



DISH WIRELESS SITE ID:
SFSFO00884A

SITE ADDRESS:
**S. EAGLE CREST DRIVE
DANVILLE, CA 95606**

**PG&E SITE ID: PITTSBURG-SAN
RAMON - 230 KV_016/064
SBA SITE ID: CA27919-U**

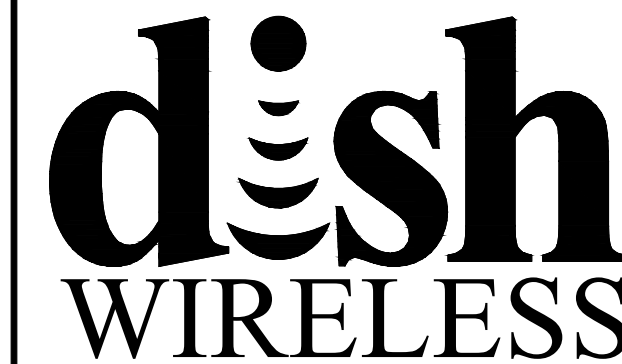
SCOPE OF WORK

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:
SECTOR SCOPE OF WORK:

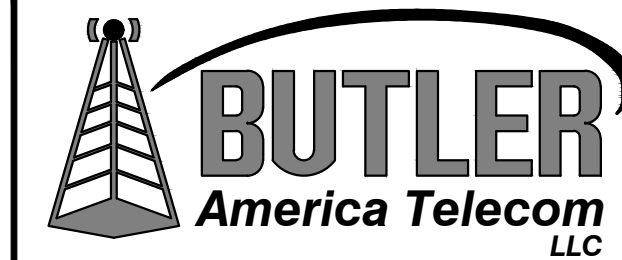
- INSTALL (3) PROPOSED 4'-0" PANEL ANTENNAS (1 PER SECTOR) ON (E) TOP HAT ON (E) PG&E TOWER
- INSTALL (6) PROPOSED RRU'S (2 PER SECTOR) BELOW CONDUCTORS
- INSTALL (1) PROPOSED SURGE SUPPRESSION DEVICE
- INSTALL (1) 1.411"Ø HYBRID CABLE
- INSTALL (24) 7/8"Ø JUMPERS, (3) RET CABLES TO RRU'S

- EQUIPMENT SCOPE OF WORK:
- INSTALL (1) PROPOSED CABLE TRAY/ ICE BRIDGE
 - INSTALL (1) PROPOSED UTILITY H-FRAME
 - INSTALL (1) PROPOSED BBU IN CABINET
 - INSTALL (1) PROPOSED EQUIPMENT CABINET
 - INSTALL (1) PROPOSED POWER CONDUIT
 - INSTALL (1) PROPOSED TELCO CONDUIT
 - INSTALL (1) PROPOSED NEMA 3 TELCO-FIBER BOX
 - INSTALL (1) PROPOSED GPS ANTENNA
 - INSTALL CAMLOCK GEN LUG INTERSECT

SITE INFORMATION		PROJECT DIRECTORY	
PROPERTY OWNER:	BLACKHAWK HOMEOWNERS ASSOCIATION 4125 BLACKHAWK PLAZA CIR. DANVILLE, CA 94606	APPLICANT:	DISH WIRELESS 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
ADDRESS:		SITE DESIGNER:	CONNELL DESIGN GROUP 22431 ANTONIO PKWY., SUITE B160-131 RANCHO SANTA MARGARITA, CA 92688 DAN CONNELL (949) 306-4644
SITE TYPE:	TRANSMISSION TOWER	SITE ACQUISITION:	BUTLER 1511 E. ORANGETHORPE AVE., SUITE D FULLERTON, CA 92831 HENRY CALISTRO (626) 543-3807
COUNTY:	CONTRA COSTA COUNTY		
LATITUDE (NAD 83):	37.817431°		
LONGITUDE (NAD 83):	-121.902887°		
ZONING JURISDICTION:	COUNTY OF CONTRA COSTA		
ZONING DISTRICT:	P-1		
PARCEL NUMBER:	203-760-026		
OCCUPANCY GROUP:	U		
CONSTRUCTION TYPE:	V-B		
POWER COMPANY:	PG&E		
FIBER COMPANY:	TBD		
PROPOSED EQUIPMENT			
LEASE AREA:	116 SQ.FT.		



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



1511 E. ORANGETHORPE AVE., SUITE D
FULLERTON, CA 92831



22431 ANTONIO PKWY
SUITE B160-131
RANCHO SANTA MARGARITA CA 92688
dconnell@connelldesigngroup.com
949-306-4644



DATE STAMPED: 07/22/2022

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DRAWN BY: LE CHECKED BY: JPC APPROVED BY: DC

RFDS REV #4 DATED 11/16/2021

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/24/2022	ISSUED FOR 90% CD REVIEW
1	06/19/2022	ISSUED FOR 100% CD
2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSFO00884A

DISH WIRELESS PROJECT NUMBER
SFSFO00884A

**S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER**

SHEET TITLE
TITLE SHEET

SHEET NUMBER

T-1

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	2019 CBC
MECHANICAL	2019 CMC
ELECTRICAL	2019 CEC

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS-1	SITE SURVEY
LS-2	NOTES
A-0	OVERALL SITE PLAN
A-1	SITE PLAN
A-2	ENLARGED SITE PLAN
A-3	EQUIPMENT / ANTENNA PLANS, AND SCHEDULE
A-4	ELEVATIONS
A-5	ELEVATIONS
D-1	DETAILS
D-2	DETAILS
D-3	DETAILS
D-4	DETAILS
E-1	UTILITY PLAN, PANEL SCHEDULE AND S.L.D.
E-2	ELECTRICAL DETAILS
G-1	GROUNDING PLAN AND NOTES
G-2	GROUNDING DETAILS
RF-1	RF DATA
GN-1	GENERAL NOTES
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

SITE PHOTO



UNDERGROUND SERVICE ALERT
UTILITY NOTIFICATION CENTER OF CALIFORNIA
(800) 422-4133
WWW.CALIFORNIA811.ORG
CALL 2-14 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

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

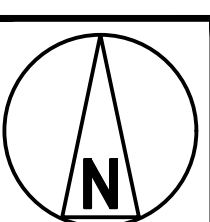
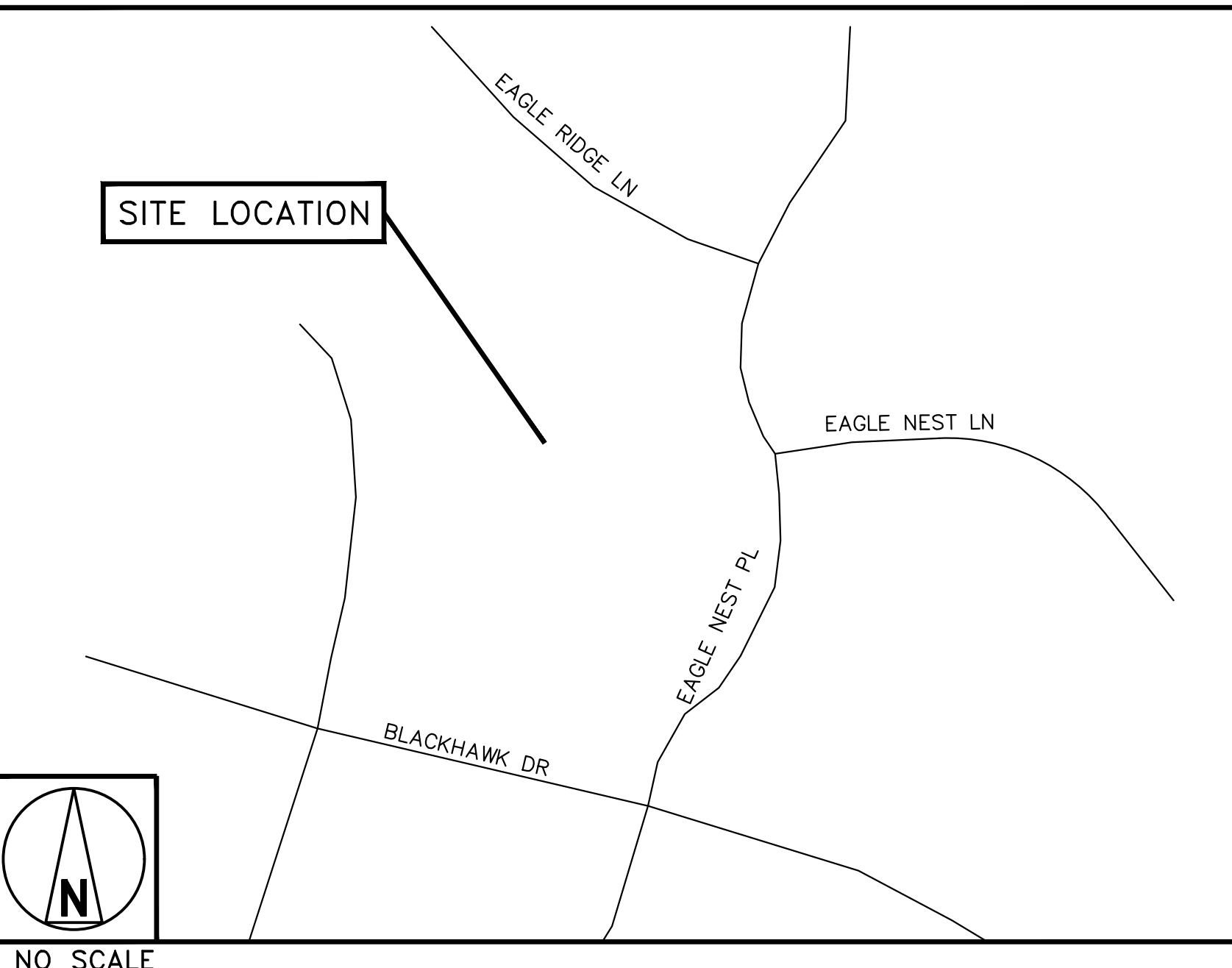
11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

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

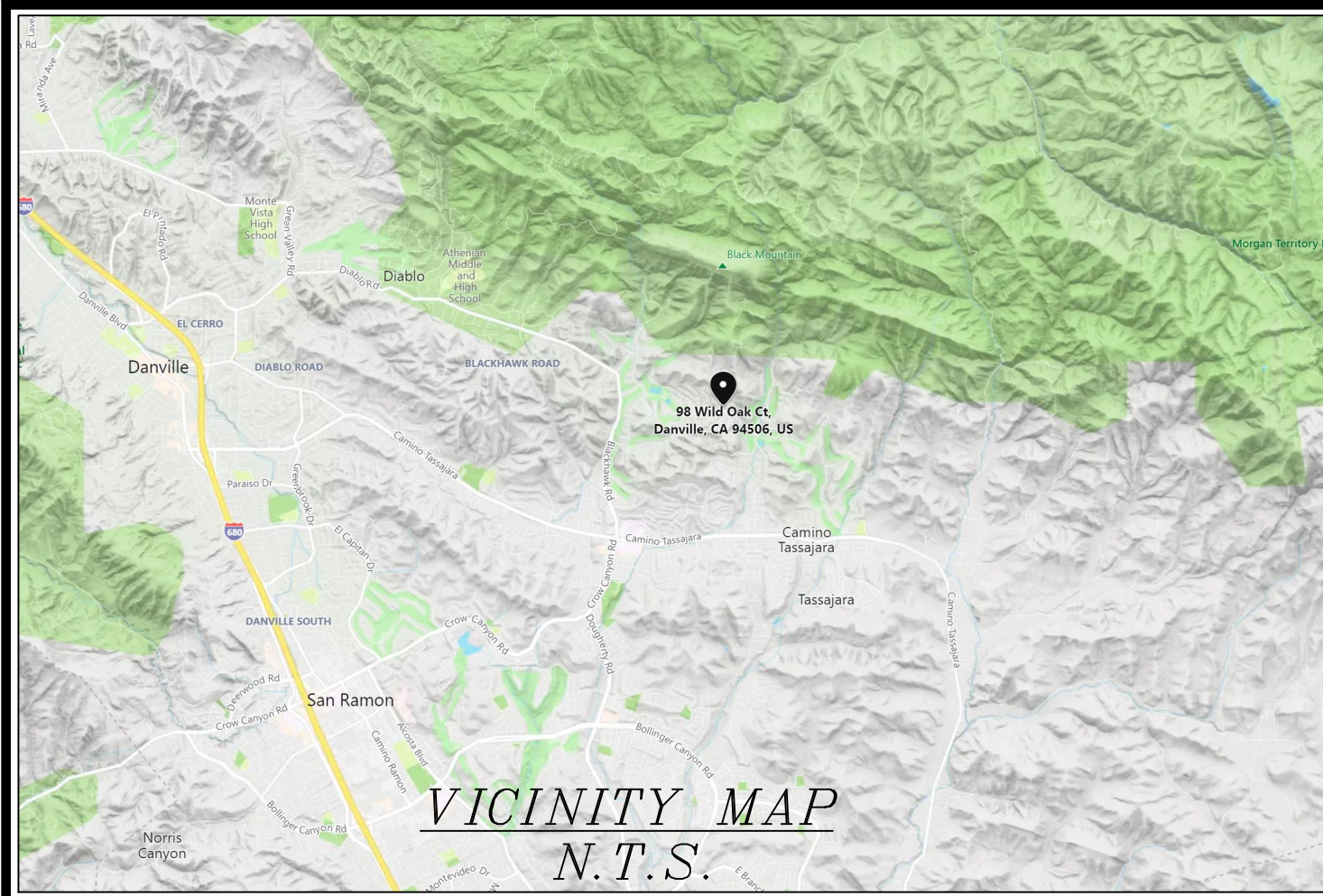
DIRECTIONS

- DIRECTIONS FROM SFO AIRPORT:**
- HEAD SOUTH
 - KEEP LEFT, FOLLOW SIGNS FOR US-101 S/SAN JOSE AND MERGE ONTO US-101 S
 - TAKE EXIT 414B FOR CA-92 E/FASHION ISLAND BLVD/CA-92 W TOWARD HAYWARD/HALF MOON BAY
 - KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR SAN MATEO BRIDGE
 - KEEP LEFT AND MERGE ONTO CA-92 E
 - USE THE RIGHT 2 LANES TO TAKE THE HESPERIAN BOULEVARD EXIT TOWARD OAKLAND/I-880/SAN JOSE
 - KEEP LEFT TO CONTINUE TOWARD I-880 N
 - KEEP LEFT AT THE FORK TO CONTINUE ON EXIT 26B, FOLLOW SIGNS FOR OAKLAND/I-880 N AND MERGE ONTO I-880N
 - USE THE RIGHT 2 LANES TO TAKE EXIT 31A FOR I-238 TOWARD CASTRO VALLEY/STOCKTON/I-580
 - CONTINUE ONTO I-238 S
 - MERGE ONTO I-580 E
 - TAKE EXIT 44B TO MERGE ONTO I-680 N
 - USE THE RIGHT LANE TO TAKE EXIT 36 FOR CROW CANYON RD
 - USE THE RIGHT 2 LANES TO TURN RIGHT ONTO CROW CANYON RD
 - CONTINUE STRAIGHT PAST CITIBANK ONTO BLACKHAWK DR
 - TURN RIGHT ONTO BLACKHAWK DR
 - DESTINATION WILL BE ON THE LEFT

VICINITY MAP



NO SCALE



VICINITY MAP
N.T.S.

SURVEY DATE
08/26/2021 & 07/06/22

BASIS OF BEARING
BEARINGS SHOWN HEREON ARE BASED UPON U.S. STATE PLANE NAD83 COORDINATE SYSTEM CALIFORNIA STATE PLANE COORDINATE ZONE THREE, DETERMINED BY GPS OBSERVATIONS.

BENCHMARK
PROJECT ELEVATIONS ESTABLISHED FROM GPS DERIVED ORTHOMETRIC HEIGHTS BY APPLICATION OF NGS "GEOID 18" MODELED SEPARATIONS TO ELLIPSOID HEIGHTS DETERMINED BY OBSERVATIONS OF THE "CRTN" REAL TIME NETWORK. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO NAVD88.

