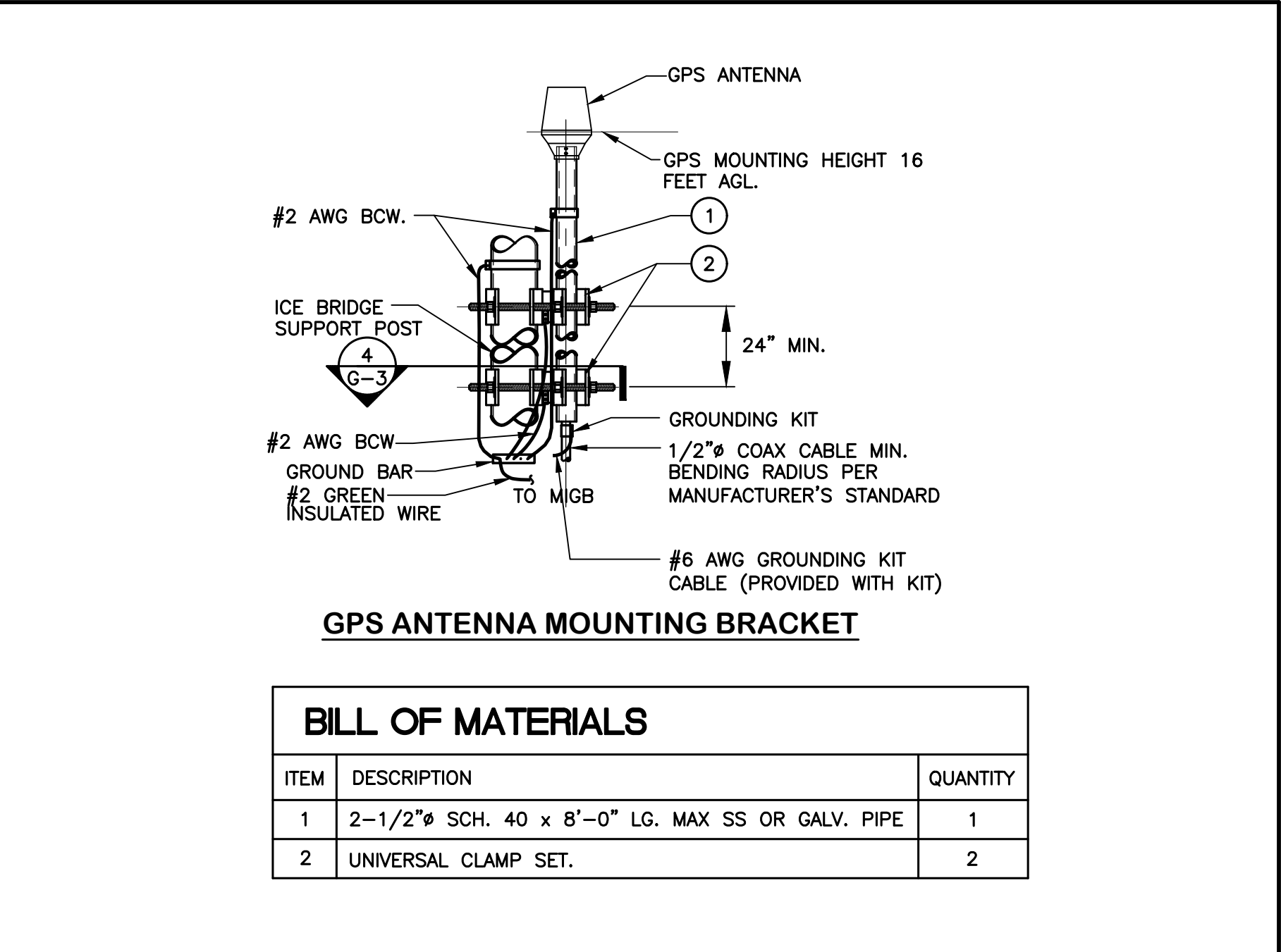
1



- NOTES**
- HIGH CONDUCTIVITY TINNED COPPER BAR 1'-8"Lx4"Wx1/4"D.
 - RED COLORED STANDOFF INSULATOR PLASTIC #1872-1A.
 - STAINLESS STEEL TRUSS SPANNER MACHINE SCREWS, SPLIT LOCKWASHER AND FLAT WASHER.
 - 1"Wx1/8" STAINLESS STEEL TYPE 304 BRACKET.
 - STAINLESS STEEL TYPE 304 HARDWARE - 3/8" EXPANSION BOLT FOR CONCRETE.



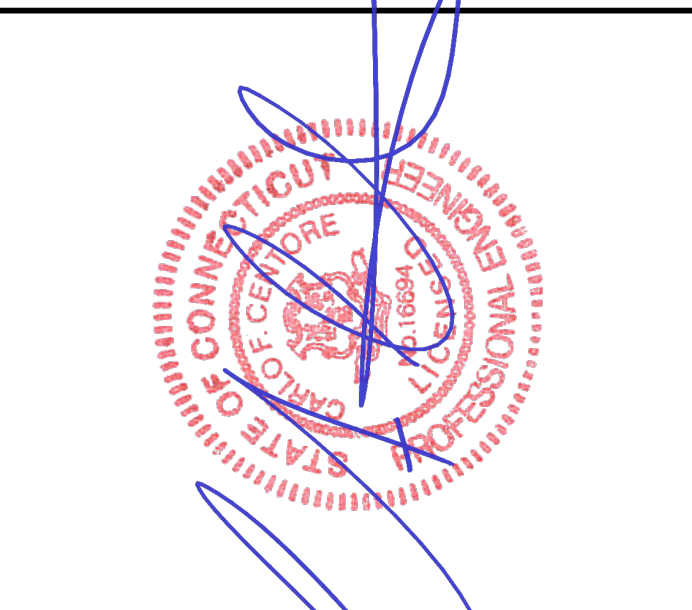
- NOTES:**
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE



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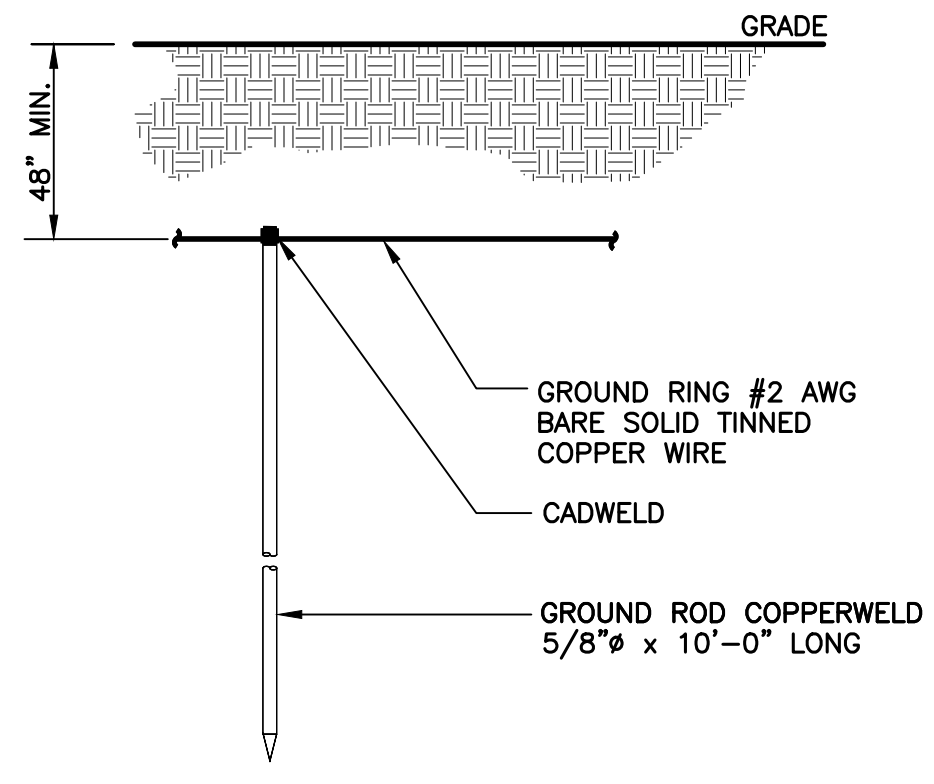
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PROJECT INFORMATION
BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
TYPICAL GROUNDING
DETAILS

SHEET NUMBER
G-2

NOTES:

1. USE GROUND PLATE DETAIL IF 10 FT. GROUND ROD DEPTH CANNOT BE ACHIEVED DUE TO LEDGE CONDITION OR IF EXISTING TOWER FOUNDATION IS ENCOUNTERED.

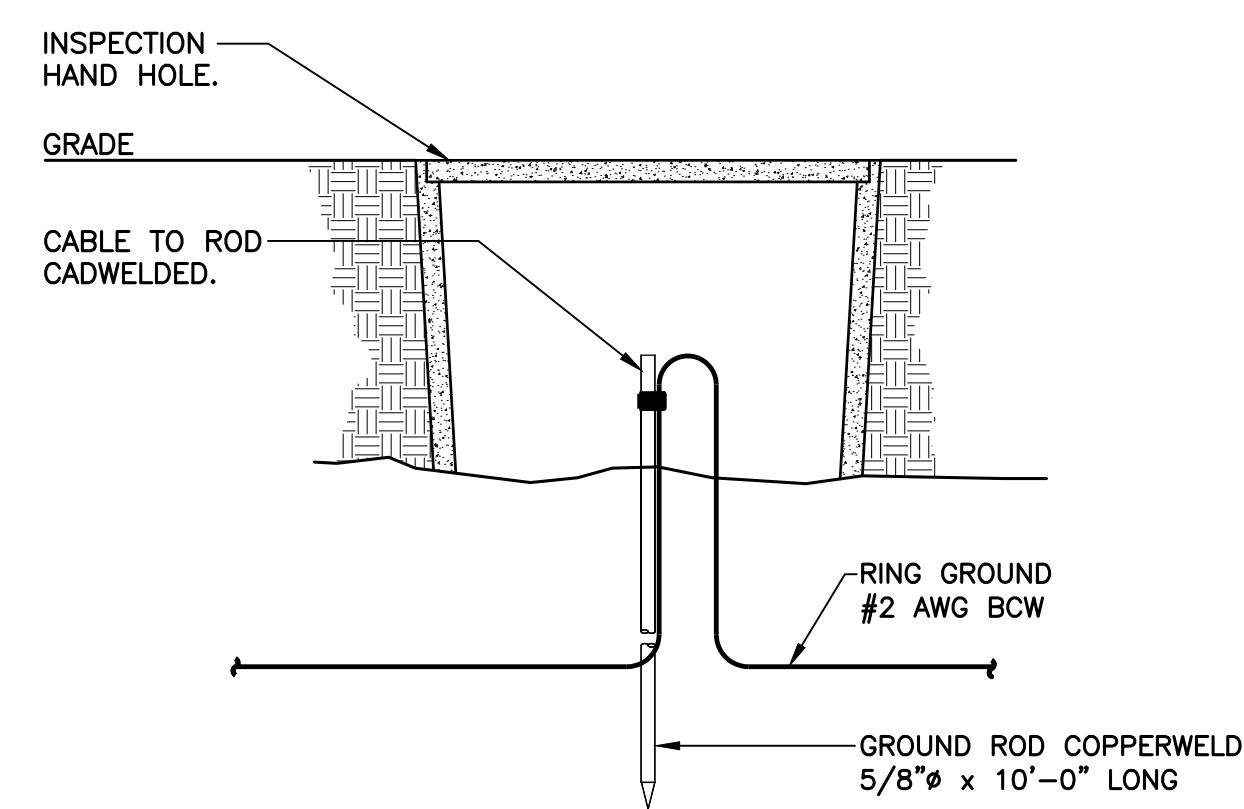


GROUND ROD DETAIL

NO SCALE 1

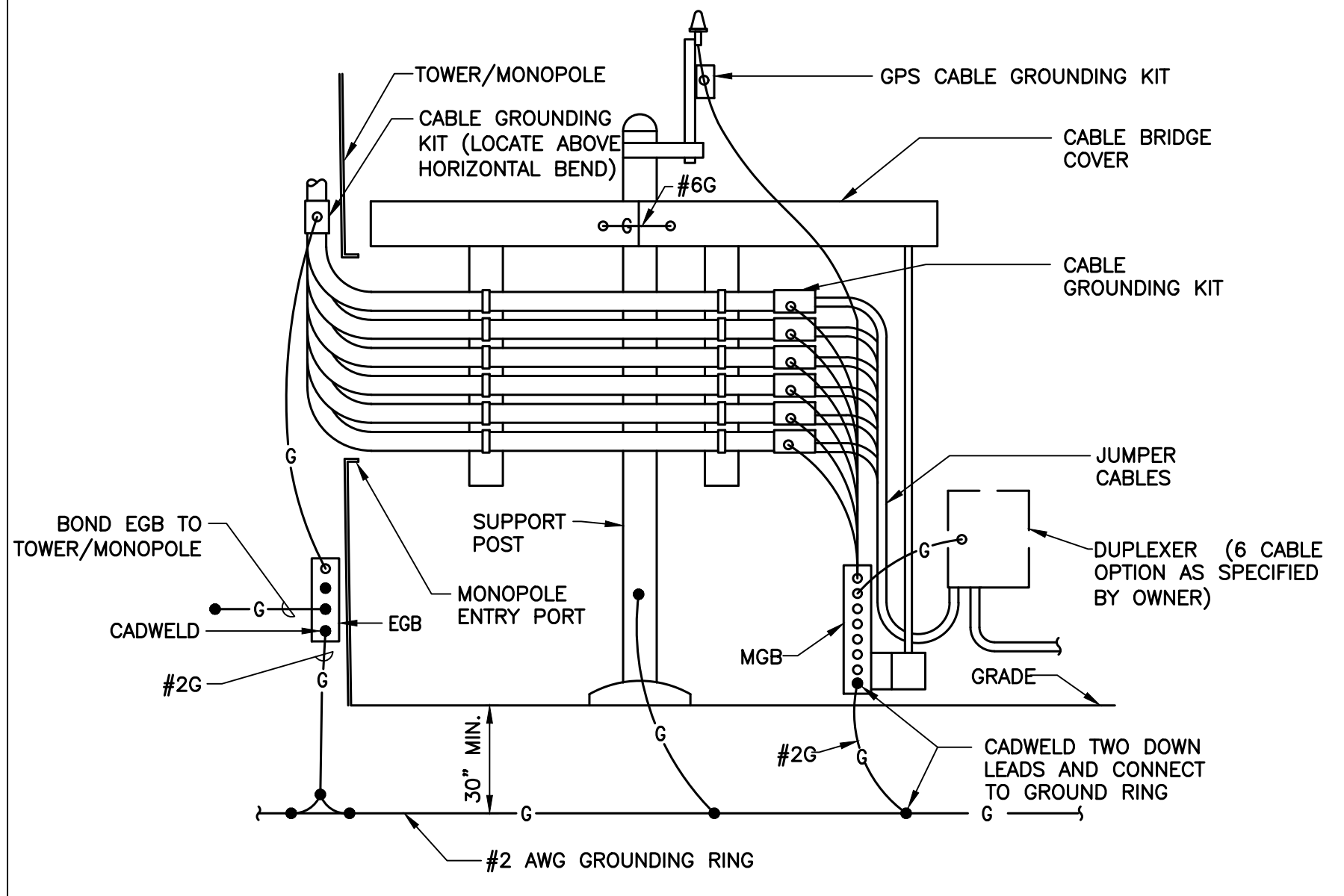
NOTES:

1. INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 12" DIA x 18" DEEP.



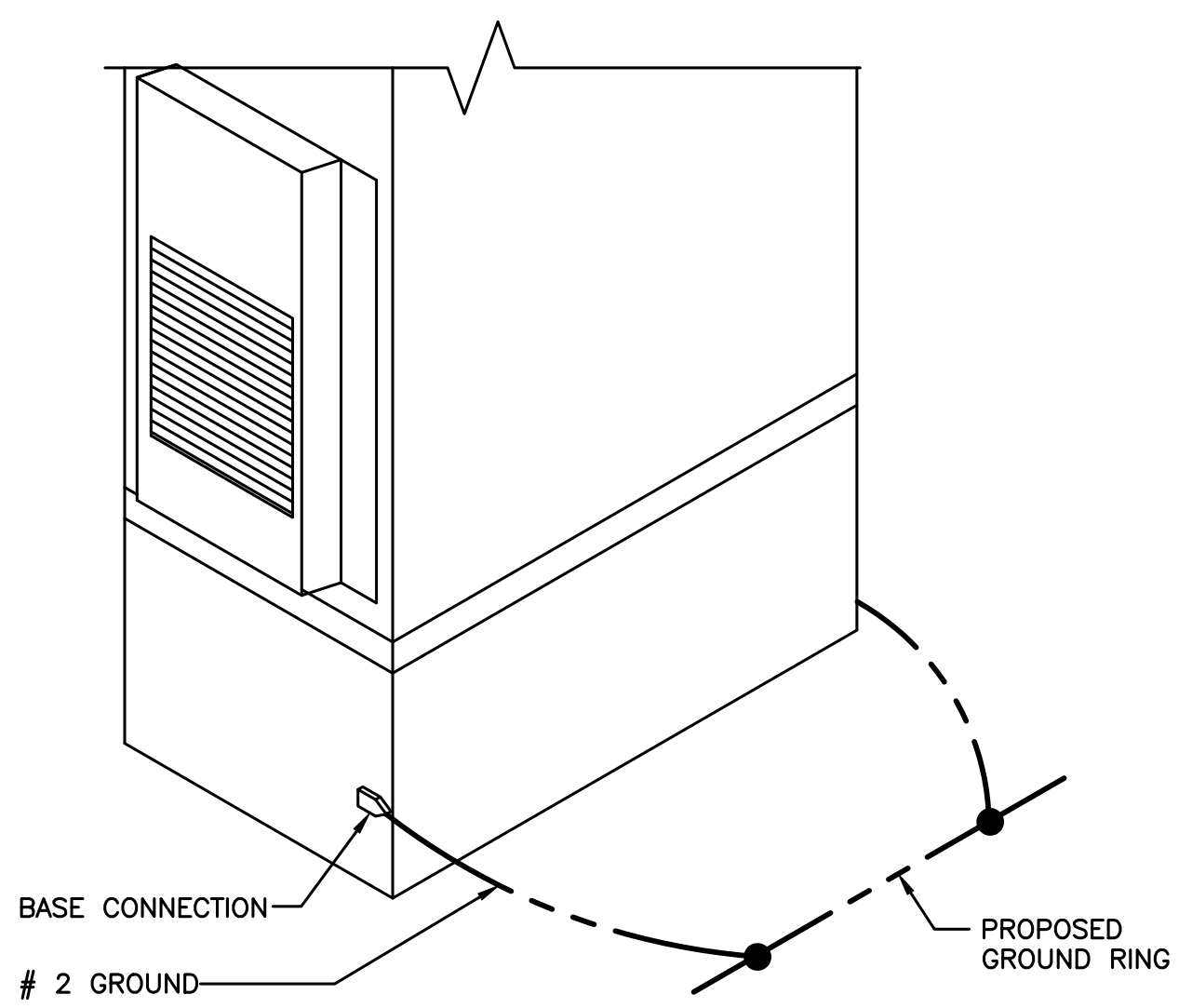
GROUND ROD WITH ACCESS DETAIL

NO SCALE 2



ICE-BRIDGE GROUNDING DETAIL

NO SCALE 3



OUTDOOR CABINET GROUNDING

NO SCALE 4

NO SCALE 5

NOT USED

NO SCALE 6

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



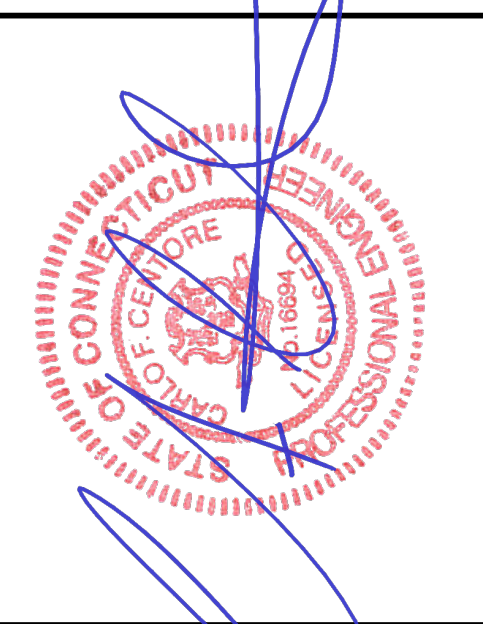
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DISH Wireless L.L.C.
PROJECT INFORMATION
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6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
TYPICAL GROUNDING
DETAILS