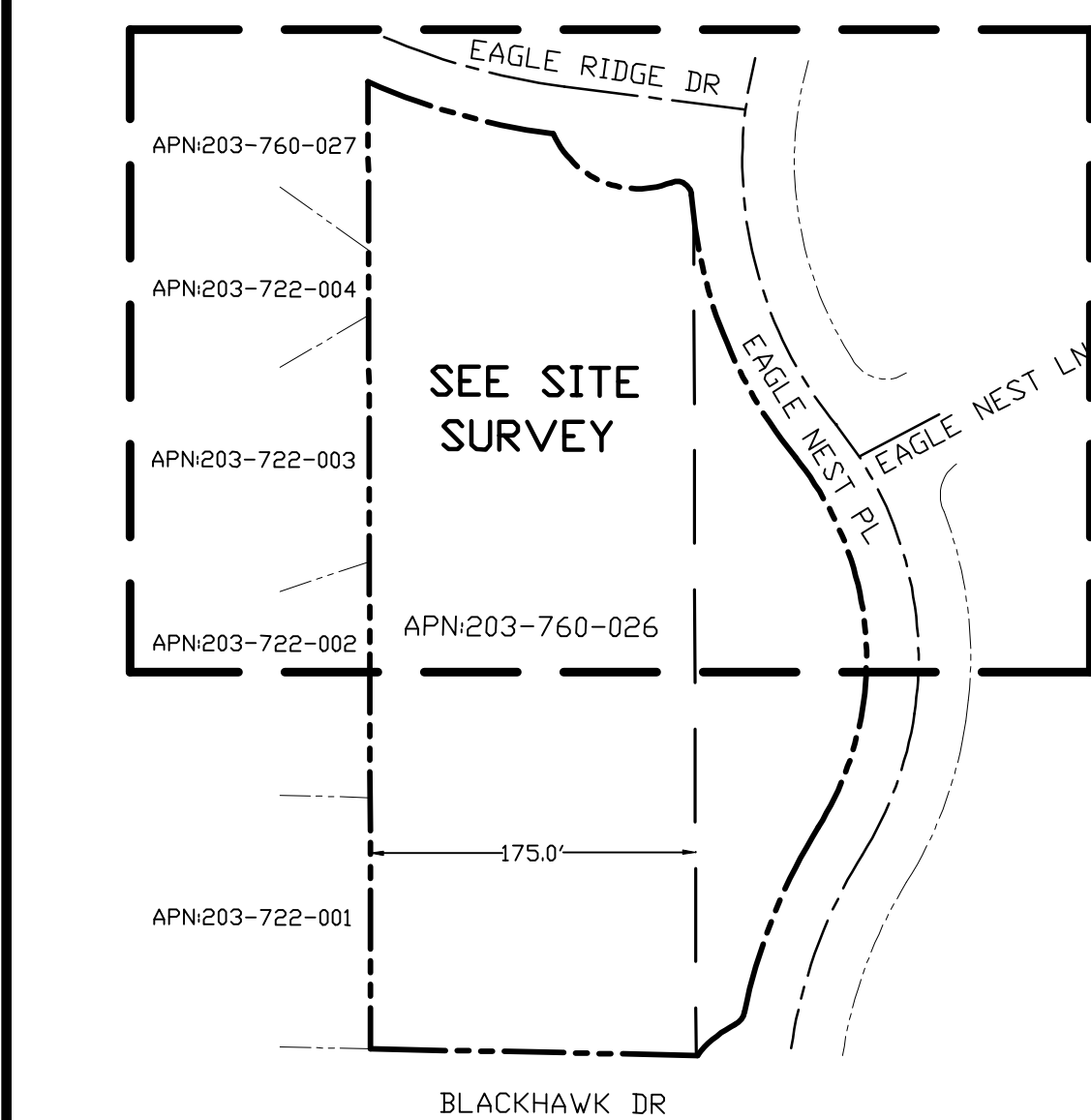
FLOOD ZONE
THIS PROJECT APPEARS TO BE LOCATED WITHIN FLOOD ZONE "X". ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP(S), MAP ID #06013C0460, DATED 06/16/2009.

UTILITY NOTES
SURVEYOR DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THEIR LOCATIONS ARE DEFINITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND DEVELOPER TO CONTACT 811 AND ANY OTHER INVOLVED AGENCIES TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. REMOVAL, RELOCATION AND/OR REPLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

SURVEYOR'S NOTES
SURVEYOR HAS NOT PERFORMED A SEARCH OF PUBLIC RECORDS TO DETERMINE ANY DEFECT IN TITLE ISSUED. THE BOUNDARY SHOWN HEREON IS PLOTTED FROM RECORD INFORMATION AND DOES NOT CONSTITUTE A BOUNDARY SURVEY OF THE PROPERTY. ALL DISTANCES SHOWN HEREON ARE GRID DISTANCES. CONTOURS DERIVED FROM DIRECT FIELD OBSERVATIONS AND FOLLOWS THE CURRENT NATIONAL MAP STANDARDS FOR VERTICAL ACCURACY.

LESSOR LEGAL DESCRIPTION
TAX PARCEL NO.203-760-026

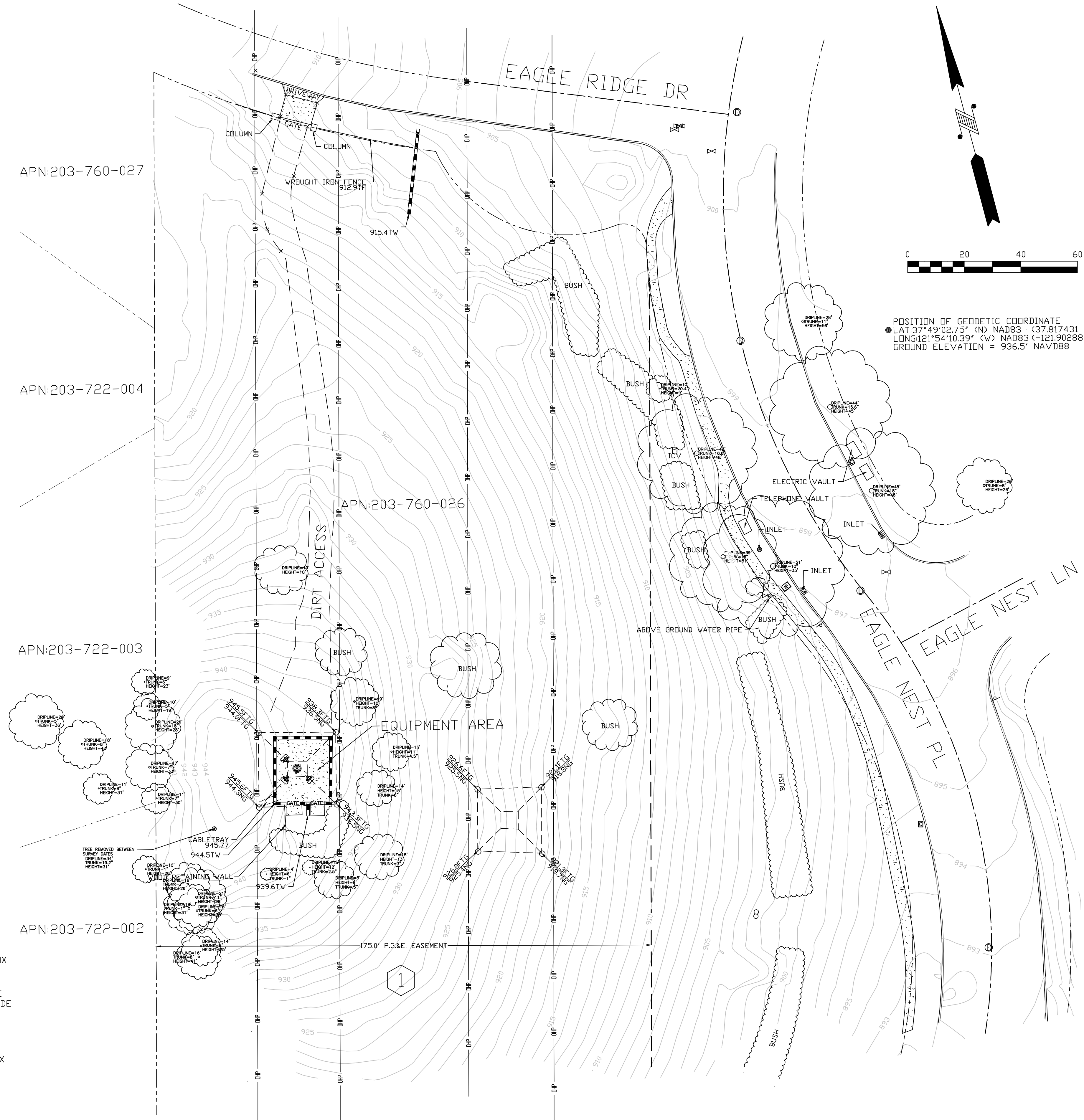
CONTINUED ON LS-2 SHEET



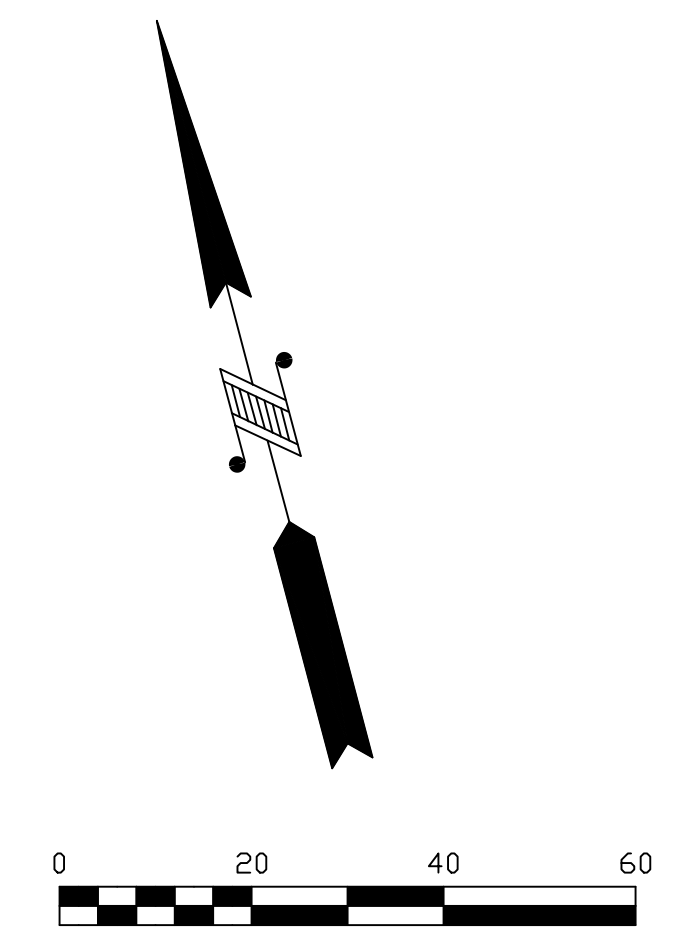
OVERALL SITE

LEGEND

- These standard symbols may be found in the drawing.
- CENTERLINE
 - CONCRETE
 - OVERHEAD LINE
 - PROPERTY LINE
 - WALL
 - BOLLARD
 - ⊕ CELLULAR ANTENNA
 - DECIDUOUS TREE
 - SHRUBBERY
 - ⊠ COMMUNICATION PULLBOX
 - ⊠ ELECTRIC PULLBOX
 - FTG FOOTING
 - FS FINISH SURFACE GRADE
 - NG NATURAL SURFACE GRADE
 - ⊕ STORM DRAIN MANHOLE
 - ⊕ SEWER MANHOLE
 - ⊕ SIGN
 - STREET LIGHT POLE
 - ⊠ STREET LIGHT PULLBOX
 - SURVEY MONUMENT
 - TOP OF CURB
 - TF TOP OF FENCE
 - TW TOP OF WALL
 - ⊕ WATER METER
 - ⊕ WATER VALVE
 - ⊠ TELEPHONE PULLBOX



SITE SURVEY



POSITION OF GEODETIC COORDINATE
 ● LAT: 37°49'02.75" (N) NAD83 (37.817431 DD)
 ● LONG: 121°54'10.39" (W) NAD83 (-121.902887 DD)
 GROUND ELEVATION = 936.5' NAVD88

dish
wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

Eaton Land
Surveying, Inc.

15604 Magnolia Rd.
Grass Valley, CA. 95949
Ph. 530.830.0038

DRAWN BY: HE
 CHECKED BY: SE

REVISIONS:

REV	DATE	DESCRIPTION
4	07/07/22	TREE SURVEY
3	06/13/22	ADJACENT LOT LINES
2	05/02/22	TITLE REPORT ADDED
1	03/10/22	TOWER DETAIL UPDATED
0	10/14/21	SUBMITTAL

LICENSED LAND SURVEYOR
 SHAWN M. EATON
 #8644
 STATE OF CALIFORNIA
 EXP. 12/31/2023

PROJECT INFORMATION:
SFSFO00884A
 S. EAGLE CREST DR.
 DANVILLE, CA. 95606
 CONTRA COSTA COUNTY

SHEET TITLE:
SITE SURVEY

SHEET NUMBER:
LS-1

LESSOR LEGAL DESCRIPTION

ALL THAT PORTION OF PARCEL "F" AS SHOWN UPON THE MAP OF SUBDIVISION 6432 RECORDED IN THE OFFICE OF THE RECORDER OF CONTRA COSTA COUNTY ON DECEMBER 19, 1984, IN BOOK 286 OF MAPS AT PAGE 7-20 ET SEQ., AS CORRECTED BY CERTIFICATE OF CORRECTION RECORDED APRIL 22, 1987 AS INSTRUMENT NO. 87-086279 IN THE OFFICE OF SAID RECORDER, DESCRIBED AS FOLLOWS:

THAT PORTION OF SAID PARCEL "F" LYING SOUTHERLY AND WESTERLY OF THE SOUTHERLY LINE OF EAGLE RIDGE DRIVE AS SHOWN ON THE ABOVE DETAILED MAP OF SUBDIVISION 6432 AND LYING EASTERLY OF THE NORTHERLY PROLONGATION OF THE EASTERLY LINE OF LOTS 25 THROUGH 28 AS SHOWN UPON THE MAP OF SUBDIVISION 5443 RECORDED IN THE OFFICE OF THE RECORDER OF CONTRA COSTA COUNTY ON AUGUST 13, 1980, IN BOOK 244 OF MAPS AT PAGE 24, TO THE INTERSECTION OF SOUTHERLY LINE OF SAID EAGLE RIDGE DRIVE.

HEREINAFTER REFERRED TO AS "SUBJECT PROPERTY."

TAX PARCEL NO.203-76-026

ENCUMBRANCES OF RECORD

① "THE RIGHT AND EASEMENT AND ERECTING, CONSTRUCTING... FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY... OF A UNIFORM WIDTH OF 175 FEET..."

GRANTOR: CASTLE AND COOKE, A HAWAII CORPORATION
 GRANTEE: PACIFIC GAS AND ELECTRIC COMPANY, A CALIFORNIA CORPORATION
 LANDS: SUBJECT AND OTHER PROPERTY
 DATE: AUGUST 27, 1959
 RECORDED: [RECORDING DATE ILLEGIBLE] AS INSTRUMENT #59-68922, BOOK 3480, PAGE 144

2. DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS FOR COUNTRY CLUB AT BLACKHAWK

DECLARANT: BLACKHAWK CORPORATION, A DELAWARE CORPORATION
 LANDS: SUBJECT AND OTHER PROPERTY
 DATE: OCTOBER 5, 1979
 RECORDED: OCTOBER 10, 1979 AS INSTRUMENT #79-148236, BOOK 9570, PAGE 472
 SUBJECT TO:
 FIRST AMENDMENT RECORDED OCTOBER 23, 1979 AS INSTRUMENT #79-155281
 SECOND AMENDMENT RECORDED DECEMBER 21, 1979 AS INSTRUMENT #79-187226
 THIRD AMENDMENT RECORDED DECEMBER 9, 1981 AS INSTRUMENT #81-159572
 FOURTH AMENDMENT RECORDED JULY 20, 1984 AS INSTRUMENT #84-100893
 DECLARATION OF ANNEXATION RECORDED JANUARY 17, 1985 AS INSTRUMENT #85-005717
 FIRST SUPPLEMENTAL RECORDED JANUARY 17, 1985 AS INSTRUMENT #85-5718
 SECOND SUPPLEMENTAL RECORDED JANUARY 17, 1985 AS INSTRUMENT #85-5719
 AMENDMENT RECORDED OCTOBER 14, 1999 AS INSTRUMENT #99-271860

3. GRANT DEED [DEVELOPMENT RIGHTS]

GRANTOR: BLACKHAWK CORPORATION, A DELAWARE CORPORATION
 GRANTEE: CONTRA COSTA COUNTY, A POLITICAL SUBDIVISION OF THE STATE OF CALIFORNIA
 LANDS: SUBJECT AND OTHER PROPERTY
 DATE: DECEMBER 20, 1984
 RECORDED: JUNE 3, 1985 AS INSTRUMENT #85-070476
 SUBJECT TO:
 DECLARATION OF COVENANTS RECORDED AS INSTRUMENT #79-148236
 FIRST AMENDMENT RECORDED OCTOBER 23, 1979 AS INSTRUMENT #79-155281
 SECOND AMENDMENT RECORDED DECEMBER 21, 1979 AS INSTRUMENT #79-187226
 THIRD AMENDMENT RECORDED DECEMBER 9, 1981 AS INSTRUMENT #81-159572
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 SECOND SUPPLEMENTAL RECORDED JANUARY 17, 1985 AS INSTRUMENT #85-5719
 AMENDMENT RECORDED OCTOBER 14, 1999 AS INSTRUMENT #99-271860

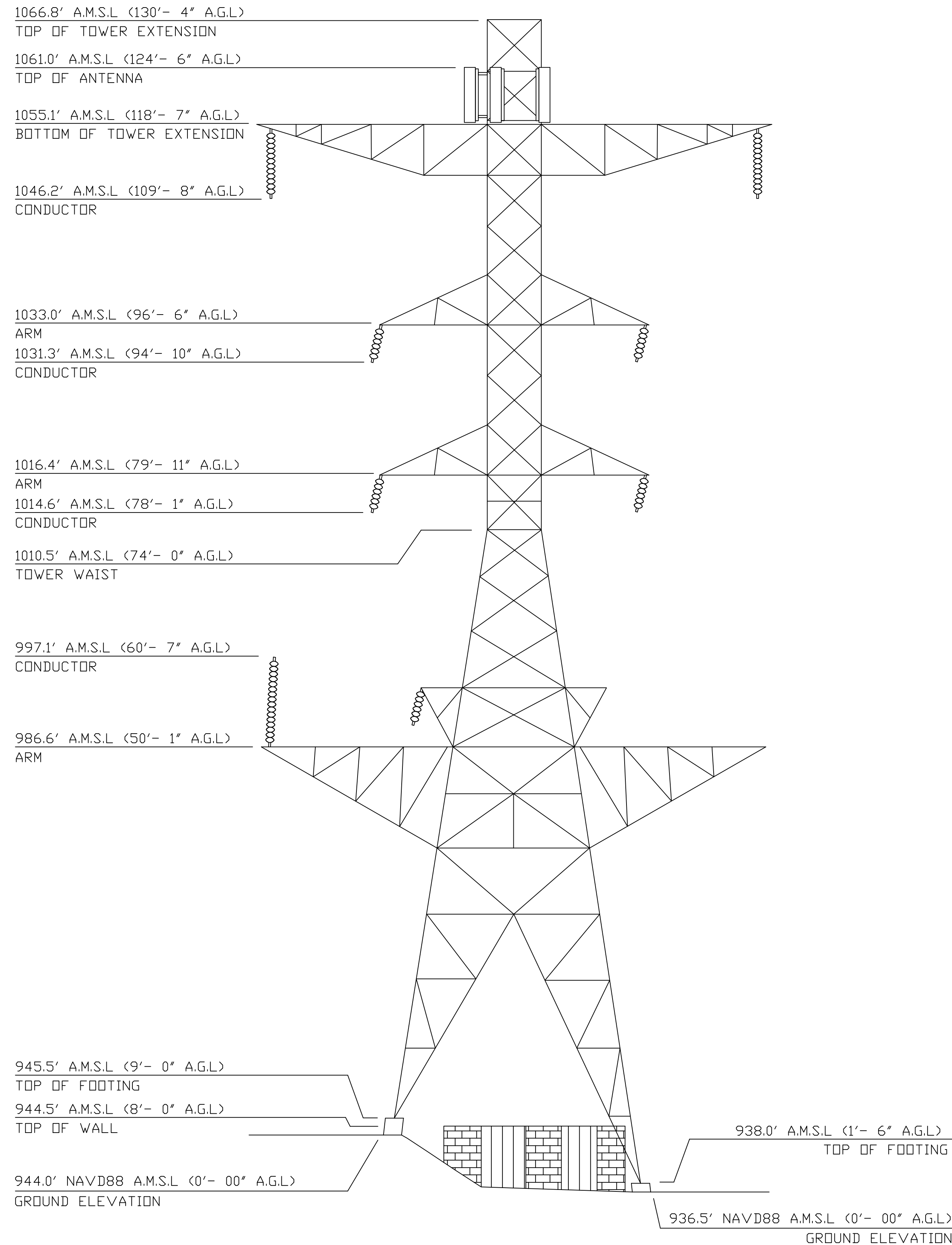
4. GRANT OF EASEMENT ON CONDITION SUBSEQUENT