SHEET NUMBER

G-3

ELECTRICAL SPECIFICATIONS

SECTION 16010

- 1.01. SCOPE OF WORK
- A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
 1. 200A, 240/120V, 1P, 3 WIRE ELECTRIC SERVICE METER FOR OWNER AND ASSOCIATED DISTRIBUTION EQUIPMENT. (AS REQUIRED BY UTILITY CO.)
 2. NEW SITE TELEPHONE SERVICE AS SPECIFIED BY TELEPHONE COMPANY.
 3. CELLULAR GROUNDING SYSTEMS, CONSISTING OF ANTENNA GROUNDING, GROUND RING, GROUND BARS, ETC.
 4. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
 5. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.
 - B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:
 1. TELEPHONE CABLES.
 2. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).
 - C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED, BUT NOT PROVIDED BY UTILITY COMPANY.
 - D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.
 - E. CONTRACTOR SHALL COORDINATE WITH TELEPHONE UTILITY COMPANY FOR LOCATION OF TELEPHONE SERVICE AND TO DETERMINE ANY REQUIRED EQUIPMENT TO BE INSTALLED BY CONTRACTOR.

- 1.02. GENERAL REQUIREMENTS
- A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
 - B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
 - C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.
 - D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
 - E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY THAT MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE PROPOSED CELLULAR SITE.
 - F. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.
 - G. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
 - H. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
 - I. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.
 - J. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
 - K. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.
 - L. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.
 - M. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.
 - N. SHOP DRAWINGS:
 1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
 2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.

- O. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

- 1.01. CONDUIT
- A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.
 - B. THE INTERIOR OF RACEWAYS/ ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION. INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.
 - C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.
 - D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS
 - E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111			
CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) ^{2,3}
EMT	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. ¹	18 INCHES
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. ¹	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

¹ PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.
² UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24".
³ WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2" OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

- 1.01. CONDUCTORS
- A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER, #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

LINE	120/208/240V	277/480V
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE
 - B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

- 1.01. BOXES
- A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.
 - B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

SECTION 16140

- 1.01. WIRING DEVICES
- A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.
 1. 15 MINUTE TIMER SWITCH - INTERMATIC #FF15M (INTERIOR LIGHTS)
 2. DUPLEX RECEPTACLE - P&S #2095 (GFCI) SPECIFICATION GRADE
 3. SINGLE POLE SWITCH - P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
 4. DUPLEX RECEPTACLE - P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE
 - B. PLATES - ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.
 - C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

- 1.01. DISCONNECT SWITCHES
- A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

- 1.01. SEISMIC RESTRAINT
- A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

- 1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT
- A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.
 - B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.
 - C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

- 1.01. GROUNDING
- A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
 - B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.

- C. GROUNDING OF PANELBOARDS:
1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
 2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).
- D. EQUIPMENT GROUNDING CONDUCTOR:
1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250.
 2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
 3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).
- E. CELLULAR GROUNDING SYSTEM:
- CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

1. GROUND BARS
 2. INTERIOR GROUND RING
 3. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
 4. ANTENNA GROUND CONNECTIONS AND PLATES.
- F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.
- G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16470

- 1.01. DISTRIBUTION EQUIPMENT
- A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

- 1.01. FUSES
- A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

- 1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM
- A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:
 - TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.
 - TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.
 - THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:
 1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
 2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
 3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
 - B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
 - C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
 - D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

- 1.01. TESTS BY CONTRACTOR
- A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.
 - B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE SO CONNECTED TO THE PANELBOARDS SUCH THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.
 - C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.



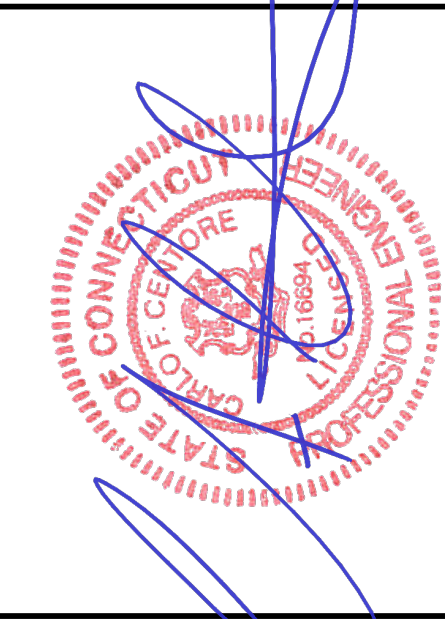
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IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
BSP	TJR	

RFDS REV #: 1 - 07/28/2023

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	08/18/23	ISSUED FOR CLIENT REVIEW
B	09/12/23	REVISED PER CLIENT COMMENTS
C	11/01/23	REVISED PER CLIENT COMMENTS
D	11/22/23	ISSUED FOR CONSTRUCTION

CENTEK PROJECT NUMBER
23009.05

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
ELECTRICAL
SPECIFICATIONS

SHEET NUMBER

G-4

CENTEK NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL/ULTIMATE DESIGN SPEED: 97 MPH (V_{asd}) (EXPOSURE C/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

- THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

- ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
- CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
- ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
- AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
- CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
- CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

- DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE DISH Wireless L.L.C. CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
- ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
- CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
- THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
- PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE 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 ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
 - STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
 - STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
 - STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
 - STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
 - PIPE---ASTM A53 (FY = 35 KSI)
 - CONNECTION BOLTS---ASTM A325-N
 - U-BOLTS---ASTM A36
 - ANCHOR RODS---ASTM F 1554
 - WELDING ELECTRODE---ASTM E 70XX
- CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
- CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
- STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
- LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
- MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- FABRICATE BEAMS WITH MILL CAMBER UP.
- LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
- COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.



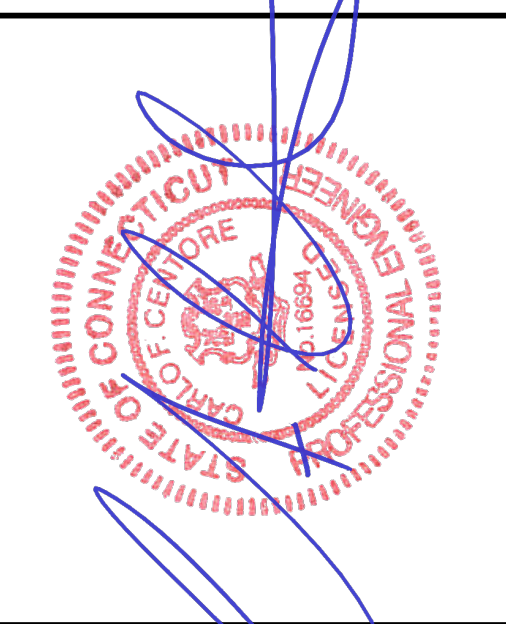
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DRAWN BY:	CHECKED BY:	APPROVED BY:
BSP	TJR	

RFDS REV #: 1 - 07/28/2023

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
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C	11/01/23	REVISED PER CLIENT COMMENTS
D	11/22/23	ISSUED FOR CONSTRUCTION