GRANTOR: COUNTRY CLUB AT BLACKHAWK IMPROVEMENT ASSOCIATION
 GRANTEE: MICHAEL DEVANEY
 LANDS: SUBJECT PROPERTY
 DATE: DECEMBER 30, 1986
 RECORDED: MARCH 5, 1987 AS INSTRUMENT #87-049510
 COMMENTS: 16-FOOT EASEMENT LOCATED IN THE SOUTHWEST CORNER OF SUBJECT PROPERTY, AS FURTHER DETAILED THEREIN

5. ORDINANCES FOR TAXATION PURPOSES

ISSUED BY: COUNTY OF CONTRA COSTA
 LANDS: SUBJECT AND OTHER PROPERTY
 ITEMIZED ORDINANCE NO. 96-27 RECORDED AUGUST 15, 1996 AS INSTRUMENT #96-152751
 ORDINANCE NO. 96-26 RECORDED AUGUST 15, 1996 AS INSTRUMENT #96-152752
 ORDINANCE NO. 98-36 RECORDED SEPTEMBER 3, 1998 AS INSTRUMENT #98-213310
 ORDINANCE NO. 98-35 RECORDED SEPTEMBER 3, 1998 AS INSTRUMENT #98-213311
 ORDINANCE NO. 98-41 RECORDED OCTOBER 26, 1998 AS INSTRUMENT #98-265421

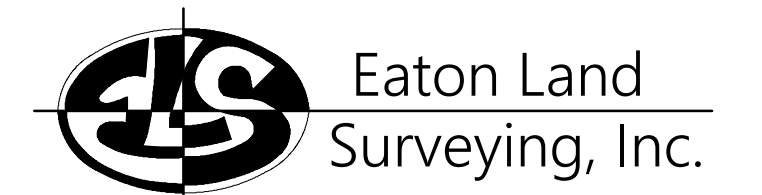
PREPARED USING CANTRELL & ASSOCIATES, INC.'S TITLE REPORT FOR #SFSFO0884A DATED 03/15/2022; THE OFFICIAL RECORDS FOR THE EASEMENTS WERE NOT INCLUDED IN THE TITLE REPORT AND MAY OR MAY NOT BE SHOWN ON THIS SURVEY. EASEMENTS SHOWN ARE TAKEN FROM THE RECORD SUBDIVISION MAP.



TOWER DETAIL
N.T.S.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



15604 Magnolia Rd.
 Grass Valley, CA. 95949
 Ph. 530.830.0038

DRAWN BY:	HE
CHECKED BY:	SE

REVISIONS:		
REV	DATE	DESCRIPTION
4	07/07/22	TREE SURVEY
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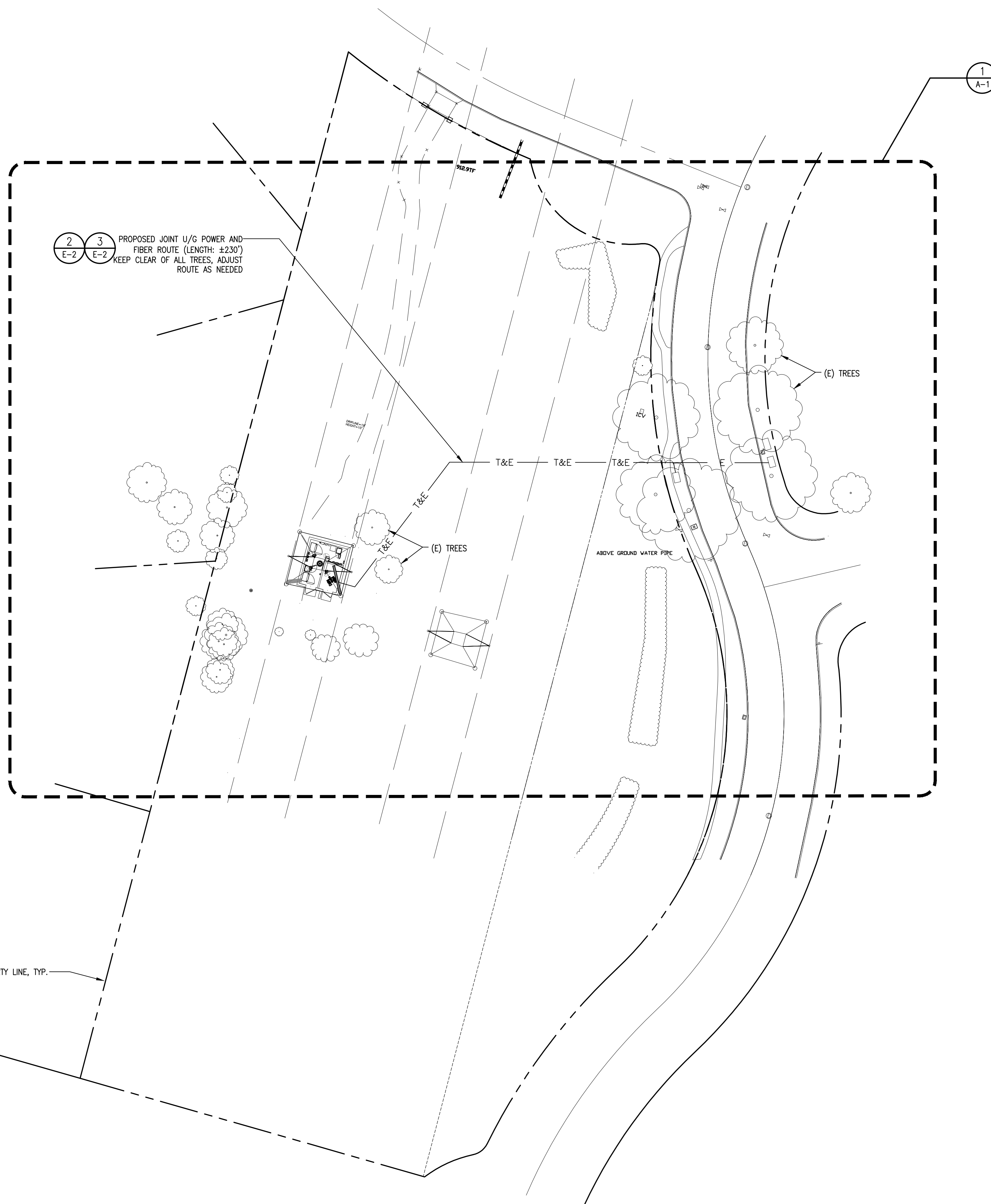


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S. EAGLE CREST DR.
DANVILLE, CA. 95606
SANTA CLARA COUNTY

SHEET TITLE:
NOTES

SHEET NUMBER:
LS-2

ALPHA SECTOR
AZIMUTH 350°



- NOTES**
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
 - CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.

- ADJACENT PROPERTIES TO SFSF000884A
- 90 WILD OAK CT
DANVILLE, CA 94506
OWNER: KAUR, INDERJEET;
BRAR, KARANDEEP SINGH
APN: 203-722-001
 - 94 WILD OAK CT
DANVILLE, CA 94506
OWNER: DUTTON WILLIAM B (TRE)
APN: 203-722-002
 - 98 WILD OAK CT
DANVILLE, CA 94506
OWNER: HARRIS JR, JACK R;
HARRIS, AIMEE D
APN: 203-722-003
 - 102 WILD OAK CT
DANVILLE, CA 94506
OWNER: JUDGE, SIMRAT
APN: 203-722-004
 - 4003 EAGLE NEST LN
DANVILLE, CA 94506
OWNER: LAPPIN WILLIAM SCOTT (TRE);
COLLINS JANINE ERIN
APN: 220-110-001
 - 4004 EAGLE NEST LN
DANVILLE, CA 94506
OWNER: LEMAICH RICHARD A &
TERRY (TRE)
APN: 220-110-026
 - 5201 BLACKHAWK DR
DANVILLE, CA 94506
OWNER: ROESLER, VEENA;
THE ROESLER 2021 TRUST
APN: 220-110-040



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DRAWN BY:	CHECKED BY:	APPROVED BY:
LE	JPC	DC

RFDS REV #4 DATED 11/16/2021

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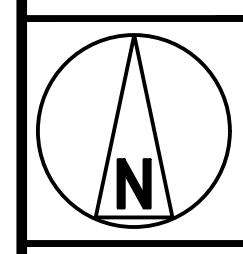
SHEET TITLE
**OVERALL
SITE PLAN**

SHEET NUMBER

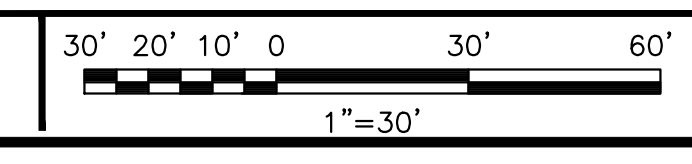
A-1

GAMMA SECTOR
AZIMUTH 260°

BETA SECTOR
AZIMUTH 130°



OVERALL SITE PLAN





- NOTES**
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BRAR, KARANDEEP SINGH
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OWNER: DUTTON WILLIAM B (TRE)
APN: 203-722-002

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DANVILLE, CA 94506
OWNER: HARRIS JR, JACK R;
HARRIS, AIMEE D
APN: 203-722-003

102 WILD OAK CT
DANVILLE, CA 94506
OWNER: JUDGE, SIMRAT
APN: 203-722-004

4003 EAGLE NEST LN
DANVILLE, CA 94506
OWNER: LAPPIN WILLIAM SCOTT (TRE);
COLLINS JANINE ERIN
APN: 220-110-001

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APN: 220-110-026

5201 BLACKHAWK DR
DANVILLE, CA 94506
OWNER: ROESLER, VEENA;
THE ROESLER 2021 TRUST
APN: 220-110-040

1
A-2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



1511 E. ORANGETHORPE AVE., SUITE D
FULLERTON, CA 92831

CDG

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DANVILLE, CA 95606
TRANSMISSION TOWER**

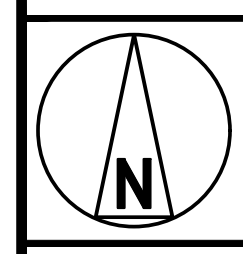
SHEET TITLE
SITE PLAN

SHEET NUMBER
A-1

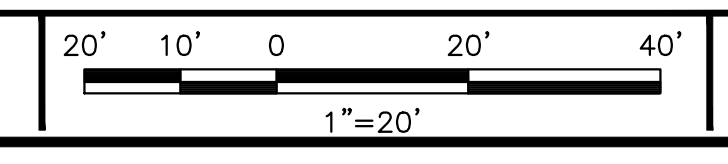
BETA SECTOR
AZIMUTH 130°

GAMMA SECTOR
AZIMUTH 260°

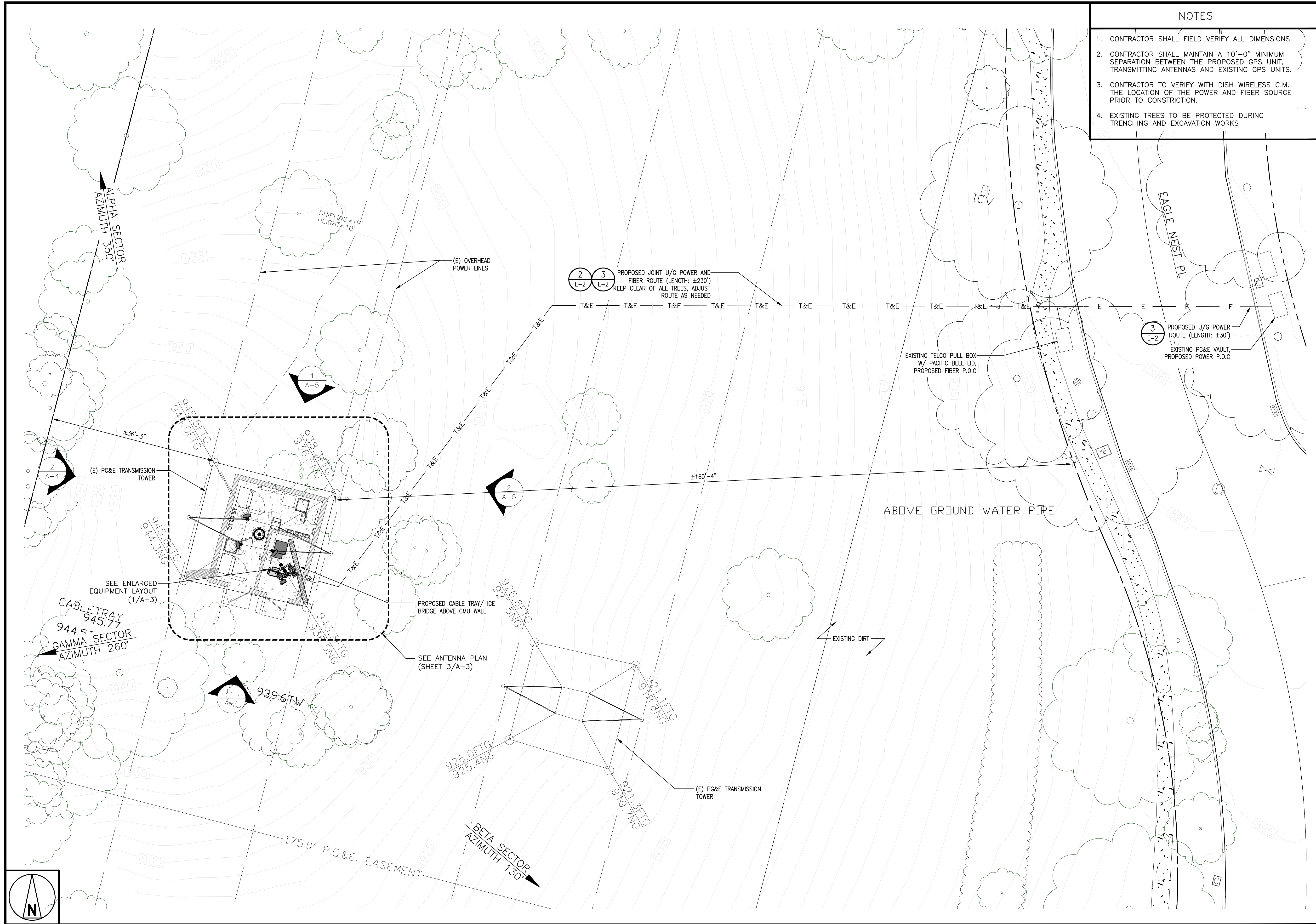
ALPHA SECTOR
AZIMUTH 350°




SITE PLAN




1



- NOTES**
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
 2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
 3. CONTRACTOR TO VERIFY WITH DISH WIRELESS C.M. THE LOCATION OF THE POWER AND FIBER SOURCE PRIOR TO CONSTRUCTION.
 4. EXISTING TREES TO BE PROTECTED DURING TRENCHING AND EXCAVATION WORKS




5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



1511 E. ORANGETHORPE AVE., SUITE D
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CDG

22431 ANTONIO PKWY
SUITE B160-131
RANCHO SANTA MARGARITA CA 92688
dconnell@connelldesigngroup.com
949-306-4644



REGISTERED PROFESSIONAL ENGINEER
DANIEL MICHAEL CONNELL
NO. 62543
EXP. 12/31/23
CIVIL
STATE OF CALIFORNIA
DATE STAMPED: 07/22/2022

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RFDS REV #4 DATED 11/16/2021

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2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSF00884A

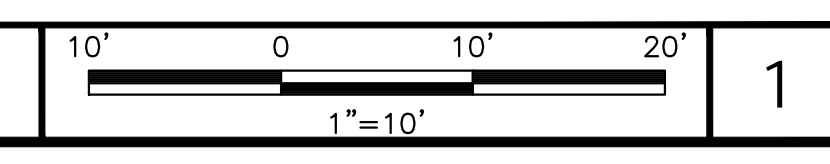
DISH WIRELESS PROJECT NUMBER
SFSF00884A

**S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER**

SHEET TITLE
**ENLARGED TOWER
PLAN**

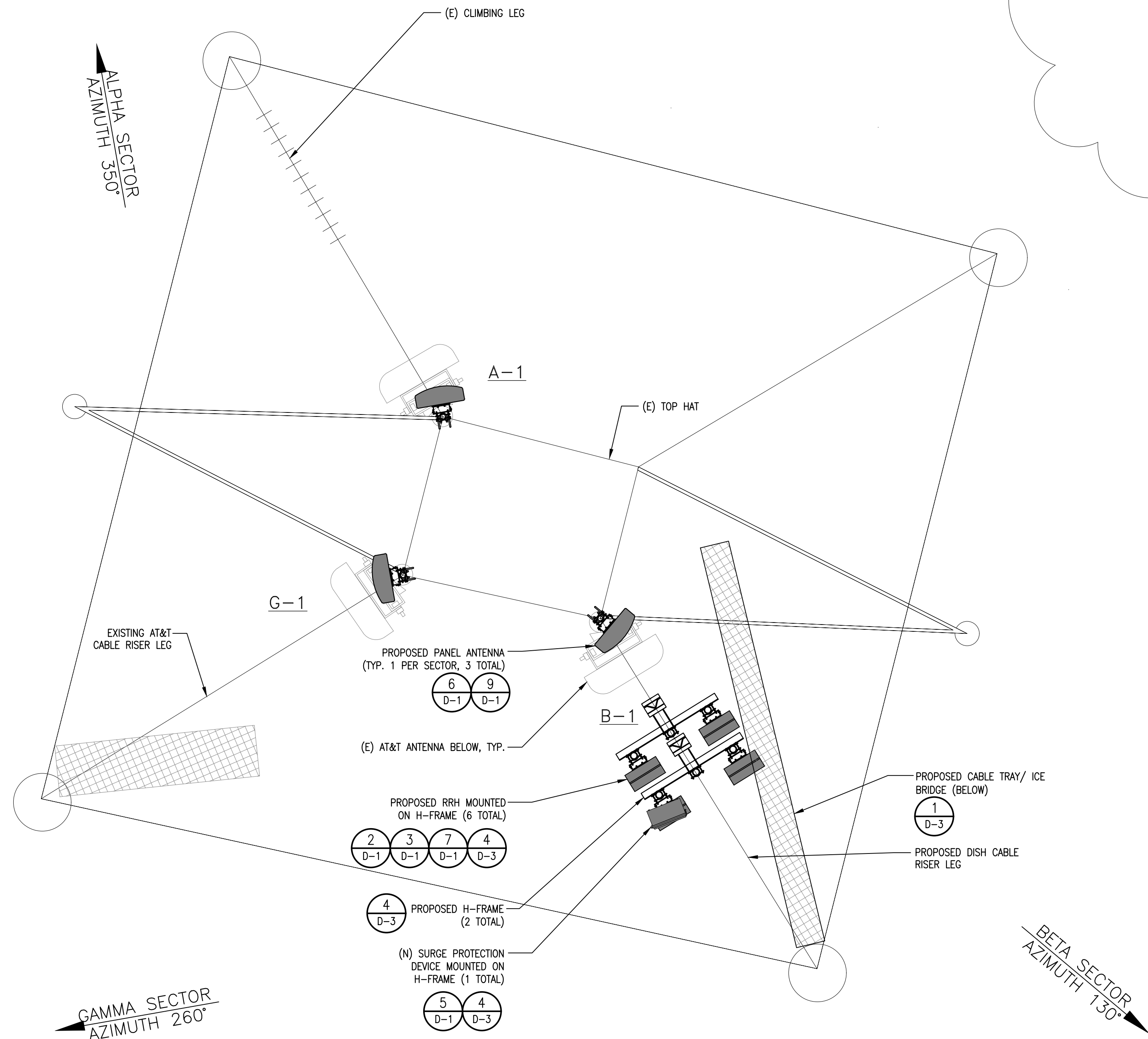
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A-2

ENLARGED TOWER PLAN

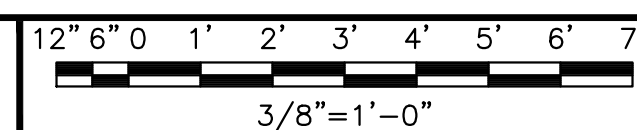


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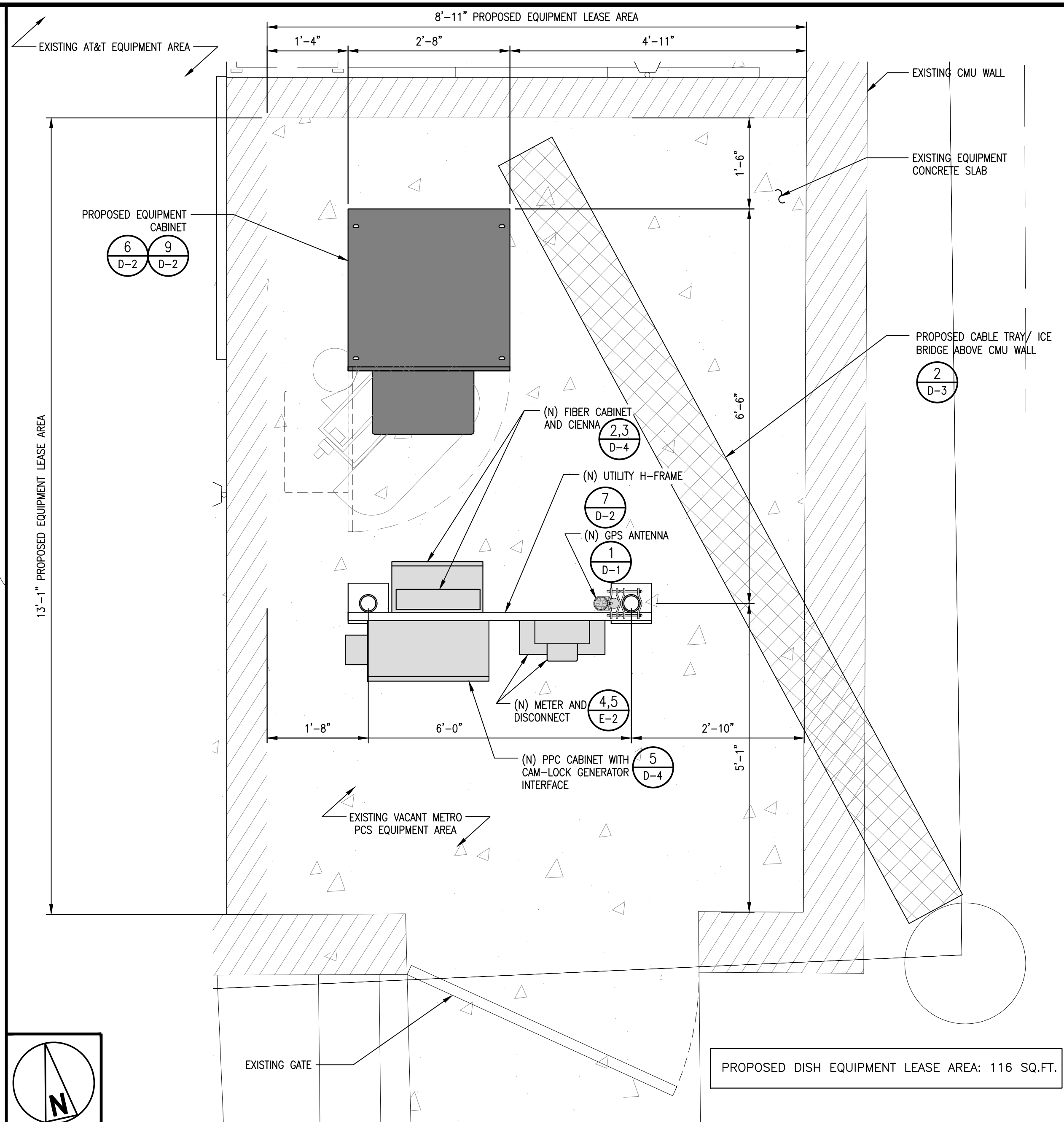
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.



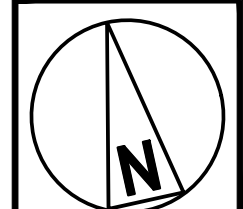
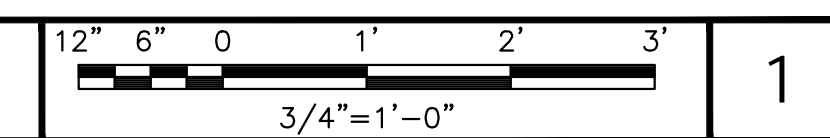
ANTENNA LAYOUT



3



EQUIPMENT LAYOUT



SECTOR	ANTENNA					RADIO				
	POSITION	EXISTING OR PROPOSED	SIZE (HxWxD)	AZIMUTH	RAD CENTER	TRANSMISSION CABLE FEED LINE TYPE AND LENGTH	POSITION	EXISTING OR PROPOSED	SIZE (HxWxD)	TRANSMISSION CABLE FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	KMW KE654L4H4-OD 48.0"x18.1"x7.1" 48.5 LBS	350°	128'-3"	COAX JUMPERS (±110' LONG)	A1	PROPOSED	FUJITSU TA08025-B605 15.75"x14.96"x9.06"	(1) HIGH-CAPACITY HYBRID CABLE (±50' LONG)
							A1	PROPOSED	FUJITSU TA08025-B604 15.75"x14.96"x7.87"	
BETA	B1	PROPOSED	KMW KE654L4H4-OD 48.0"x18.1"x7.1" 48.5 LBS	130°	128'-3"	COAX JUMPERS (±110' LONG)	B1	PROPOSED	FUJITSU TA08025-B605 15.75"x14.96"x9.06"	
							B1	PROPOSED	FUJITSU TA08025-B604 15.75"x14.96"x7.87"	
GAMMA	C1	PROPOSED	KMW KE654L4H4-OD 48.0"x18.1"x7.1" 48.5 LBS	260°	128'-3"	COAX JUMPERS (±110' LONG)	C1	PROPOSED	FUJITSU TA08025-B605 15.75"x14.96"x9.06"	
							C1	PROPOSED	FUJITSU TA08025-B604 15.75"x14.96"x7.87"	

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

ANTENNA SCHEDULE

NO SCALE 2

dish WIRELESS
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

BUTLER
America Telecom LLC
1511 E. ORANGETHORPE AVE., SUITE D
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CDG
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LE	JPC	DC

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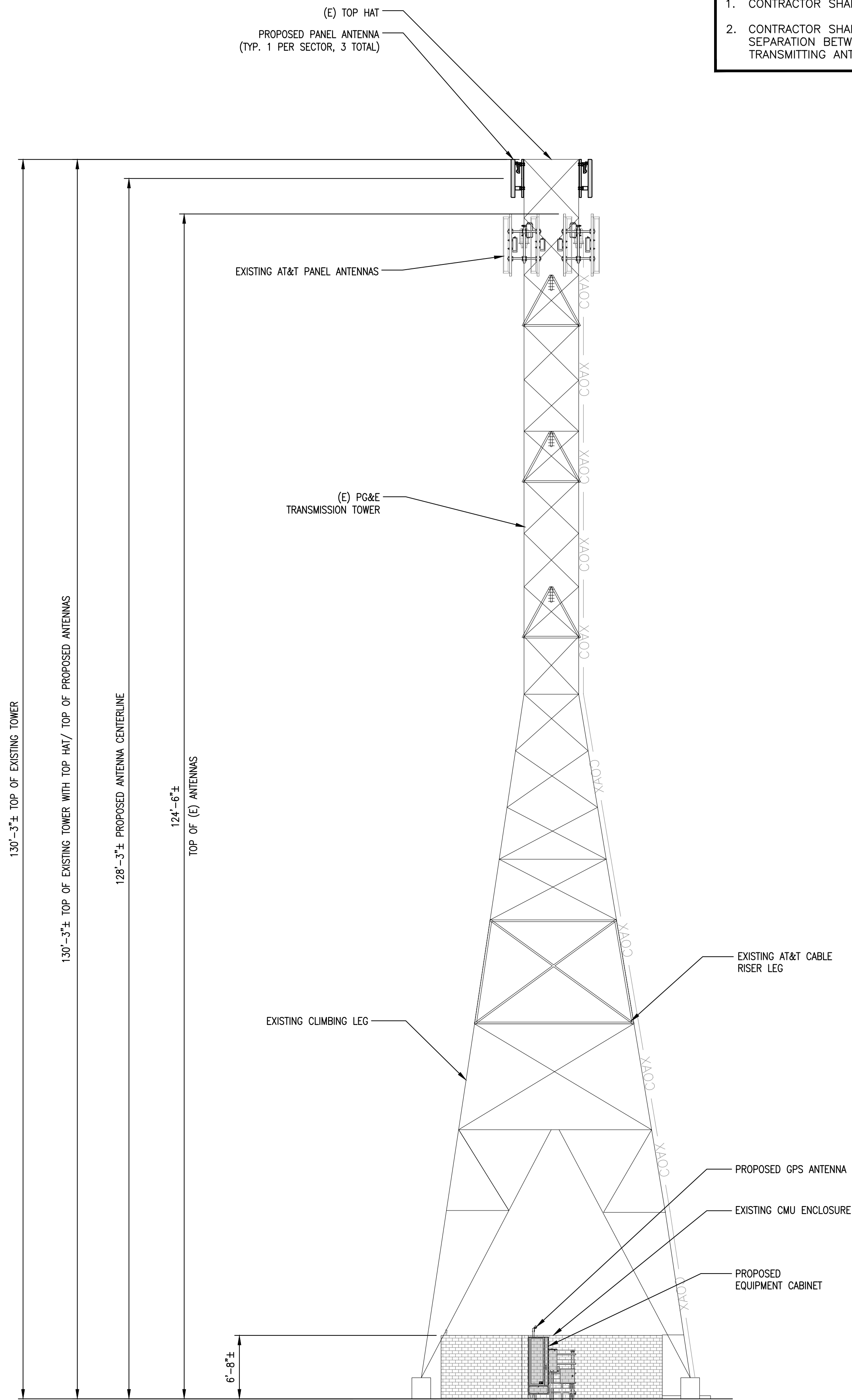
DISH WIRELESS PROJECT NUMBER
SFSF00884A
S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
EQUIP / ANTENNA PLANS, AND SCHEDULE

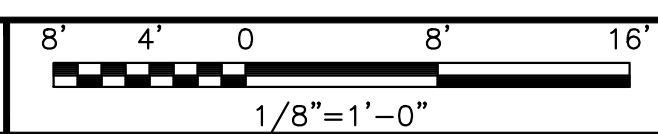
SHEET NUMBER
A-3

NOTES

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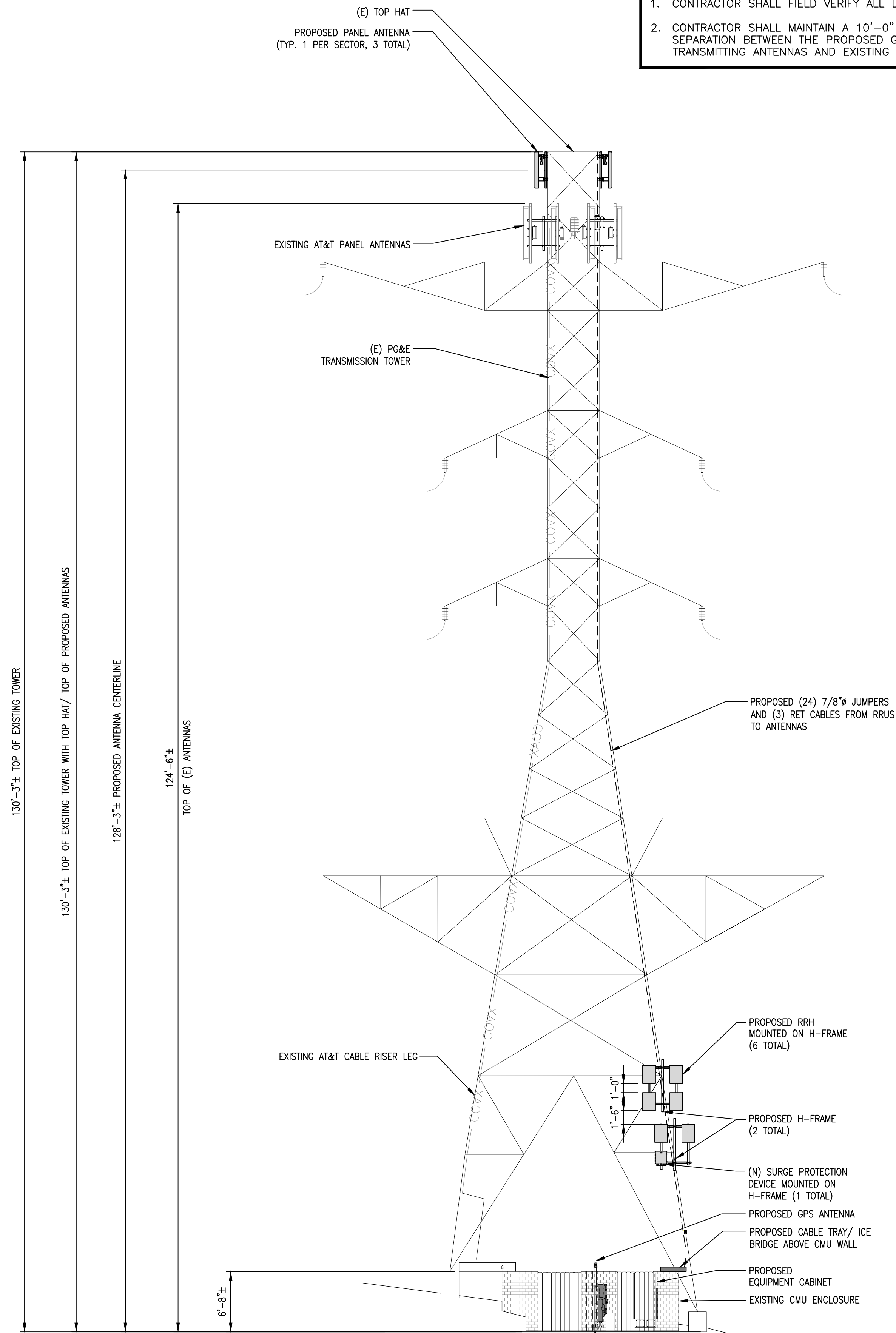
TOWER WEST ELEVATION