CENTEK PROJECT NUMBER
23009.05

DISH Wireless L.L.C.
PROJECT INFORMATION

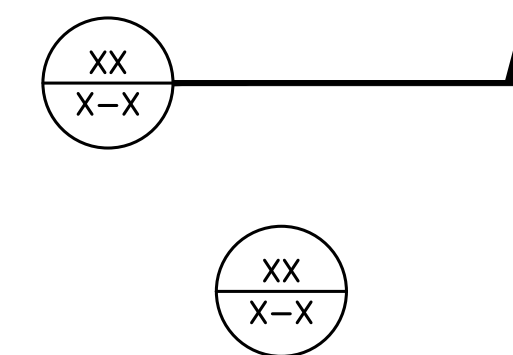
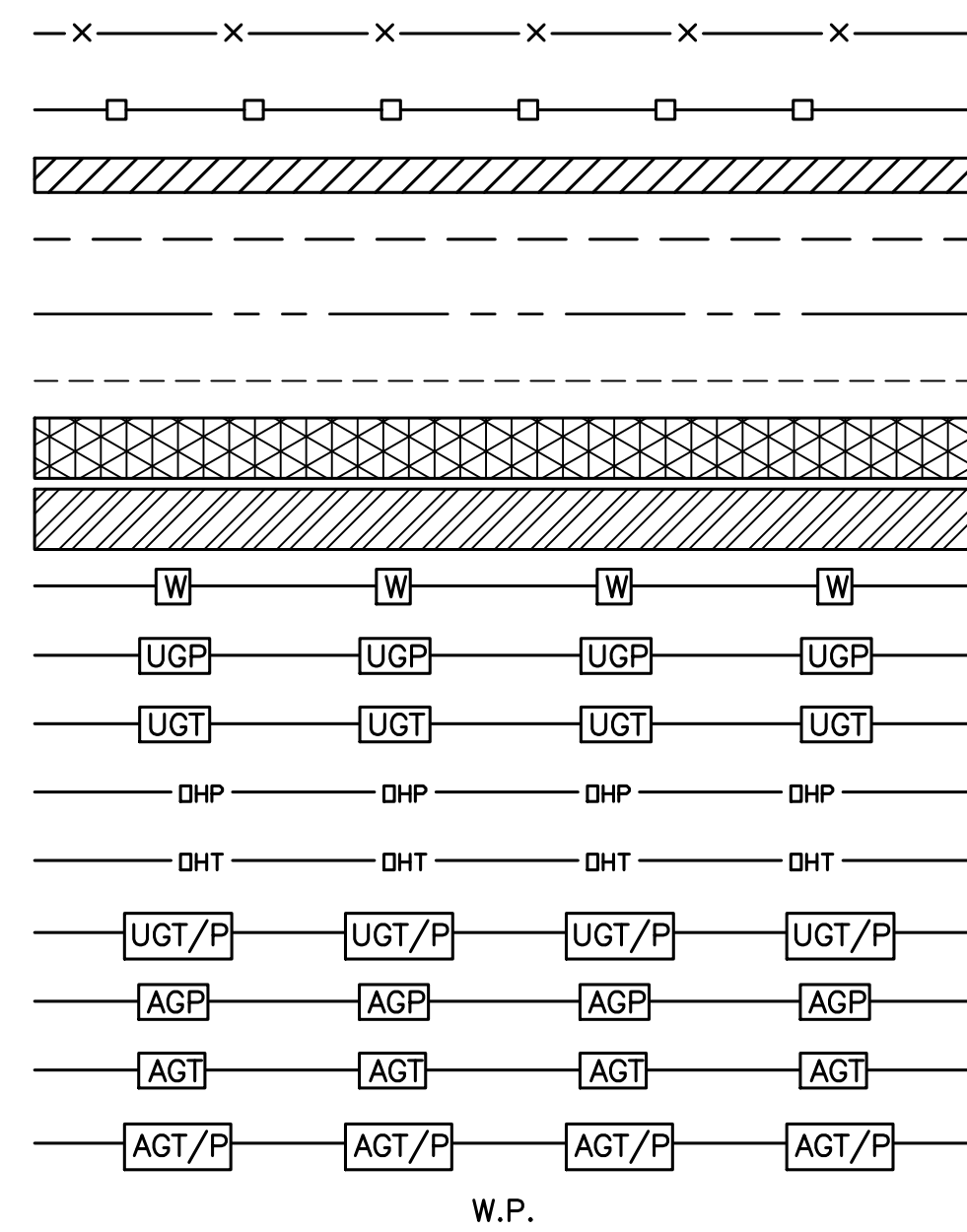
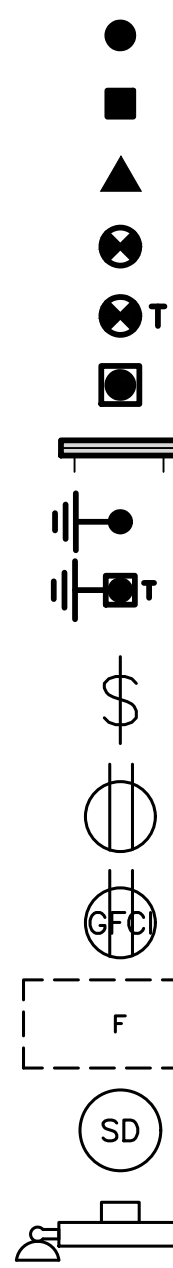
BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
CENTEK
NOTES AND SPECIFICATIONS

SHEET NUMBER

GN-1

EXOTHERMIC CONNECTION
 MECHANICAL CONNECTION
 BUSS BAR INSULATOR
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 EXOTHERMIC WITH INSPECTION SLEEVE
 GROUNDING BAR
 GROUND ROD
 TEST GROUND ROD WITH INSPECTION SLEEVE
 SINGLE POLE SWITCH
 DUPLEX RECEPTACLE
 DUPLEX GFCI RECEPTACLE
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 LED-1-25A400/51K-SR4-120-PE-DDBTXD
 CHAIN LINK FENCE
 WOOD/WROUGHT IRON FENCE
 WALL STRUCTURE
 LEASE AREA
 PROPERTY LINE (PL)
 SETBACKS
 ICE BRIDGE
 CABLE TRAY
 WATER LINE
 UNDERGROUND POWER
 UNDERGROUND TELCO
 OVERHEAD POWER
 OVERHEAD TELCO
 UNDERGROUND TELCO/POWER
 ABOVE GROUND POWER
 ABOVE GROUND TELCO
 ABOVE GROUND TELCO/POWER
 WORKPOINT



SECTION REFERENCE
 DETAIL REFERENCE

LEGEND

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

ABBREVIATIONS



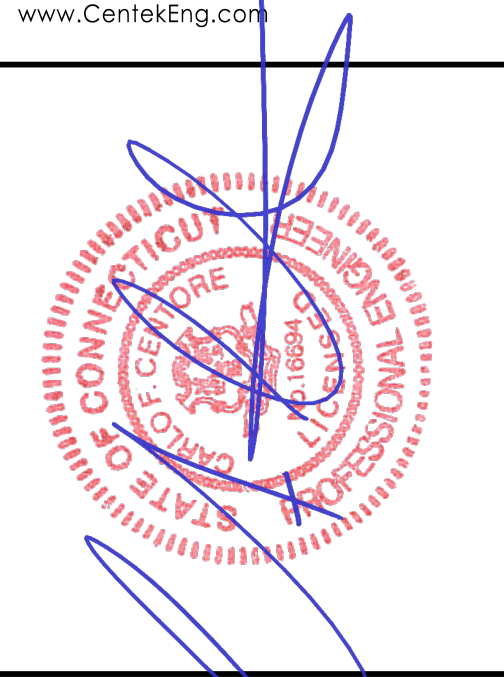
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CEN TEK PROJECT NUMBER
 23009.05

DISH Wireless L.L.C.
 PROJECT INFORMATION
BOBDL00219A
 6 MAIN STREET
 CENTERBROOK CT, 06409

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1.1

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

SIGN PLACEMENT:

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

NOTES:

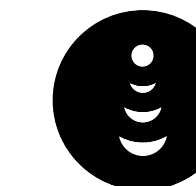
1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE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

INFORMATION

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

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

Site ID: _____



THIS SIGN IS FOR REFERENCE PURPOSES ONLY

NOTICE



Transmitting Antenna(s)

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

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

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

Site ID: _____



CAUTION



Transmitting Antenna(s)

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

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WARNING



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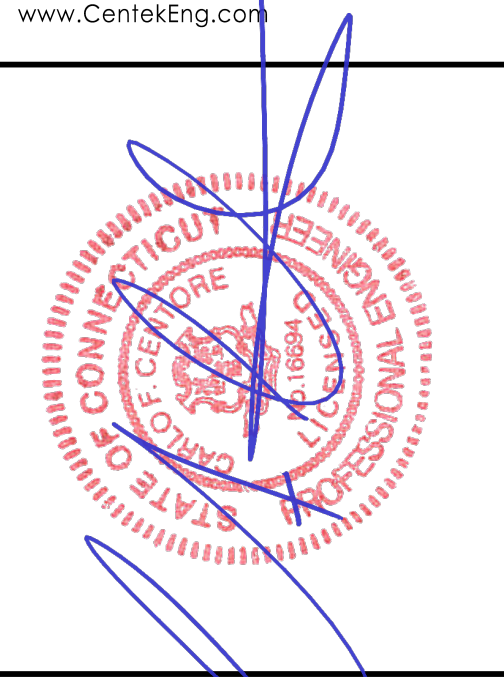
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CEN TEK PROJECT NUMBER
23009.05

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
DISH RF SIGNAGE

SHEET NUMBER
GN-1.2

SITE ACTIVITY REQUIREMENTS:

- 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.
- "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.
- 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.
- 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).
- 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."
- 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.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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.
- 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.
- 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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:

- 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
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



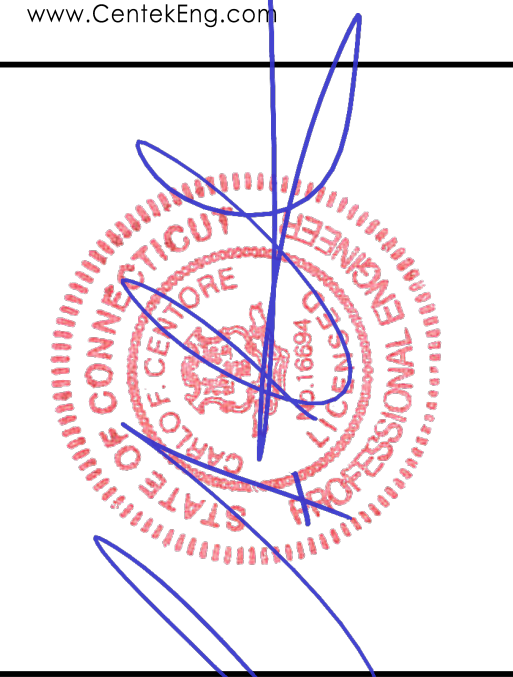
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CENTEK PROJECT NUMBER
23009.05

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
DISH GENERAL NOTES

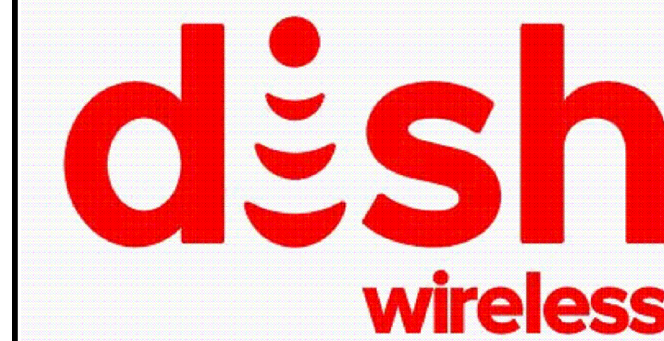
SHEET NUMBER
GN-1.3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°F AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER 40 ksi
#5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
 - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
 - CONCRETE EXPOSED TO EARTH OR WEATHER:
 - #6 BARS AND LARGER 2"
 - #5 BARS AND SMALLER 1–1/2"
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
 - SLAB AND WALLS 3/4"
 - BEAMS AND COLUMNS 1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
 - 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
 - 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C."
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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CEN TEK PROJECT NUMBER
23009.05

DISH Wireless L.L.C.
PROJECT INFORMATION
**BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409**

SHEET TITLE
DISH GENERAL NOTES

SHEET NUMBER
GN-1.4

GROUNDING NOTES:

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



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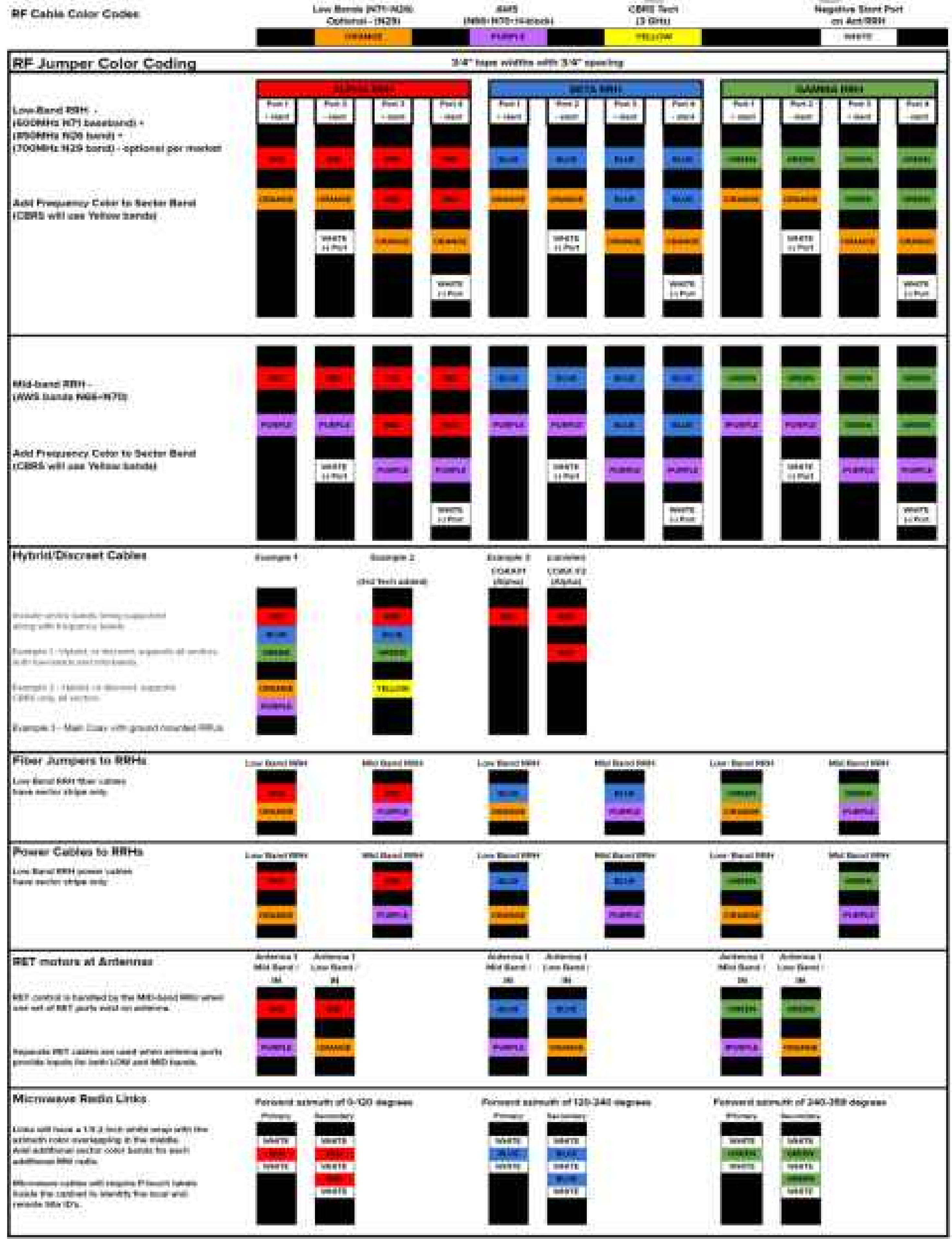
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00219A
6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
DISH GENERAL NOTES

SHEET NUMBER
GN-1.5

RF COLOR CODING



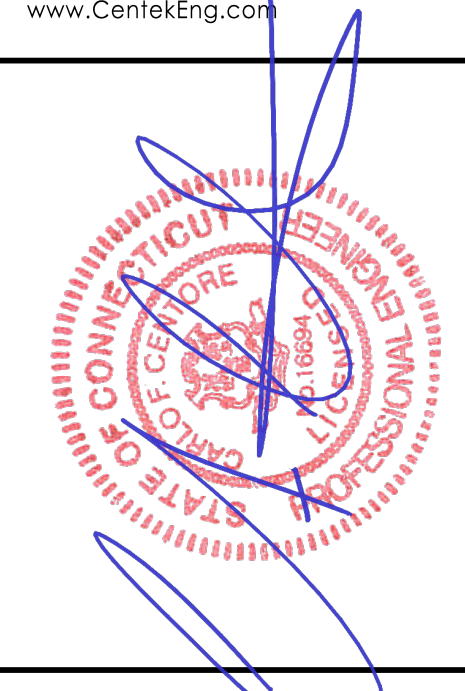
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DISH Wireless L.L.C.
PROJECT INFORMATION
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6 MAIN STREET
CENTERBROOK CT, 06409

SHEET TITLE
RF CABLE
COLOR CODES

SHEET NUMBER
RF-1

ATTACHMENT 6

Structural Analysis Report

124 Existing Water Tower

*Proposed Dish
Equipment Installation*

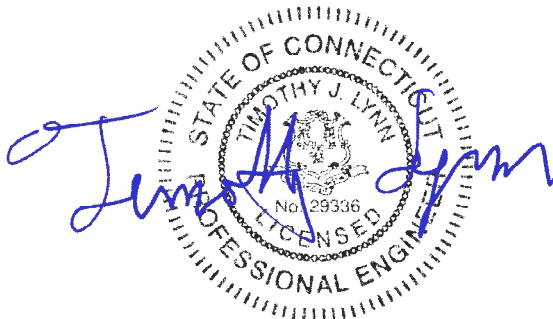
Site Ref: BOBDL00219

*6 Main Street
Essex, CT*

CEN TEK Project No. 23009.05

Date: August 14, 2023

Max Stress Ratio = 90%



Prepared for:
Northeast Site Solutions
1053 Farmington Ave., Unit G,
Farmington, CT 06032

Table of Contents

SECTION 1 - REPORT

- INTRODUCTION
- ANTENNA AND APPURTENANCE SUMMARY
- PRIMARY ASSUMPTIONS USED IN THE ANALYSIS
- ANALYSIS
- TOWER LOADING
- TOWER CAPACITY
- FOUNDATION AND ANCHORS
- CONCLUSION

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- tnxTower INPUT/OUTPUT SUMMARY
- tnxTower FEED LINE PLAN
- tnxTower FEED LINE DISTRIBUTION
- tnxTower DETAILED OUTPUT

Introduction

The purpose of this report is to summarize the results of the non-linear, P- Δ structural analysis of the antenna installation proposed by Dish on the existing water tower located in Essex, Connecticut.

The host tower is a 124-ft, four legged, water tower. The tower geometry and structure member sizes information were taken from a tower mapping report prepared by Infinigy job no. 173586E dated 12/12/2017.

Existing antenna and appurtenance inventory was taken from a previous structural analysis report prepared by Centek Engineering job no. 21005.25 dated August 16, 2021.

Proposed antenna and appurtenance inventory for Dish was taken from an RF data sheet dated 7/28/23.

Antenna and Appurtenance Summary

The existing and proposed loads considered in the analysis consist of the following:

- T-MOBILE (Existing):
Antennas: Three (3) Ericsson AIR6449 panel antennas, three (3) RFS APXVAALL24_43 panel antennas, three (3) Ericsson 4460 remote radio heads and three (3) Ericsson 4480 remote radio heads pipe mounted to the tank façade with a RAD center elevation of ± 118 -ft above grade level.
Coax Cables: Three (3) 6x24 \varnothing fiber cable running on a face of the existing tower as specified in Section 3 of this report.
- AT&T (Existing):
Antenna: Three (3) Powerwave 7770 panel antennas, two (2) Commscope NNHH-65C panel antennas panel antennas, one (1) Commscope NNHH-65A panel antennas, two (2) CCI DMP65R-BU8DA panel antennas, one (1) CCI DMP65R-BU4DA panel antennas, six (6) Powerwave LGP21401 TMAs, three (3) Ericsson 4415 B30 remote radio heads, three (3) Ericsson 4449 B5/B12 remote radio heads, three (3) Ericsson 8843 B2/B66A remote radio heads and three (3) Raycap DC6-48-60-18-8F surge arrestors pipe mounted to the tank handrail with a RAD center elevation of ± 108 -ft above grade level.
Coax Cable: Twelve (12) 1-5/8" \varnothing coax cables, one (1) 2-1/4" conduit running on a leg/face of the existing tower as specified in Section 3 of this report.
- Verizon (Existing):
Antennas: Three (3) Antel LPA-80080/6CF panel antennas, three (3) Antel LPA-80063-6CF panel antennas, six (6) Commscope SBNHH-1D65B panel antennas, twelve (12) RFS diplexers, three (3) Alcatel-Lucent RRH4x45 B66A remote radio heads, three (3) Alcatel-Lucent RRH4x30 B13 remote radio heads and two (2) main distribution boxes pipe mounted to the tank handrail with a RAD center elevation of ± 107 -ft above grade level
Coax Cable: Six (6) 1-5/8" \varnothing coax cables and two (2) 1-5/8" \varnothing fiber cable running on a leg/face of the existing tower as specified in Section 3 of this report.