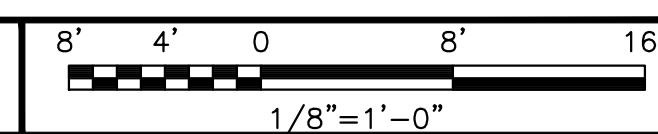
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TOWER SOUTH ELEVATION



1



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S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

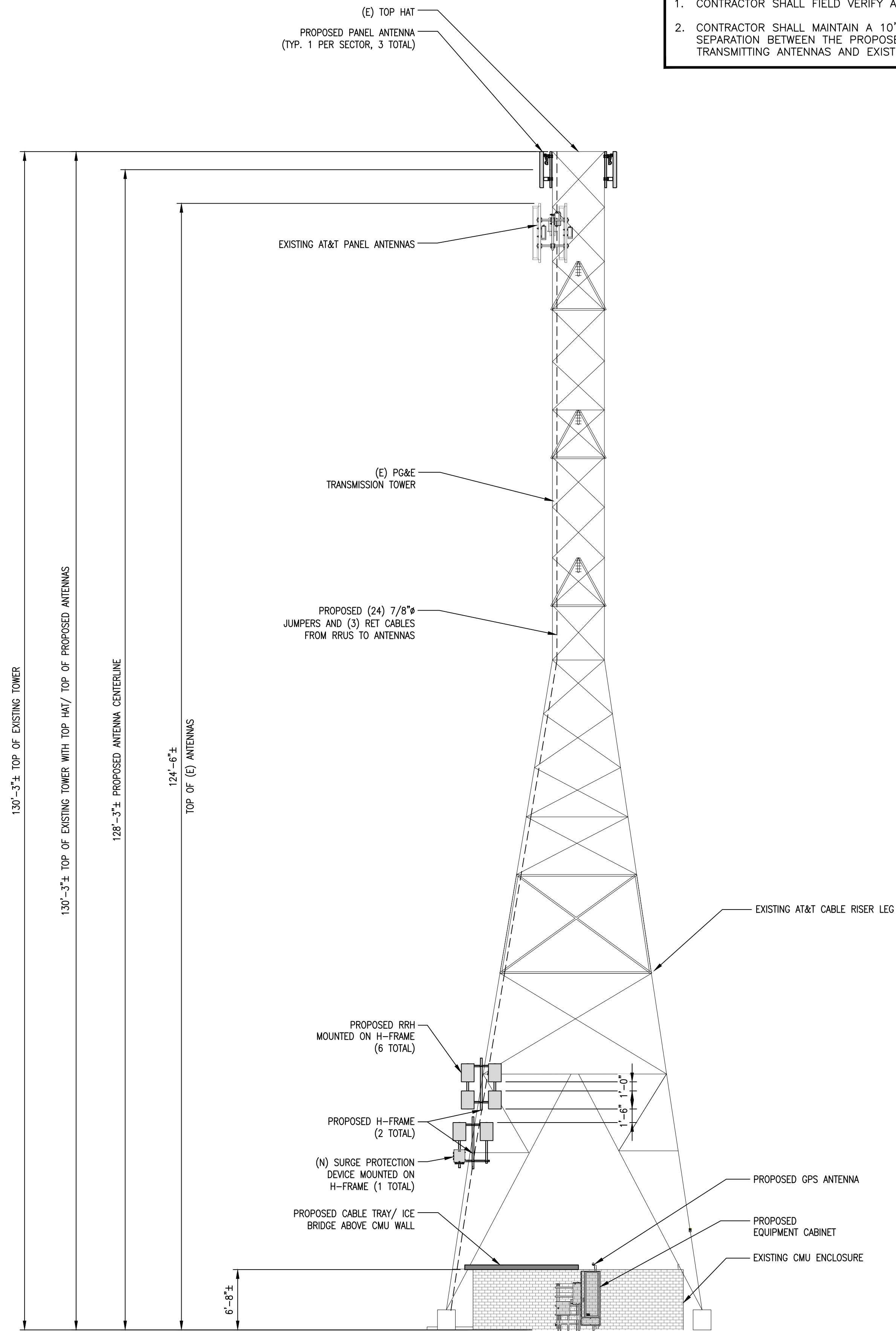
SHEET TITLE
ELEVATIONS

SHEET NUMBER

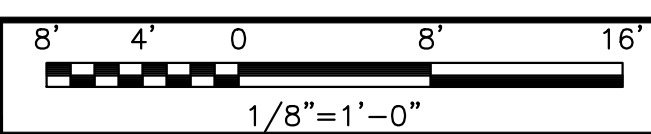
A-4

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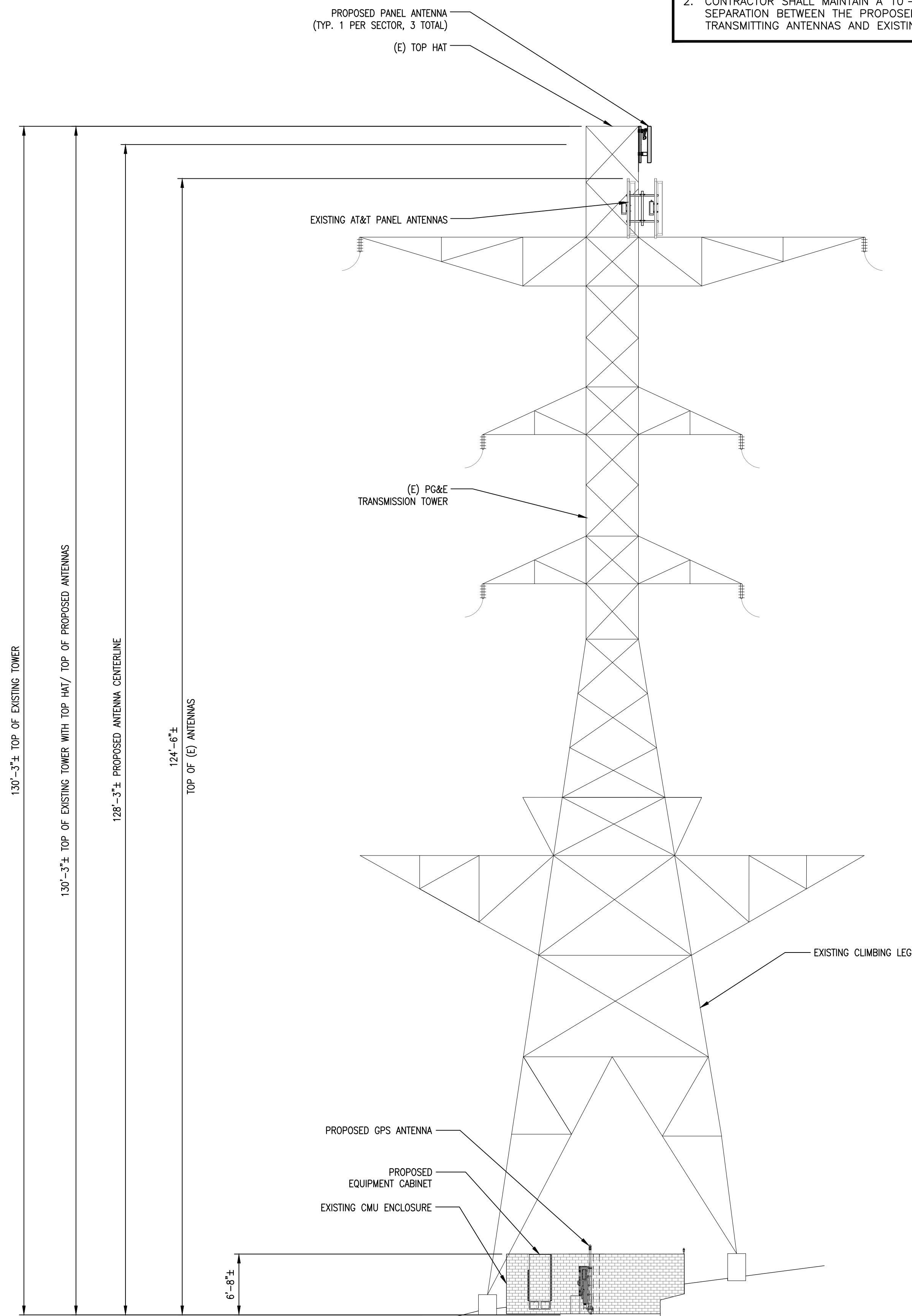
TOWER EAST ELEVATION



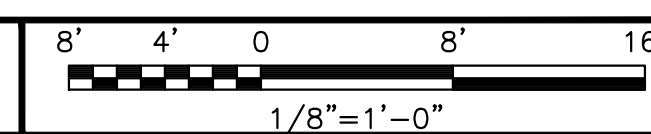
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NOTES

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TOWER NORTH ELEVATION



1



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949-306-4644



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DISH WIRELESS PROJECT NUMBER
SFSF00884A

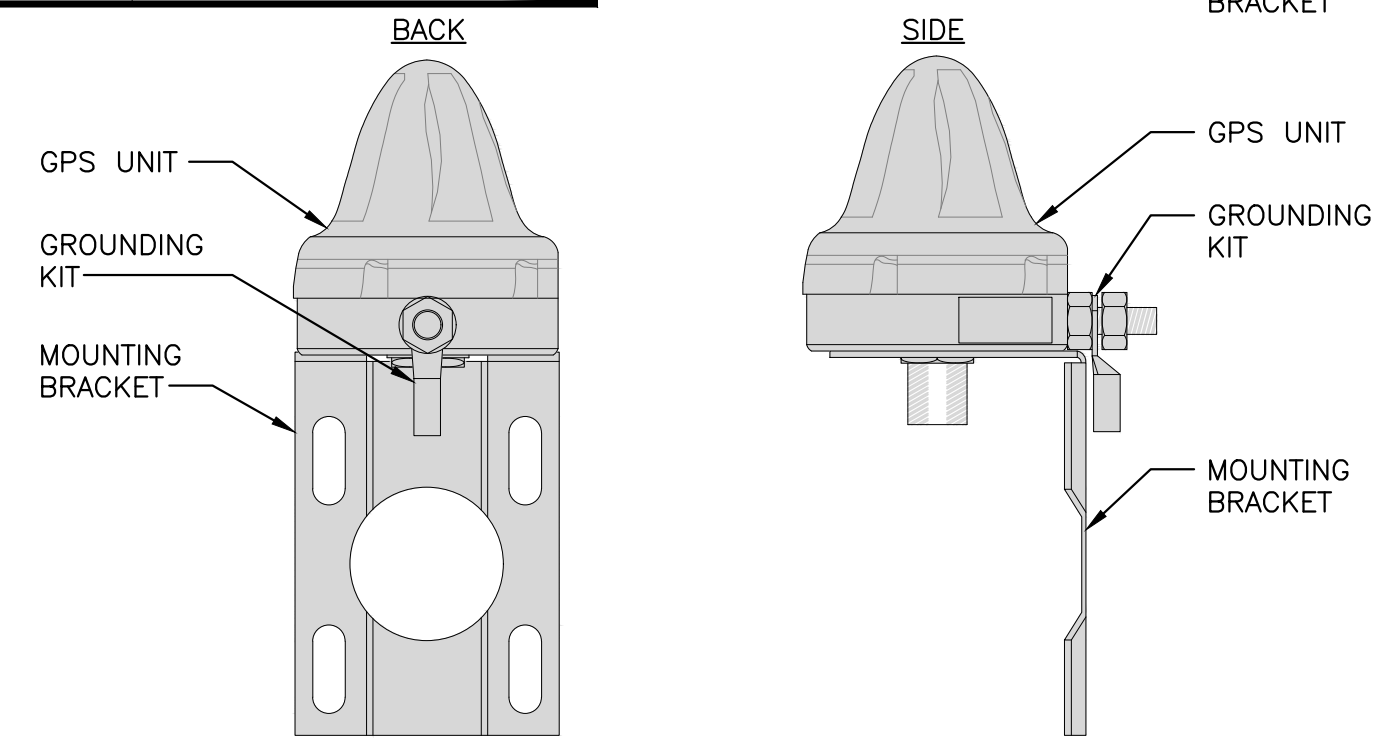
S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
ELEVATIONS

SHEET NUMBER

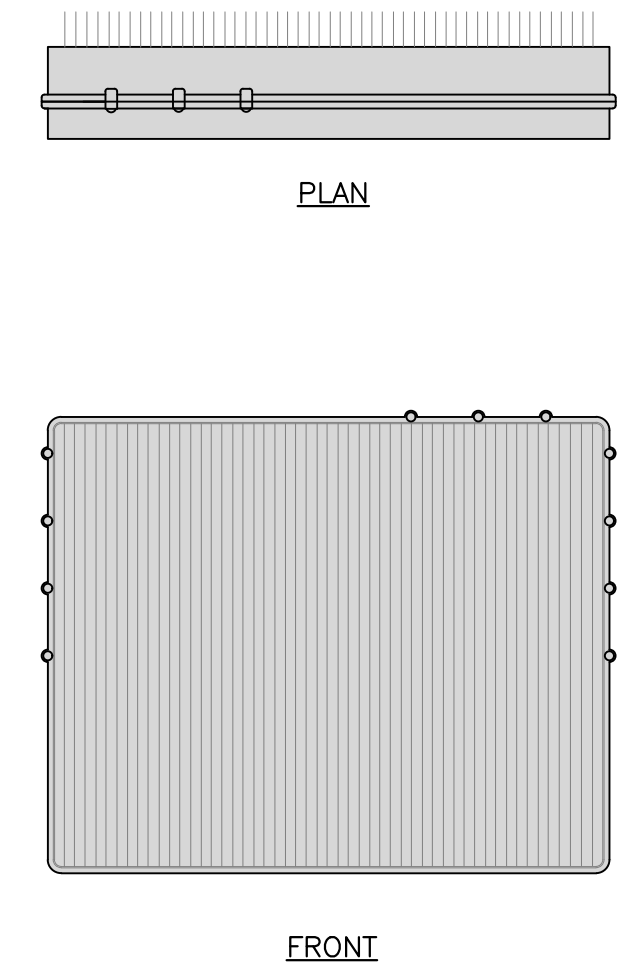
A-5

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

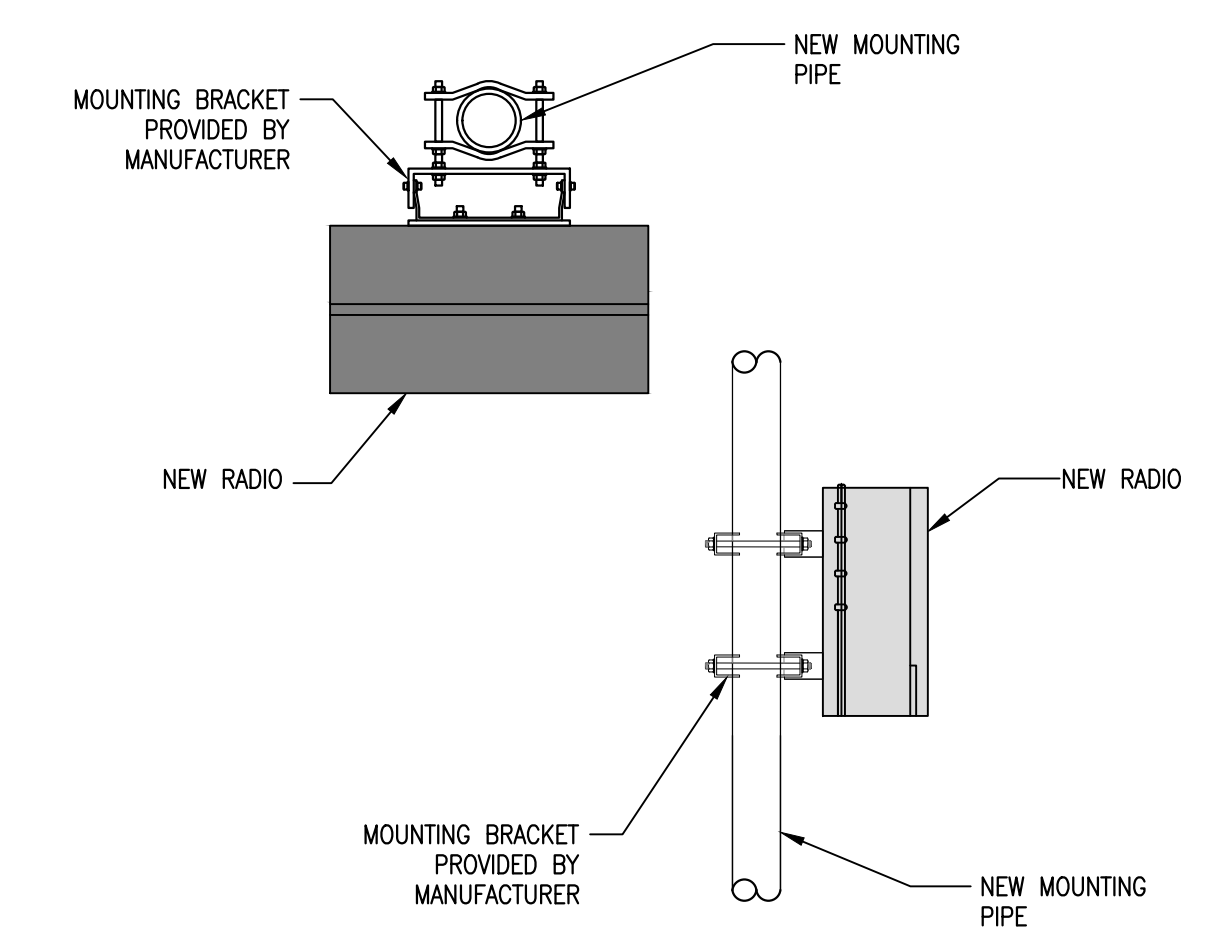


GPS ANTENNA DETAIL NO SCALE 1

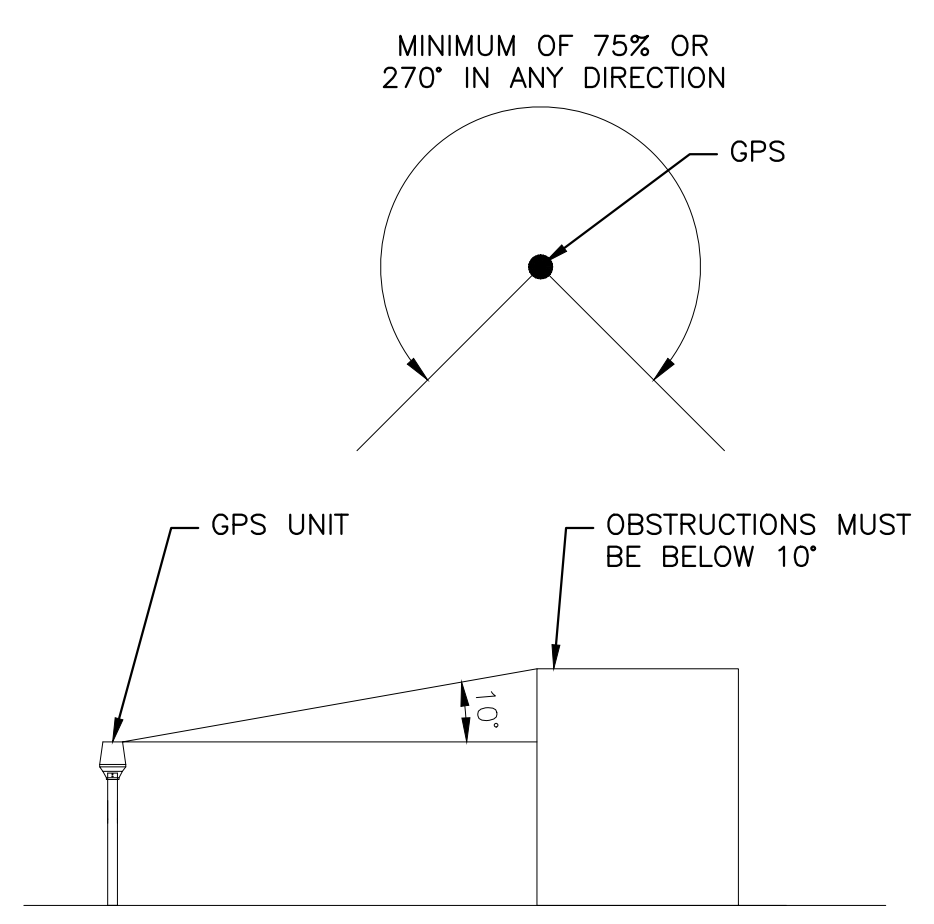
FUJITSU TA08025-B605	
DIMENSIONS (HxWxD) (KG/IN)	15.75" X 14.96" X 9.06"
TOTAL WEIGHT (KG/LB)	75lb
POWER SUPPLY VOLTAGE	-48Vdc (NOMINAL)



REMOTE RADIO HEAD DETAIL NO SCALE 2

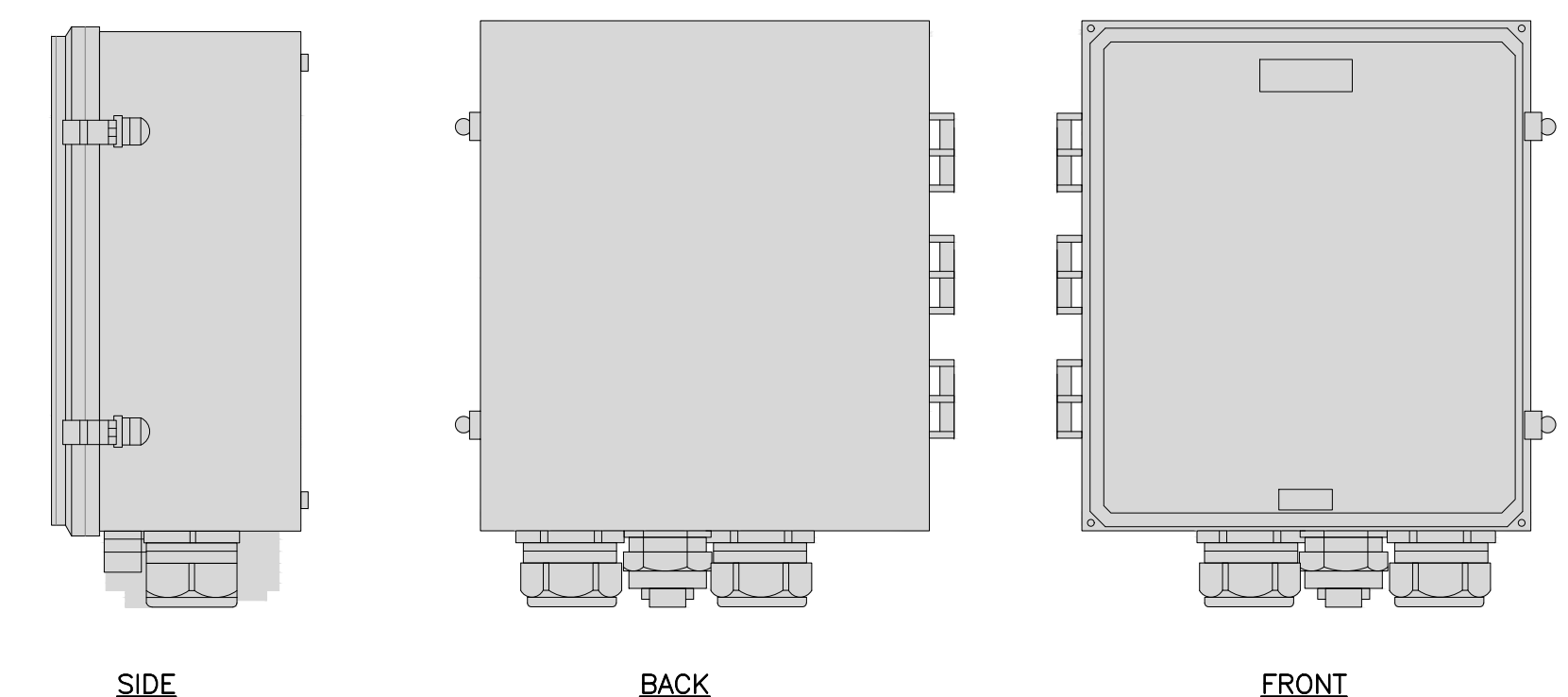


RRU MOUNT DETAIL NO SCALE 3



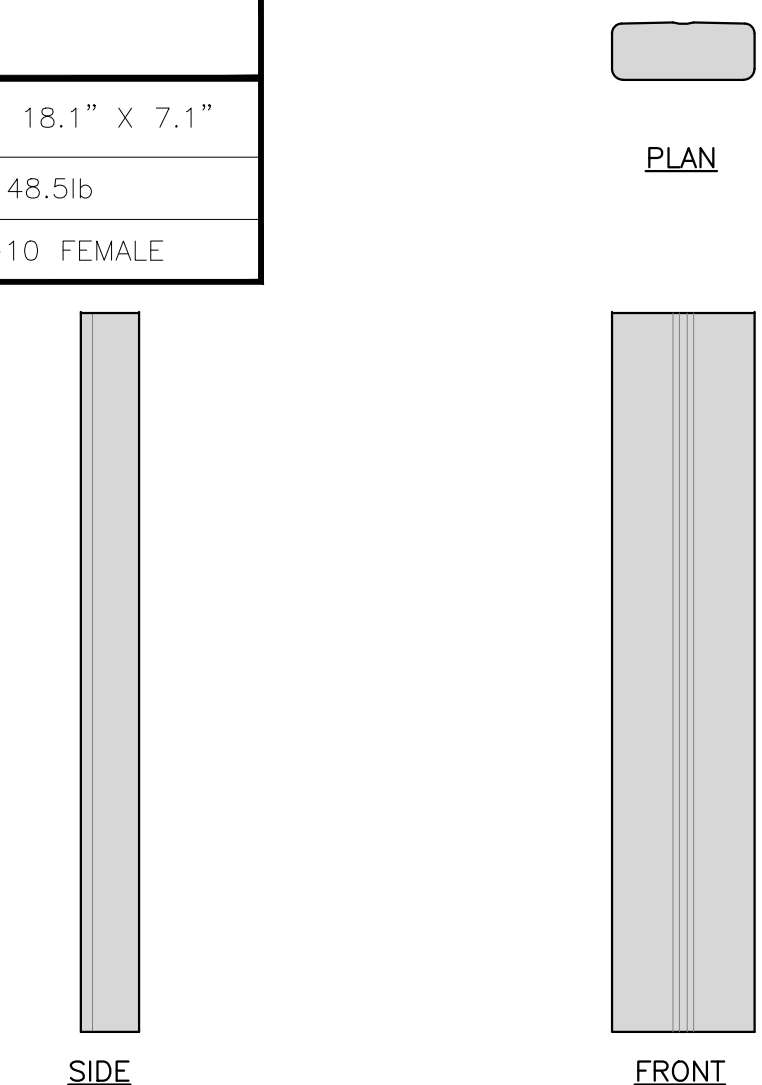
GPS MINIMUM SKY VIEW REQUIREMENTS NO SCALE 4

RAYCAP RDIC-9181-PF-48 SURGE PROTECTION DEVICE	
DIMENSIONS (HxWxD)	16" X 14" X 8"
WEIGHT	21.85 LBS



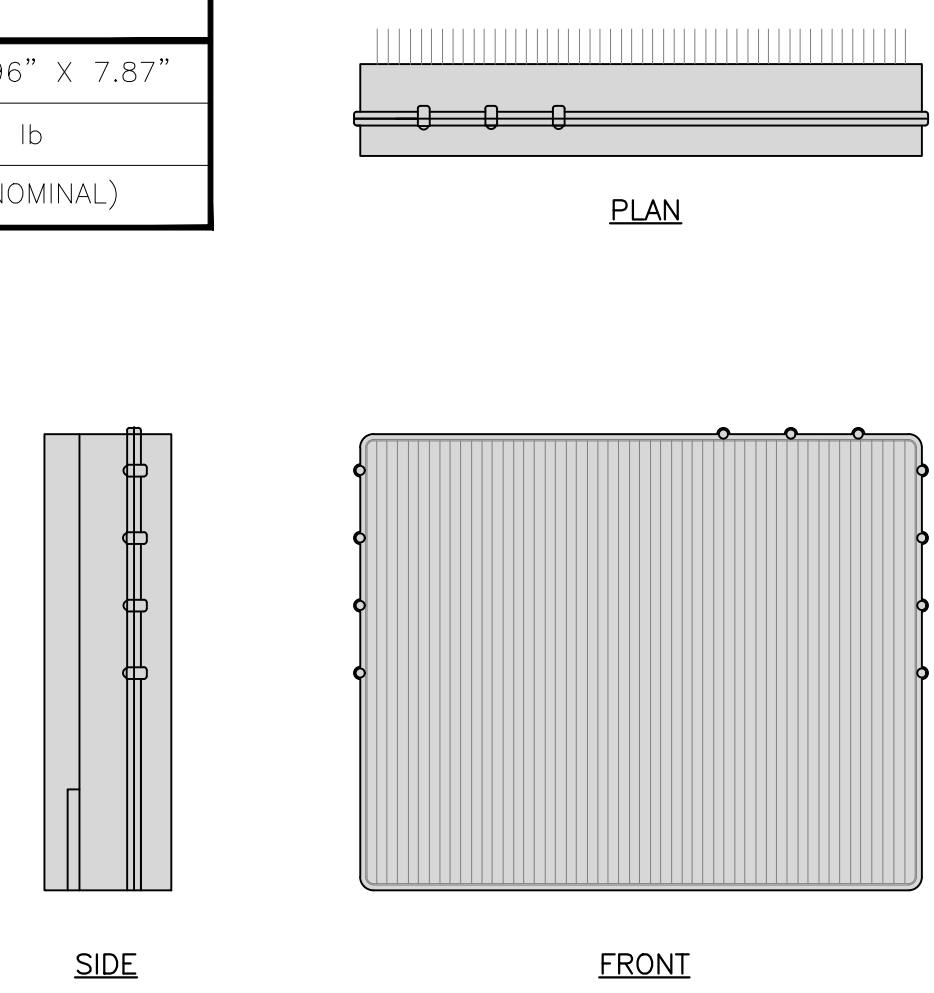
SURGE PROTECTION DEVICE DETAIL NO SCALE 5

KMW KE654L4H4-0D	
DIMENSIONS (HxWxD)(MM/IN)	48.0" X 18.1" X 7.1"
TOTAL WEIGHT (kg/lb)	48.5lb
RF CONNECTOR INTERFACE	4.3-10 FEMALE

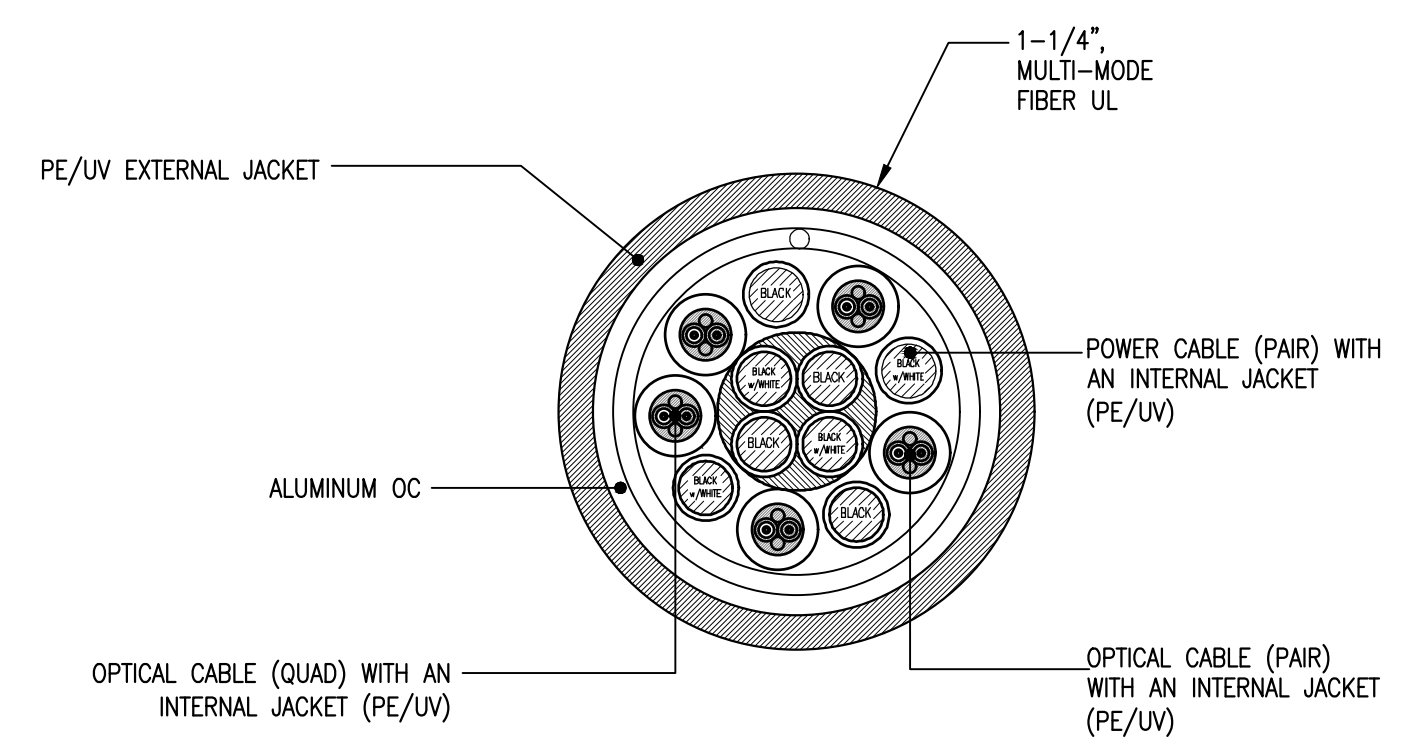


ANTENNA DETAIL NO SCALE 6

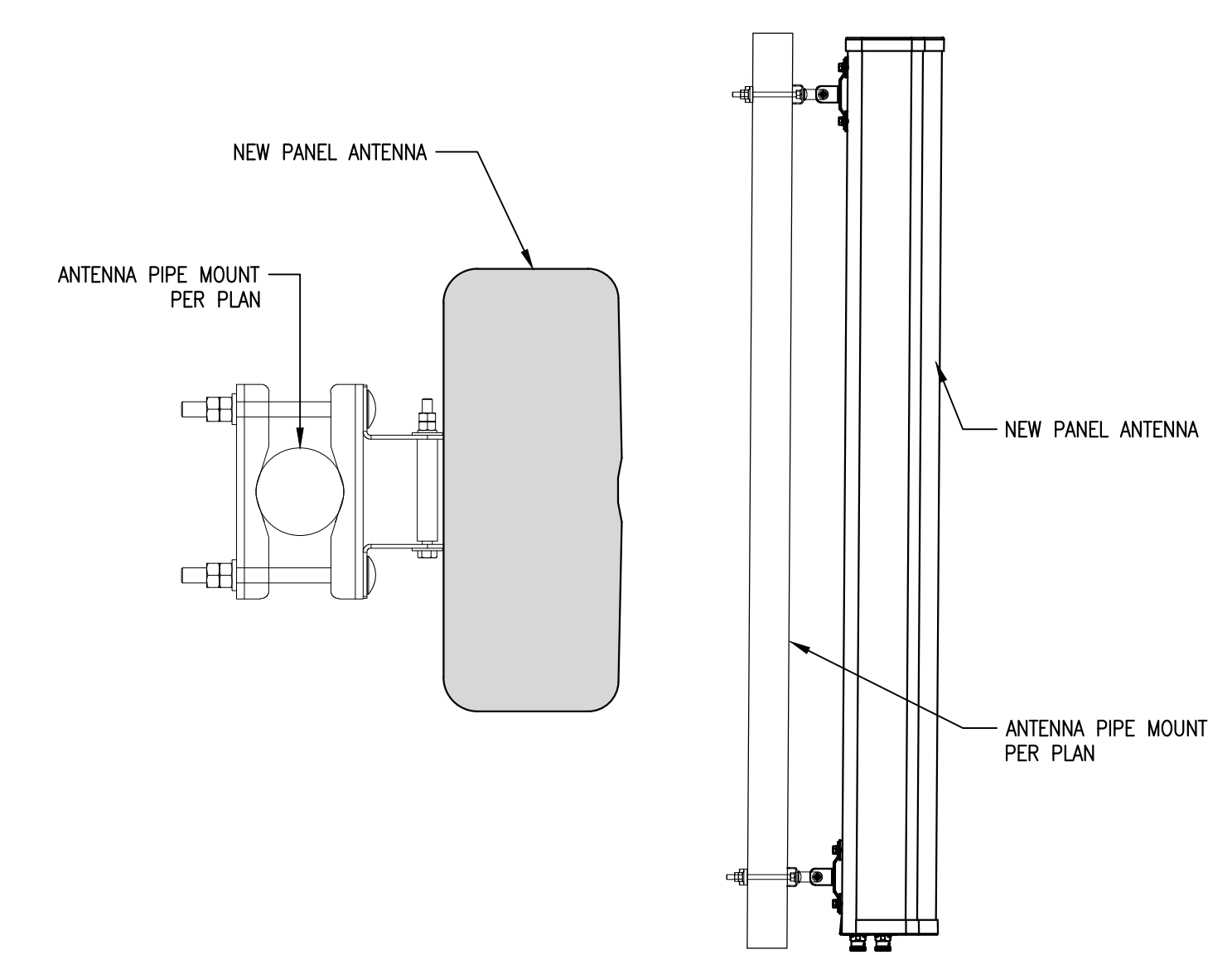
FUJITSU TA08025-B604	
DIMENSIONS (HxWxD) (KG/IN)	15.75" X 14.96" X 7.87"
TOTAL WEIGHT (KG/LB)	63.93 lb
POWER SUPPLY VOLTAGE	-48Vdc (NOMINAL)