- **DISH (PROPOSED):**
Antennas: Three (3) JMA MX08FRO665-21 panel antennas, three (3) Fujitsu TA08025-B604 remote radio heads, three (3) Fujitsu TA08025-B605 remote radio heads and one (1) Raycap RD1DC-9181-PF-48 OVP box pipe mounted with a RAD center elevation of ±98-ft above the tower base.
Coax Cables: One (1) 1-1/4"Ø Hybriflex cable running on the face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables should be routed as specified in section 3 of this report.

A n a l y s i s

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed to determine stresses in members as per guidelines of AWWA-D100, TIA-222-H entitled “Structural Standard for Antenna Support Structures and Antennas”, the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC¹.

T o w e r L o a d i n g

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per AWWA-D100 and ASCE 7-16, gravity loads of the tower structure and its components.

Load Cases:	<u>Load Case 1</u> ; 135 mph (Ultimate) wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	<i>[Appendix P of the 2022 CT Building Code]</i>
	<u>Load Case 2</u> ; 50 mph wind speed w/ 1.00” radial ice plus gravity load – used in calculation of tower stresses.	<i>[Annex B of TIA-222-H]</i>

¹ The 2021 International Building Code as amended by the 2022 Connecticut State Building Code (CSBC).

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower.

- Calculated stresses **were found to be within allowable limits.**

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Diagonal (T1)	70'-0"-106'-0"	90.2%	PASS
Leg (T3)	0'-0"-36'-0"	71.3%	PASS

Foundation and Anchors

The existing foundation consists of a four (4) 3-ft square tapering to 7.5-ft square x 5.25-ft long reinforced concrete piers and four (4) 13-ft square concrete pads. Pad thickness was unable to be verified. The base of the tower is connected to the foundation by means of (2) 1.75"Ø, anchor bolts per leg embedded into the concrete foundation structure.

- The tower reactions developed from the governing Load Case were used in the verification of the foundation:

Load Effect	Proposed Tower Reactions
Leg Shear	12 kips
Leg Compression	389 kips
Leg Tension	0 kips
Base Moment	4886 ft-kips
Base Shear	58 kips

- The foundation was found to be within allowable limits based on the tank being in use and full of water. With the tank full there is no uplift at the tower legs and therefore the foundations were evaluated for bearing only. If the tank is decommissioned and the water is removed the foundation and anchorage will need to be re-evaluated for uplift.

CENTEK Engineering, Inc.
Structural Analysis - 124-ft Water Tower
T-Mobile Antenna Upgrade – BOBDL00219
Essex, CT
August 14, 2023

Conclusion

This analysis shows that the subject water tower **is adequate** to support the proposed antenna configuration with the below recommendations.

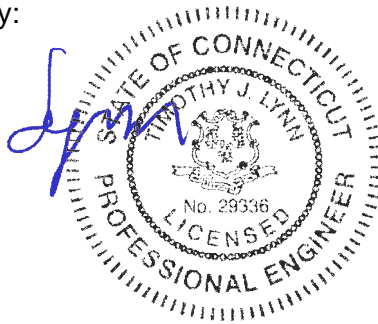
The analysis is based, in part, on the information provided to this office by Dish. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer



Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

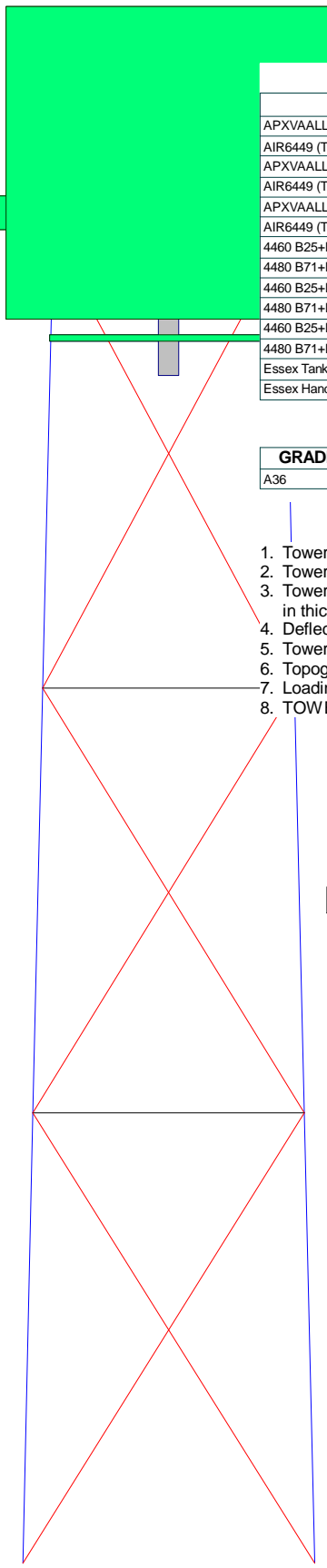
tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISA Tower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-H standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	T1	T2	T3
Legs		P19x0.36"	
Leg Grade		A36	
Diagonals	SR 1	SR 1 1/4	SR 1 3/8
Diagonal Grade		A572-50	
Top Girts		W8x24	
Face Width (ft)	18.5	20.12	21.64
# Panels @ (ft)	1 @ .36	1 @ .34	1 @ .36
Weight (K)	13.0	13.0	14.1

106.0 ft
70.0 ft
36.0 ft
0.0 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVAALL24-43 (T-Mobile)	118	MX08FRO665-21 (Dish - Proposed)	98
AIR6449 (T-Mobile)	118	MX08FRO665-21 (Dish - Proposed)	98
APXVAALL24-43 (T-Mobile)	118	MX08FRO665-21 (Dish - Proposed)	98
AIR6449 (T-Mobile)	118	TA08025-B604 (Dish - Proposed)	98
APXVAALL24-43 (T-Mobile)	118	TA08025-B604 (Dish - Proposed)	98
AIR6449 (T-Mobile)	118	TA08025-B604 (Dish - Proposed)	98
4460 B25+B66 (T-Mobile)	118	TA08025-B605 (Dish - Proposed)	98
4480 B71+B85 (T-Mobile)	118	TA08025-B605 (Dish - Proposed)	98
4460 B25+B66 (T-Mobile)	118	TA08025-B605 (Dish - Proposed)	98
4480 B71+B85 (T-Mobile)	118	RD1DC-9181-PF-48 (Dish - Proposed)	98
4460 B25+B66 (T-Mobile)	118	HSS6x6x1/4 x 19' (Dish - Proposed)	98
4480 B71+B85 (T-Mobile)	118	HSS6x6x1/4 x 19' (Dish - Proposed)	98
Essex Tank	112	HSS6x6x1/4 x 19' (Dish - Proposed)	98
Essex Handrail	108	HSS6x6x1/4 x 19' (Dish - Proposed)	98

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi	A572-50	50 ksi	65 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Loading for AT&T and Verizon Antennas attached to handrail is included in the handrail input.
8. TOWER RATING: 90.2%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 389 K
SHEAR: 12 K

UPLIFT: 0 K
SHEAR: 0 K

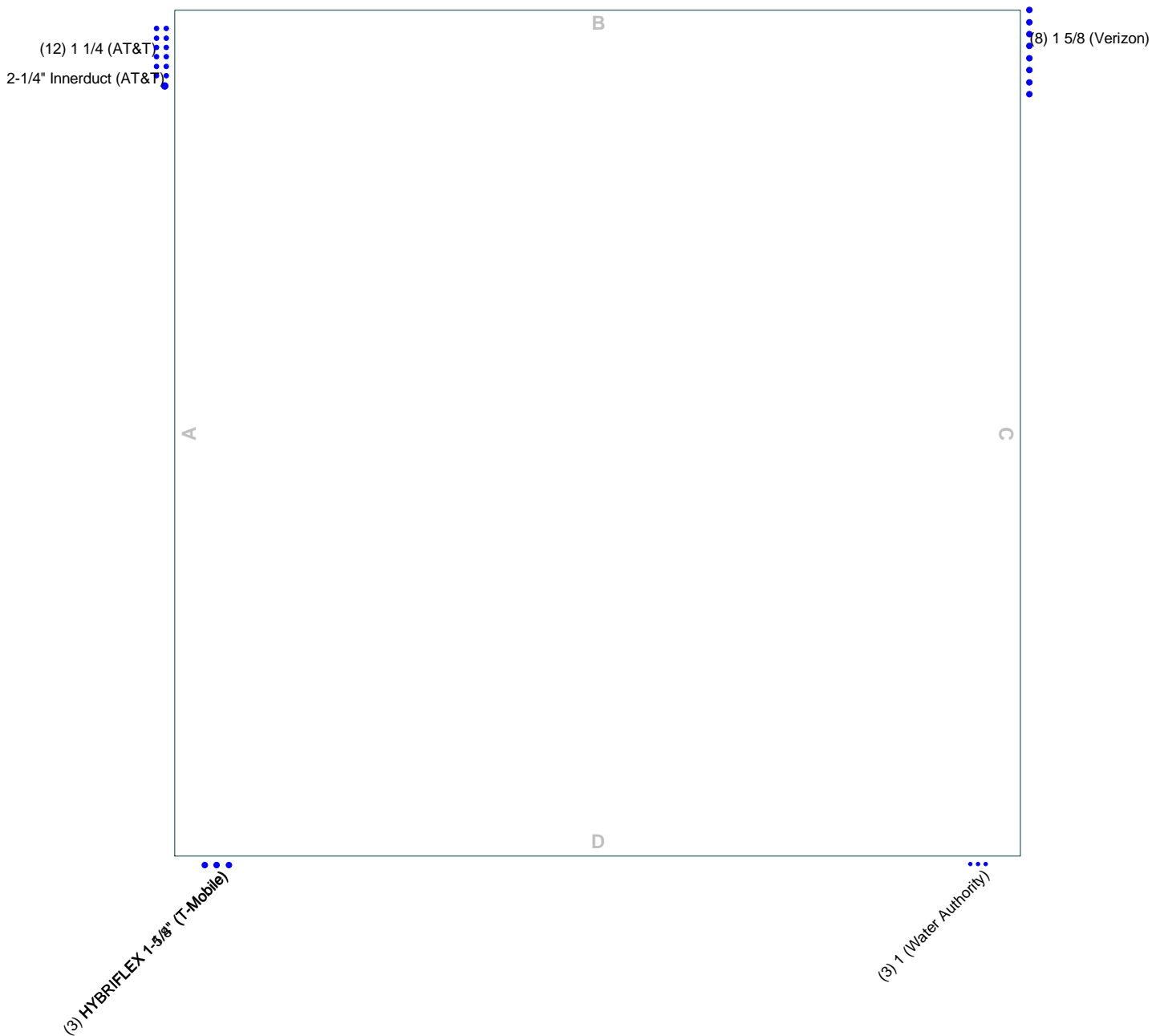
AXIAL 1027 K
SHEAR 12 K
MOMENT 1137 kip-ft
TORQUE 12 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 960 K
SHEAR 58 K
MOMENT 4886 kip-ft
TORQUE 63 kip-ft
REACTIONS - 135 mph WIND