REMOTE RADIO HEAD DETAIL NO SCALE 7



HYBRID CABLE DETAIL (FOR REFERENCE) NO SCALE 8



ANTENNA MOUNTING DETAIL NO SCALE 9



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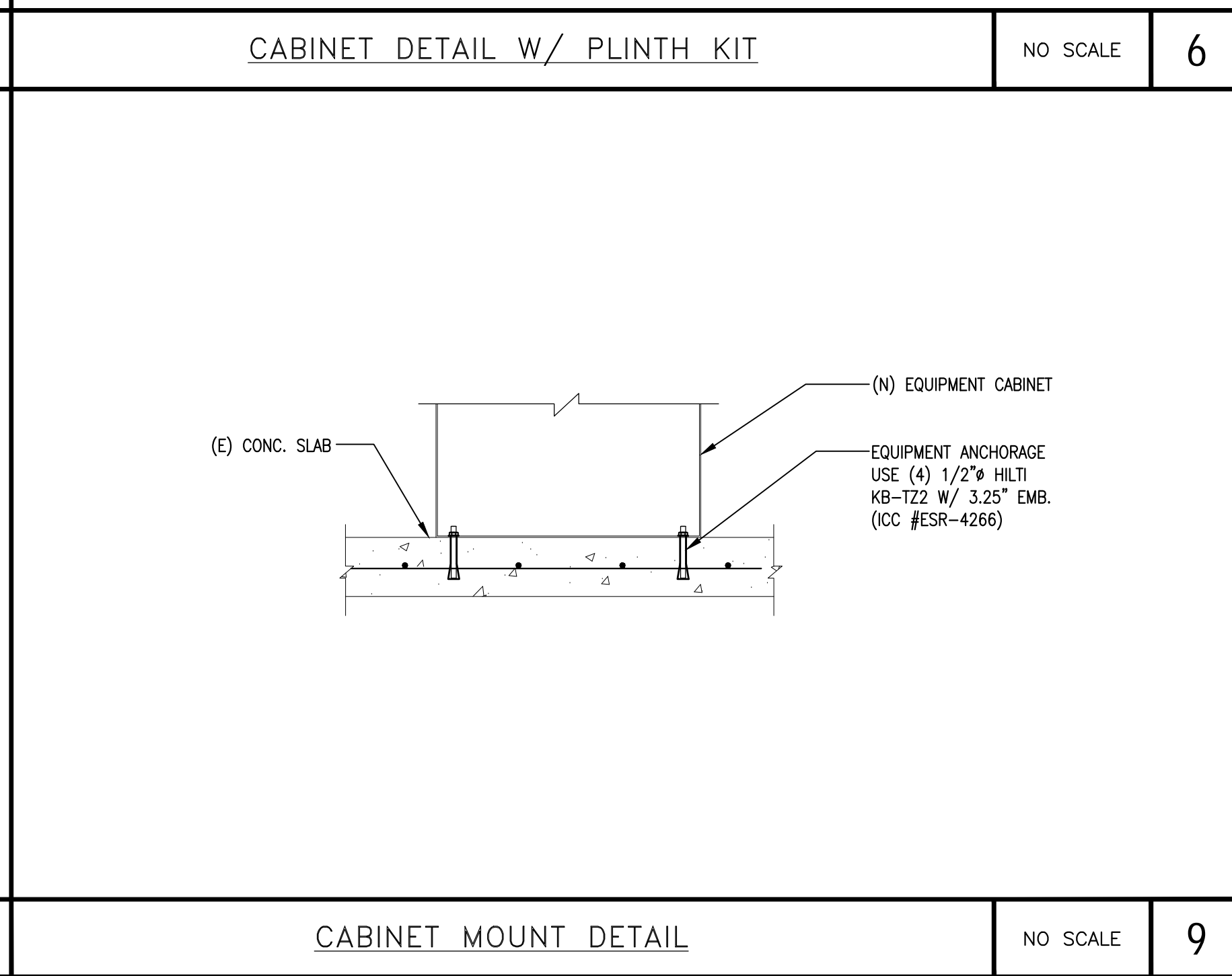
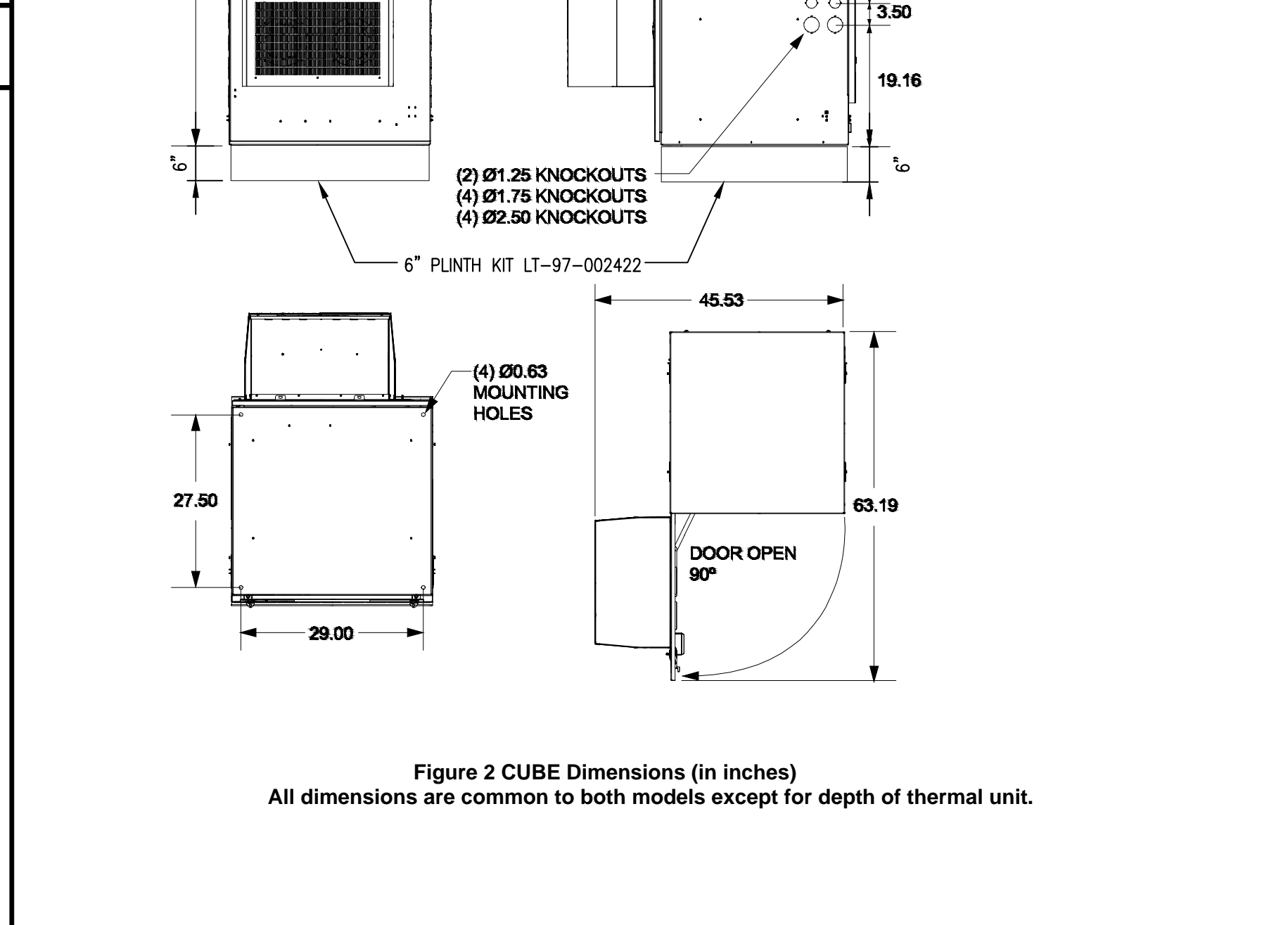
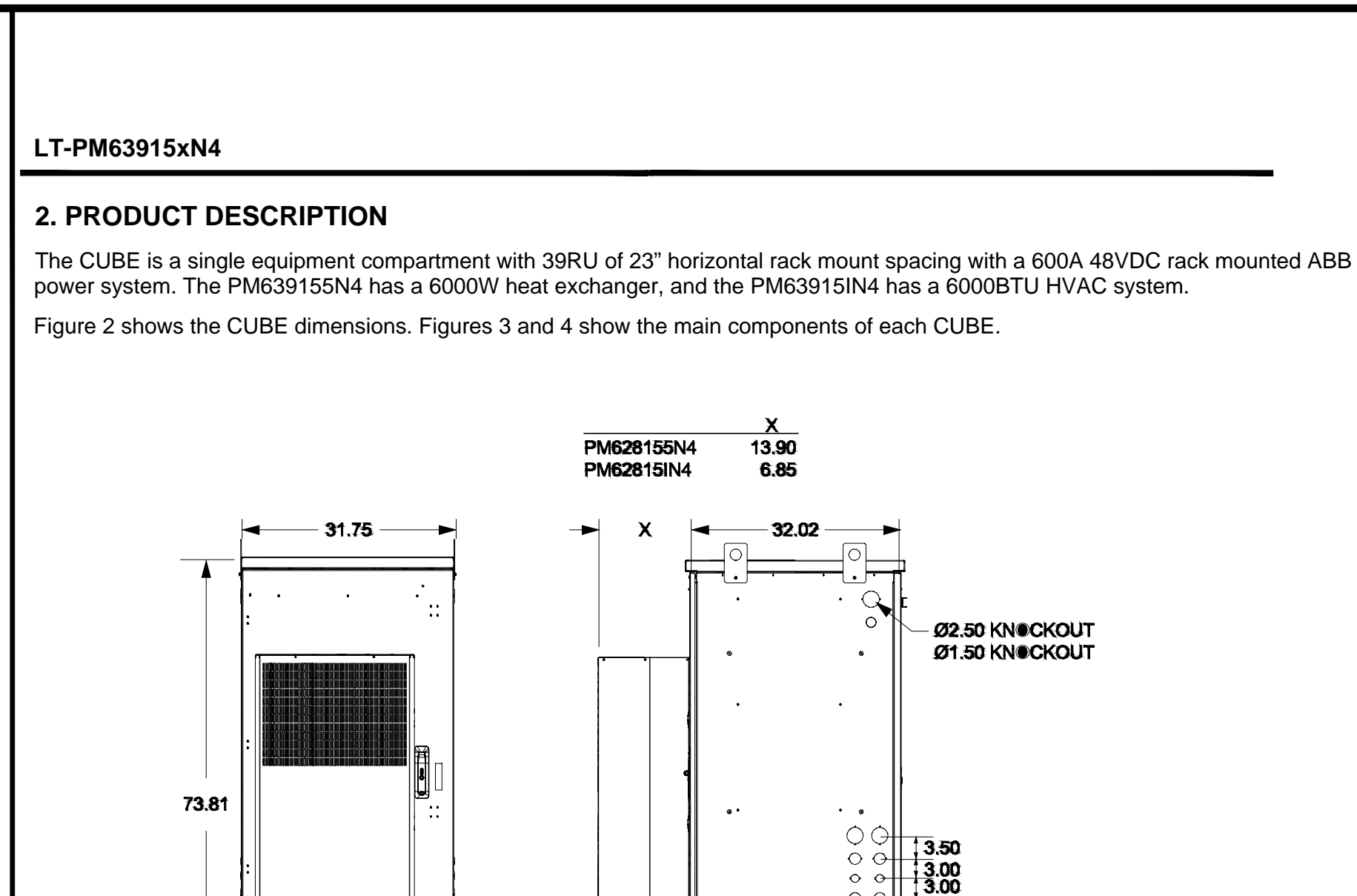
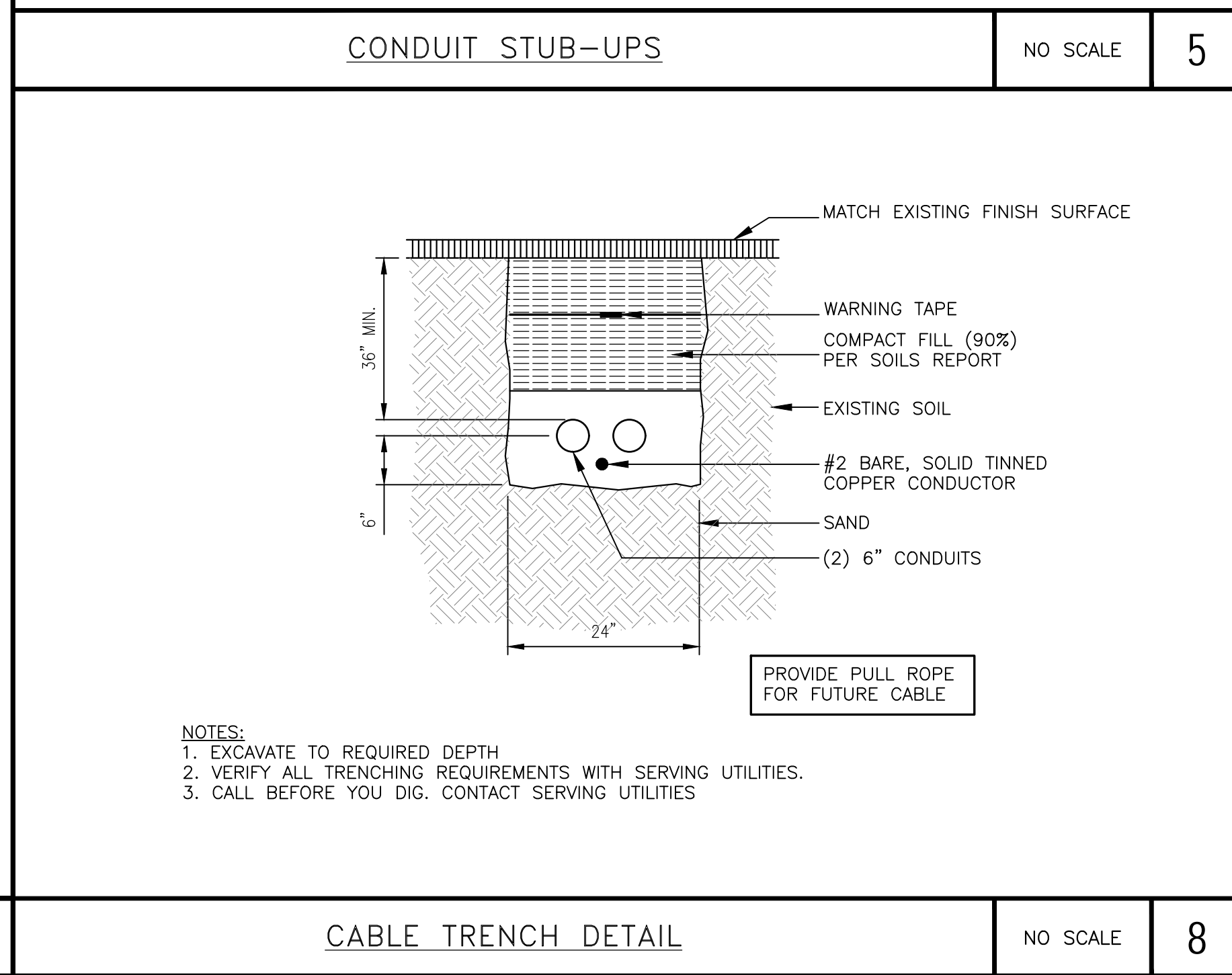
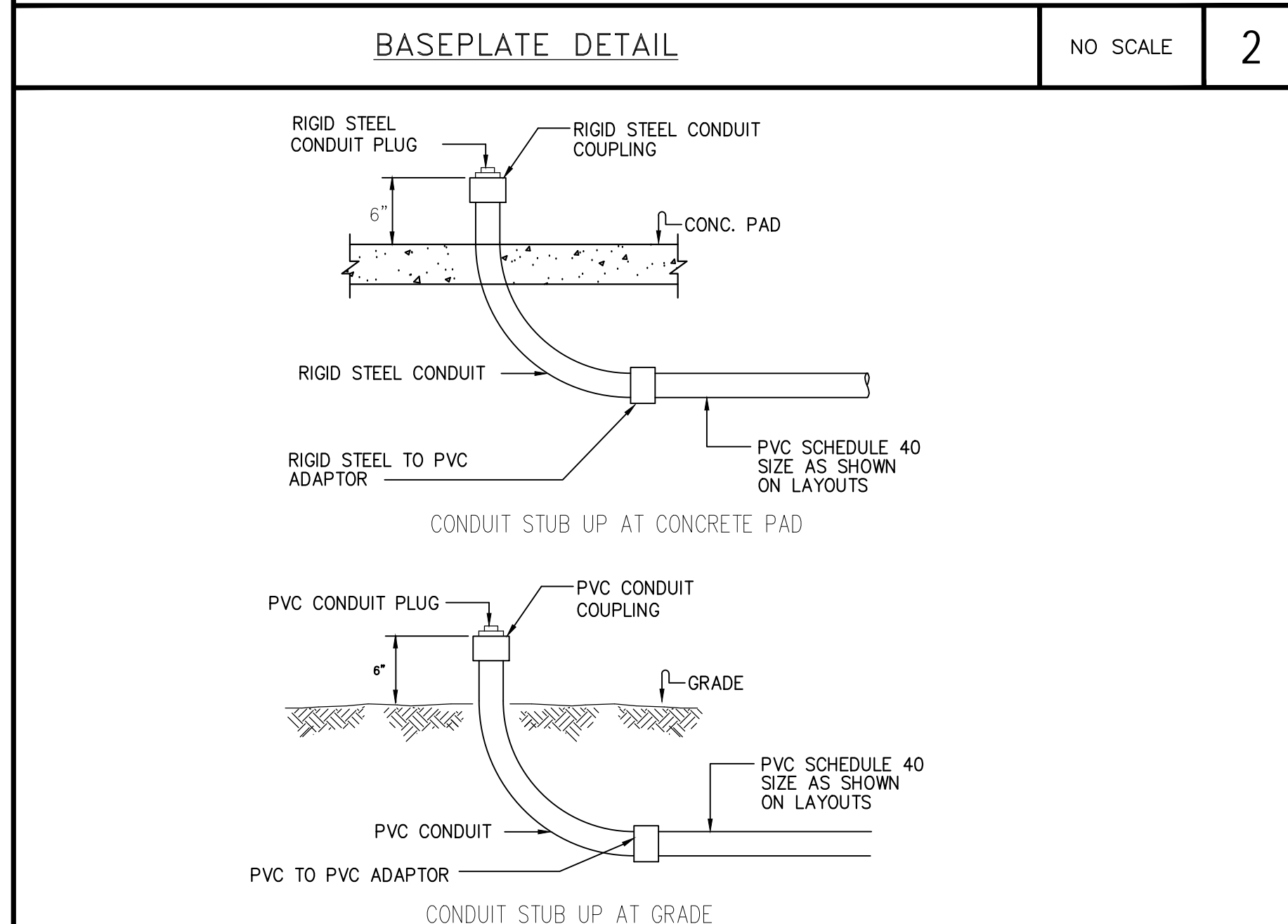
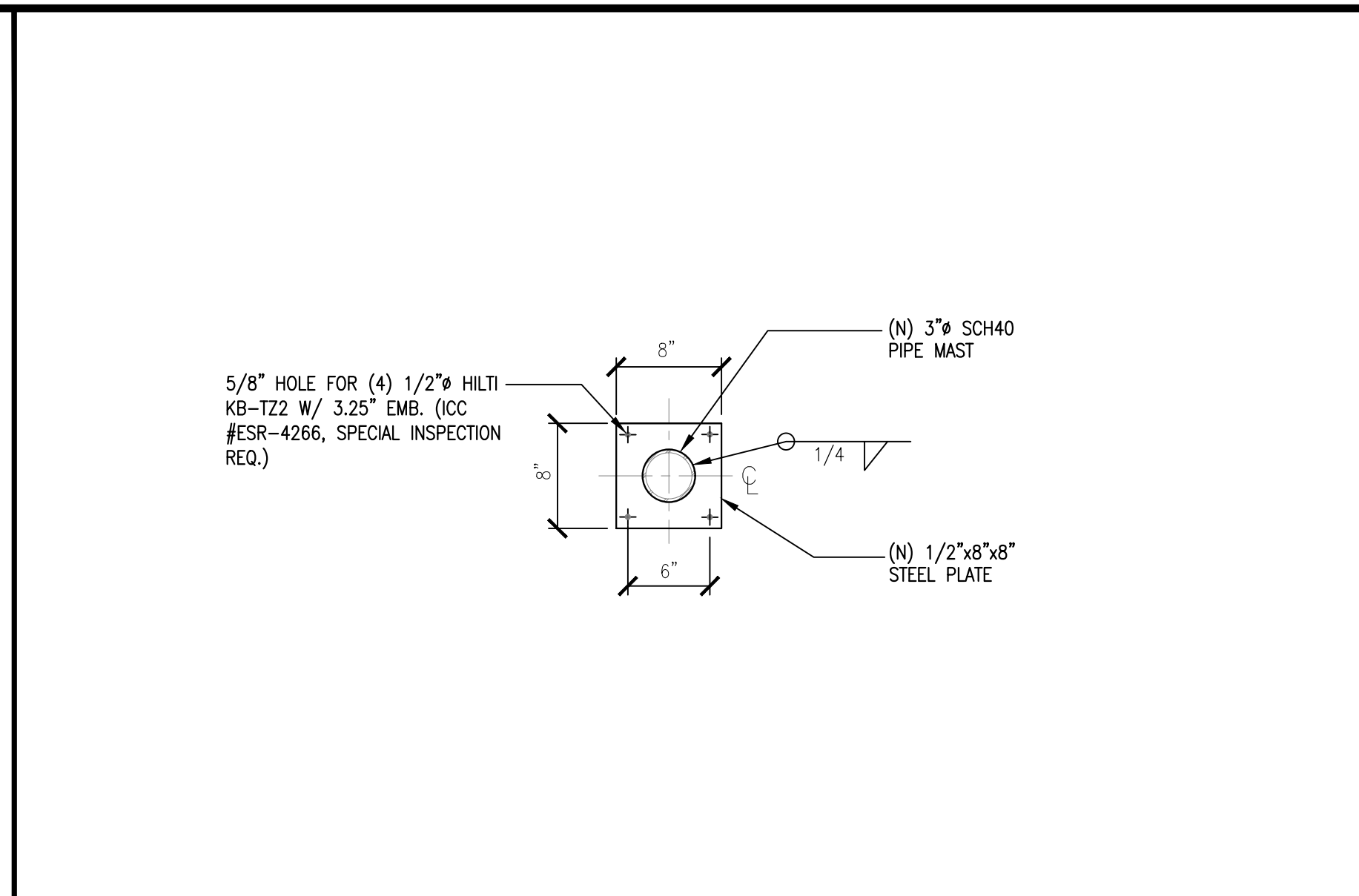
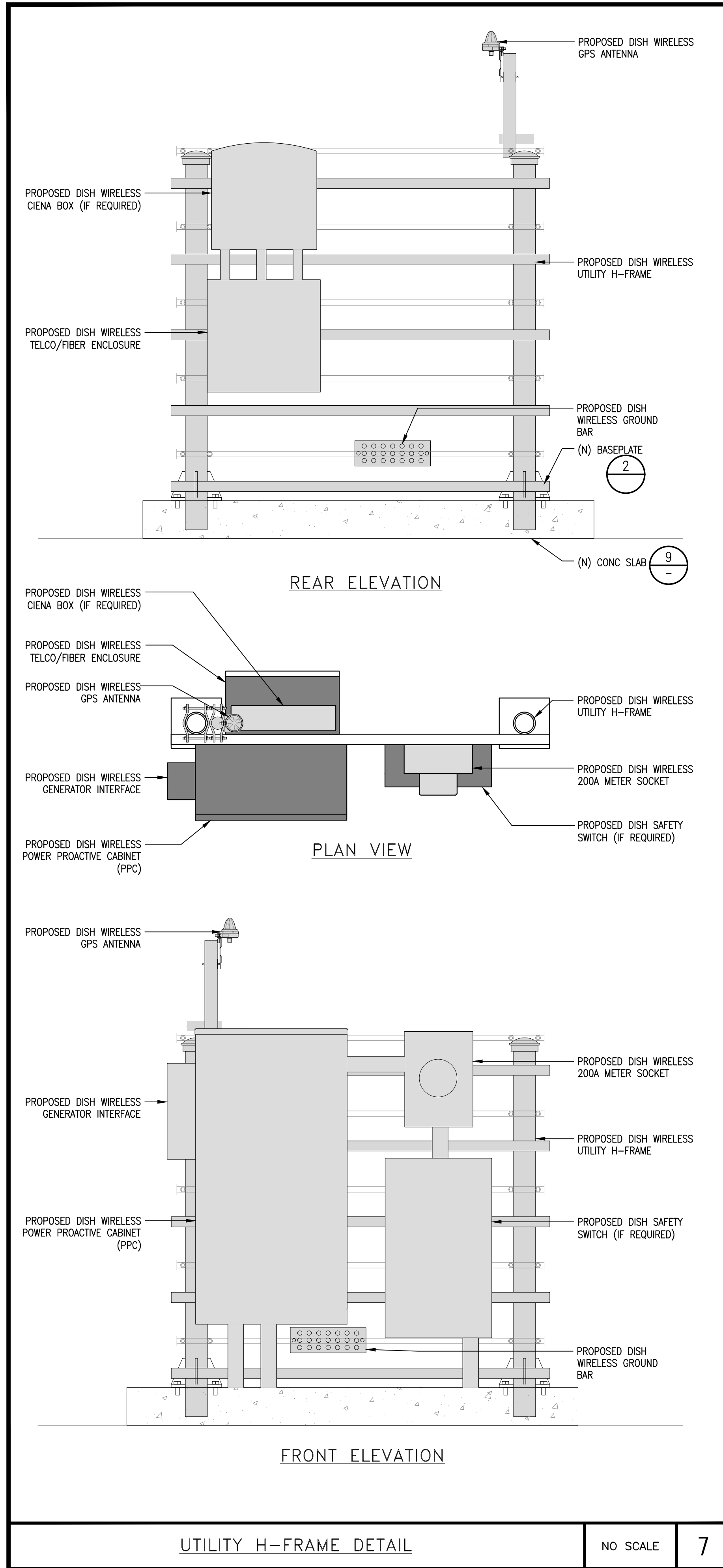
(VENDOR) PROJECT NUMBER
SFSF00884A