Centek Engineering Inc.		
63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587		
Job: 23009.05 - BOBDL00219	Project: 124' WaterTower - Essex, CT	
Client: Dish	Drawn by: T.JL	App'd:
Code: TIA-222-H	Date: 08/14/23	Scale: NTS
Path:	Dwg No. E-1	

Feed Line Plan

Round Flat App In Face App Out Face

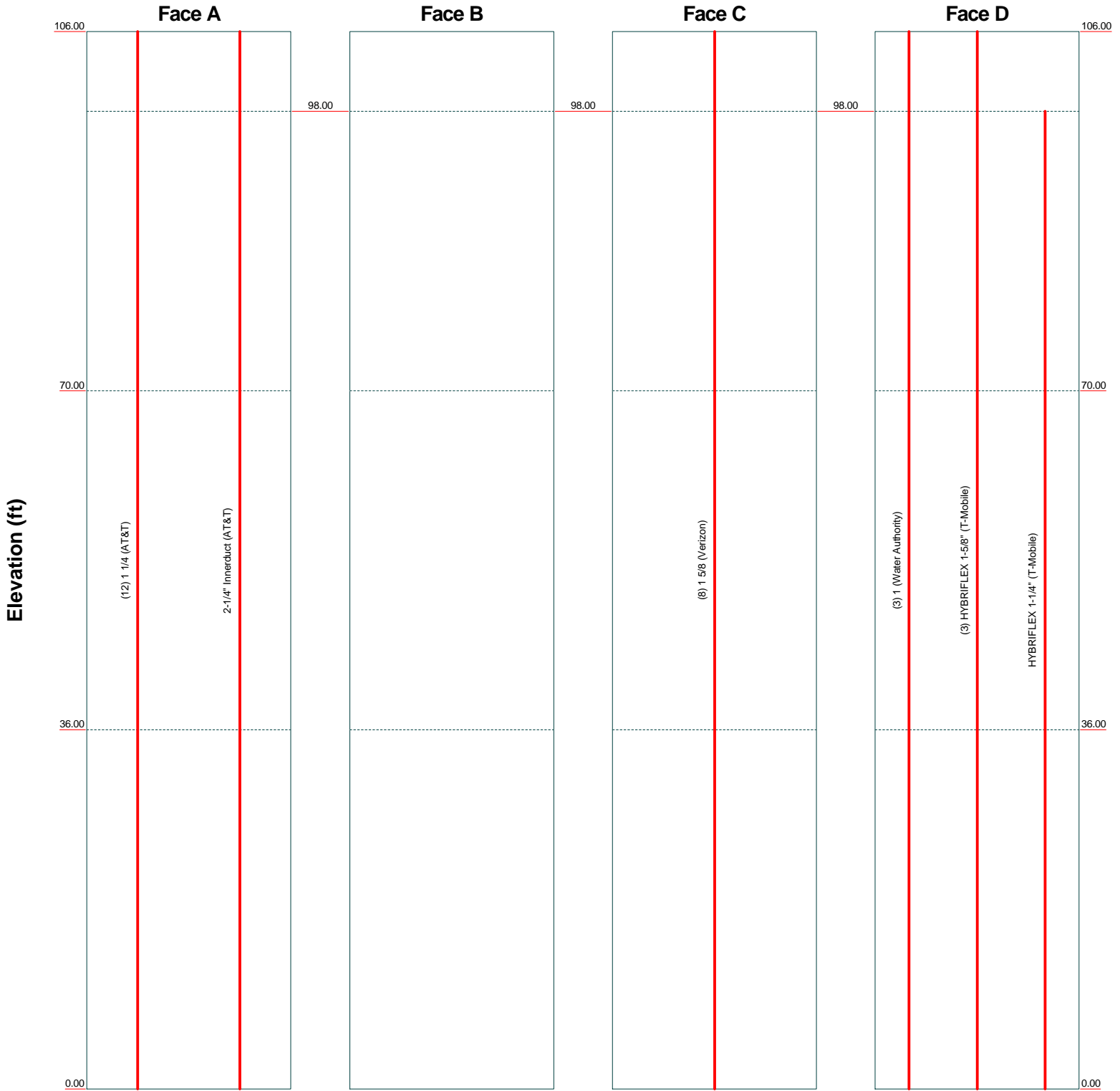


Centek Engineering Inc.			Job: 23009.05 - BOBDL00219		
63-2 North Branford Rd.			Project: 124' WaterTower - Essex, CT		
Branford, CT 06405			Client: Dish	Drawn by: T.JL	App'd:
Phone: (203) 488-0580			Code: TIA-222-H	Date: 08/14/23	Scale: NTS
FAX: (203) 488-8587			Path:		Dwg No. E-7

J:\job\23009001\W05_BOBDL00219\05_Structural\Structural_Analysis\Report\Backup_Documental\Water Tower.rvt

Feed Line Distribution Chart 0' - 106'

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



Centek Engineering Inc.		
63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587		
Job: 23009.05 - BOBDL00219	Project: 124' WaterTower - Essex, CT	
Client: Dish	Drawn by: T.JL	App'd:
Code: TIA-222-H	Date: 08/14/23	Scale: NTS
Path:	Dwg No. E-7	

tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job 23009.05 - BOBDL00219	Page 1 of 23
	Project 124' WaterTower - Essex, CT	Date 09:45:59 08/14/23
	Client Dish	Designed by TJL

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 106.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 18.50 ft at the top and 23.25 ft at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 0.00 ft.

Basic wind speed of 135 mph.

Risk Category III.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Loading for AT&T and Verizon Antennas attached to handrail is included in the handrail input..

Tension only take-up is 0.0313 in.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 <li style="text-align: center;">Poles 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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ATTACHMENT 7

Structural Analysis Report

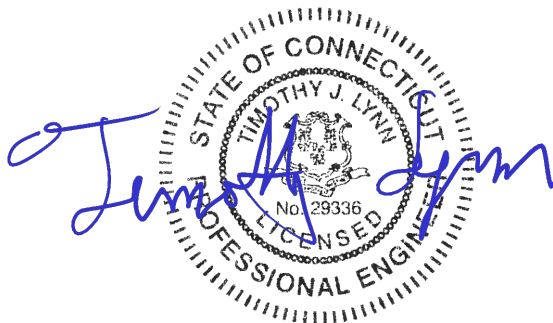
Antenna Mount Analysis

Dish Site Ref.: BOBDL00219

*6 Main Street
Centerbrook, CT*

Centek Project No. 23009.05

Date: August 14, 2023



Prepared for:

*Northeast Site Solutions
1053 Farmington Ave., Unit G
Farmington, CT 06032*

Table of Contents

SECTION 1 - REPORT

- INTRODUCTION
- PRIMARY ASSUMPTIONS
- ANTENNA AND APPURTENANCE SUMMARY
- ANALYSIS
- DESIGN LOADING
- REFERENCE STANDARDS
- RESULTS
- CONCLUSION

SECTION 2 – CONDITIONS & SOFTWARE

- STANDARD ENGINEERING CONDITIONS
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

SECTION 3 – CALCULATIONS

- WIND LOAD CALCULATION
- RISA 3D – OUTPUT REPORT
- CONNECT TO HOST STRUCTURE

Introduction

This structural analysis report (SAR) was prepared to address the structural viability of installing Dish's proposed antenna configuration attached to a water tank located at 6 Main Street, Centerbrook, Connecticut.

The proposed antenna mount assembly consists of one (1) Pipe 2.0 STD antenna pipe per sector mounted to HSS beams connected to the existing water tank legs. This structural analysis report verifies the adequacy of the mentioned antenna mount assembly and its connection to the water tower only.

Primary Assumptions Used in the Analysis

- The host structure's theoretical capacity not including any assessment of the condition of the host structure.
- The existing elevated steel antenna frames carry the horizontal and vertical loads due to the weight of equipment, and wind and transfers into host structure.
- Structure is in plumb condition.
- Loading for equipment and enclosure as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All members are assumed to be as observed during roof framing mapping.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.

Antenna and Equipment Summary

Location	Appurtenance / Equipment	Rad Center Elevation (AGL)	Mount Type
Per Sector	(1) JMA MX08FRO665-21 Antenna (1) Fujitsu TA08025-B605 Radio (1) Fujitsu TA08025-B604 Radio (1) Raycap RDIC-9181-PF-48	98-ft	Pipe Mounted to W-beam

Equipment – Indicates proposed equipment to be installed.
 Equipment – Indicates existing equipment to remain.

Analysis

The antenna frames were analyzed using a comprehensive computer program titled Risa3D. The program examines the antenna mounts considering the worst-case code prescribed loading condition. The structures were considered to be loaded by concentric forces, and the model assumes that the members are subjected to bending, axial, and shear forces.

Design Loading

Loading was determined per the requirements of the 2018 ANSI TIA-222-H, 2021 International Building Code amended by the 2022 CSBC and ASCE 7-16 “Minimum Design Loads for Buildings and Other Structures”.

Basic Wind Speed:	$V_{asd} = 125$ mph	<i>Appendix P of the 2022 CT State Building Code</i>
Risk Category:	II	<i>2021 IBC; Table 1604.05</i>
Exposure Category:	Surface Roughness C	<i>ASCE 7-16; Section 26.7.2</i>
Dead Load	Equipment and framing self-weight	<i>Identified within SAR design calculations</i>

Reference Standards

2021 International Building Code:

1. AISC 360-10, *Specification for Structural Steel Buildings*.

Results

Member stresses and design reactions were calculated utilizing the structural analysis software RISA 3D.

The antenna mounting assembly and impacted host building components were found to be structurally acceptable as presented in the following table:

Sector	Component	Stress Ratio (percentage of capacity)	Result
All Sectors	HSS6x6	11%	PASS
	HSS3x3	18%	PASS
	Pipe 2.0 STD	28%	PASS
	5/8" Bolt	18%	PASS


Conclusion

This analysis shows that the proposed subject antenna mount assembly is **STRUCTURALLY ADEQUATE** to support the proposed Dish equipment configuration.

The analysis is based, in part, on the information provided to this office by Dish. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:


Timothy J. Lynn, PE
Structural Engineer



*Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures*

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an uncorroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

ATTACHMENT 8



Radio Frequency Emissions Analysis Report



Site ID: BOBDL00219A

6 Main Street
Essex, CT 06409

September 26, 2023

Fox Hill Telecom Project Number: 230994

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	22.45 %

September 26, 2023

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBDL00219A**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **6 Main Street, Essex, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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.

Population 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 limit for the 600 MHz band is approximately $400 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS / AWS-4) 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 performed for the proposed upgrades to the Dish Wireless antenna facility located at **6 Main Street, Essex, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

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

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

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

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

Equation 9 per FCC OET65 for Far Field Modeling

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

S = Power Density (in $\mu\text{w}/\text{cm}^2$)

ERP = Effective Radiated Power from antenna (watts)

R = Distance from the antenna (meters)

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

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

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

Table 1: Channel Data Table



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

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	98
B	1	JMA MX08FRO665-21	98
C	1	JMA MX08FRO665-21	98

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	4.02
Sector A Composite MPE%							4.02
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	4.02
Sector B Composite MPE%							4.02
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	4.02
Sector C Composite MPE%							4.02

Table 3: Dish Emissions Levels



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

Site Composite MPE%	
Carrier	MPE%
Dish – Max Per Sector Value	4.02 %
T-Mobile	3.60 %
AT&T	8.69 %
Verizon Wireless	6.14 %
Site Total MPE %:	22.45 %

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	4.02 %
Dish Sector B Total:	4.02 %
Dish Sector C Total:	4.02 %
<hr/>	
Site Total:	22.45 %

Table 5: Site MPE Summary

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

Dish _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	858.77	98	10.64	n71 (600 MHz)	400	2.66%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,648.39	98	6.80	n70 (AWS-4 / 1995-2020)	1000	0.68%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,849.52	98	6.80	n66 (AWS-4 / 2180-2200)	1000	0.68%
						Total:	4.02 %

Table 6: Dish Maximum Sector MPE Power Values



Summary

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

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

Dish Sector	Power Density Value (%)
Sector A:	4.02 %
Sector B:	4.02 %
Sector C:	4.02 %
Dish Maximum Total (per sector):	4.02 %
Site Total:	22.45 %
Site Compliance Status:	COMPLIANT

The anticipated composite emissions value for this site, assuming all carriers present, is **22.45 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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

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

ATTACHMENT 9

Dish Wireless, LLC Letter of Authorization

**Re: Dish Wireless, LLC Telecommunications Site Located at:
6 Main Street, Centerbrook CT**

The owner of **6 Main Street, Centerbrook CT**, MacBeth Ventures, LLC hereby authorizes DISH Wireless LLC, including their agent, Northeast Site Solutions, LLC to submit a zoning application through the town of Essex for the purpose of establishing equipment on the existing water tower located at the above-mentioned property listed below:

Customer Site ID: BOBDL00219A

6 Main Street, Centerbrook CT

This authorization shall remain in effect until the zoning application is successfully processed and approved by the Town of Essex or until terminated by either party with written notice to the other party.


MacBeth Ventures, LLC

By: _____

Title: Vice President

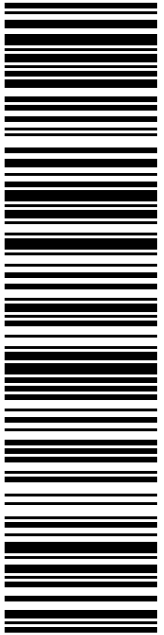
Printed Name: Peter J. Decker

ATTACHMENT 8



NORM NEEDLEMAN
FIRST SELECTMAN
29 WEST AVE
ESSEX CT 06426-1140

USPS TRACKING #



9405 5036 9930 0630 7067 84

DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
STE 1
5 MELROSE DR
FARMINGTON CT 06032-2251

Expected Delivery Date: 12/02/23
Ref#: DD-00219A
0003


C001

P

USPS.com 9405 5036 9930 0630 7067 84 0096 5000 0010 6426
US POSTAGE \$9.65
 Flat Rate Env
U.S. POSTAGE PAID
 Click-N-Ship®


Mailed from 06032 986743992195574

PRIORITY MAIL®




11/30/2023

Electronic Rate Approved #038555749



Click-N-Ship®



UNITED STATES
POSTAL SERVICE®



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Click-N-Ship® Label Record

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9405 5036 9930 0630 7067 84

Trans. #: 597307520	Priority Mail® Postage: \$9.65
Print Date: 11/30/2023	Total: \$9.65
Ship Date: 11/30/2023	
Expected Delivery Date: 12/02/2023	


From: DEBORAH CHASE Ref#: DD-00219A
 NORTHEAST SITE SOLUTIONS
 STE 1
 5 MELROSE DR
 FARMINGTON CT 06032-2251

To: NORM NEEDLEMAN
 FIRST SELECTMAN
 29 WEST AVE
 ESSEX CT 06426-1140

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

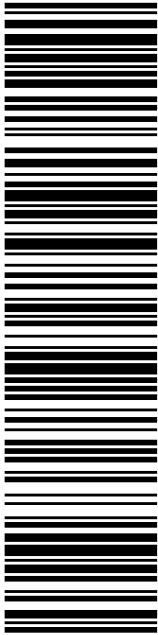


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CARY DUQUES
LAND USE OFFICIAL/WETLANDS
29 WEST AVE
ESSEX CT 06426-1140

USPS TRACKING #



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P

usps.com 9405 5036 9930 0630 7067 60 0096 5000 0010 6426
US POSTAGE \$9.65
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U.S. POSTAGE PAID
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DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032-2251

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9405 5036 9930 0630 7067 60

Trans. #: 597307520	Priority Mail® Postage: \$9.65
Print Date: 11/30/2023	Total: \$9.65
Ship Date: 11/30/2023	
Expected Delivery Date: 12/02/2023	

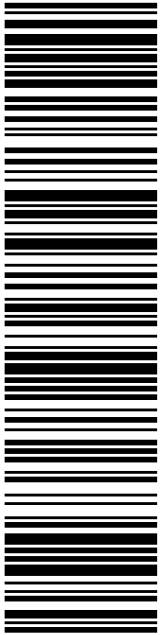
From: DEBORAH CHASE Ref#: DD-00219A
 NORTHEAST SITE SOLUTIONS
 5 MELROSE DR
 FARMINGTON CT 06032-2251

To: CARY DUQUES
 LAND USE OFFICIAL/WETLANDS ENFORCEMENT
 OFFICER
 29 WEST AVE
 ESSEX CT 06426-1140

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MACBETH VENTURES LLC C/O HT PARTNER
STE 312
6 MAIN ST
CENTERBROOK CT 06409-1094



Click-N-Ship®

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US POSTAGE
 Flat Rate Env
U.S. POSTAGE PAID
 Click-N-Ship®
 Mailed from 06032 986743992194523
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DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
5 MELROSE DR
FARMINGTON CT 06032-2251

Expected Delivery Date: 12/02/23
Ref#: DD-00219A
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R002



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Click-N-Ship® Label Record

USPS TRACKING # :	
9405 5036 9930 0630 7067 91	
Trans. #:	597307520
Print Date:	11/30/2023
Ship Date:	11/30/2023
Expected Delivery Date:	12/02/2023
Priority Mail® Postage:	\$9.65
Total:	\$9.65
From:	DEBORAH CHASE NORTHEAST SITE SOLUTIONS 5 MELROSE DR FARMINGTON CT 06032-2251
	Ref#: DD-00219A
To:	MACBETH VENTURES LLC C/O HT PARTNER LLC STE 312 6 MAIN ST CENTERBROOK CT 06409-1094
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