DISH WIRELESS PROJECT NUMBER
SFSF00884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
DETAILS

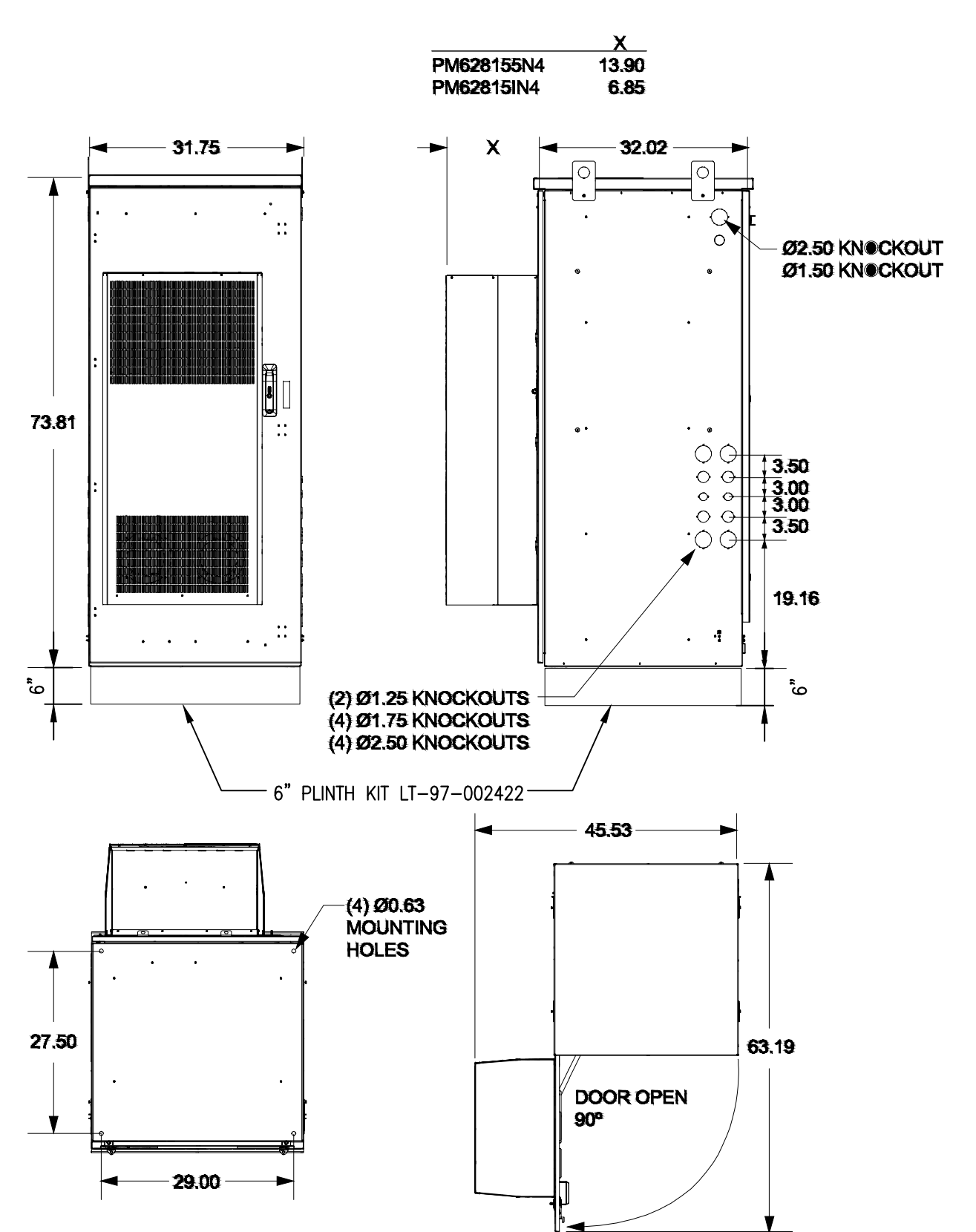
SHEET NUMBER
D-1



LT-PM63915xN4

2. PRODUCT DESCRIPTION

The CUBE is a single equipment compartment with 39RU of 23" horizontal rack mount spacing with a 600A 48VDC rack mounted ABB power system. The PM639155N4 has a 6000W heat exchanger, and the PM639151N4 has a 6000BTU HVAC system. Figure 2 shows the CUBE dimensions. Figures 3 and 4 show the main components of each CUBE.



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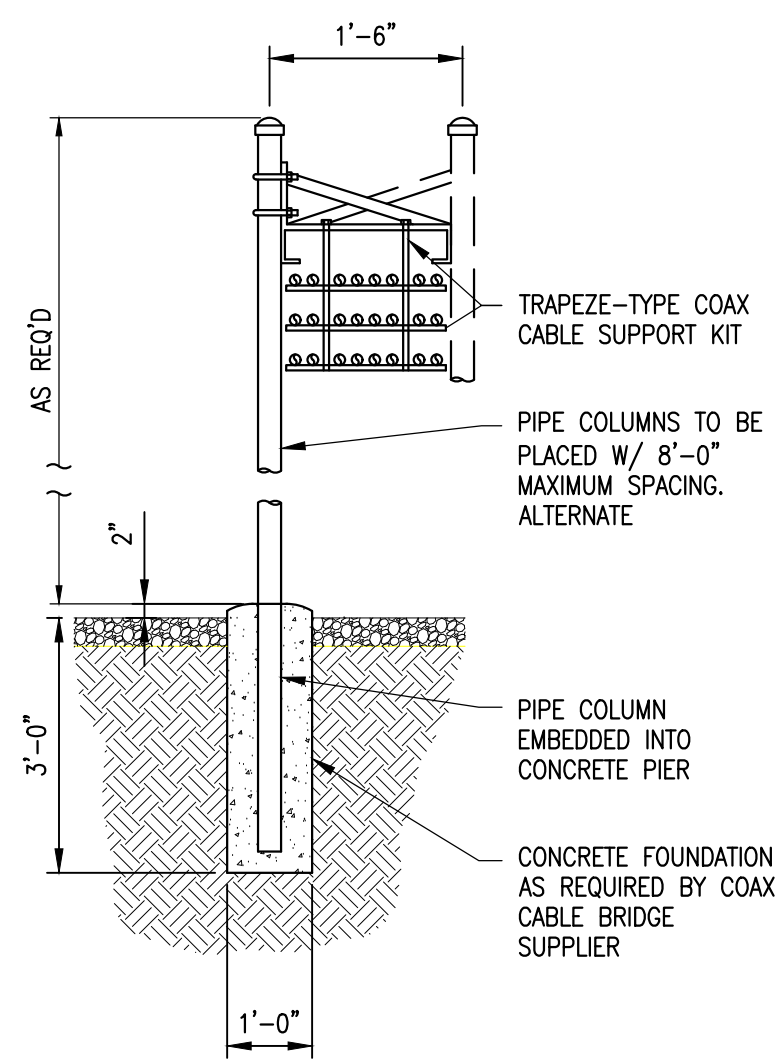
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**S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER**

SHEET TITLE
DETAILS

SHEET NUMBER
D-2



ICE BRIDGE

NO SCALE

1

NOT USED

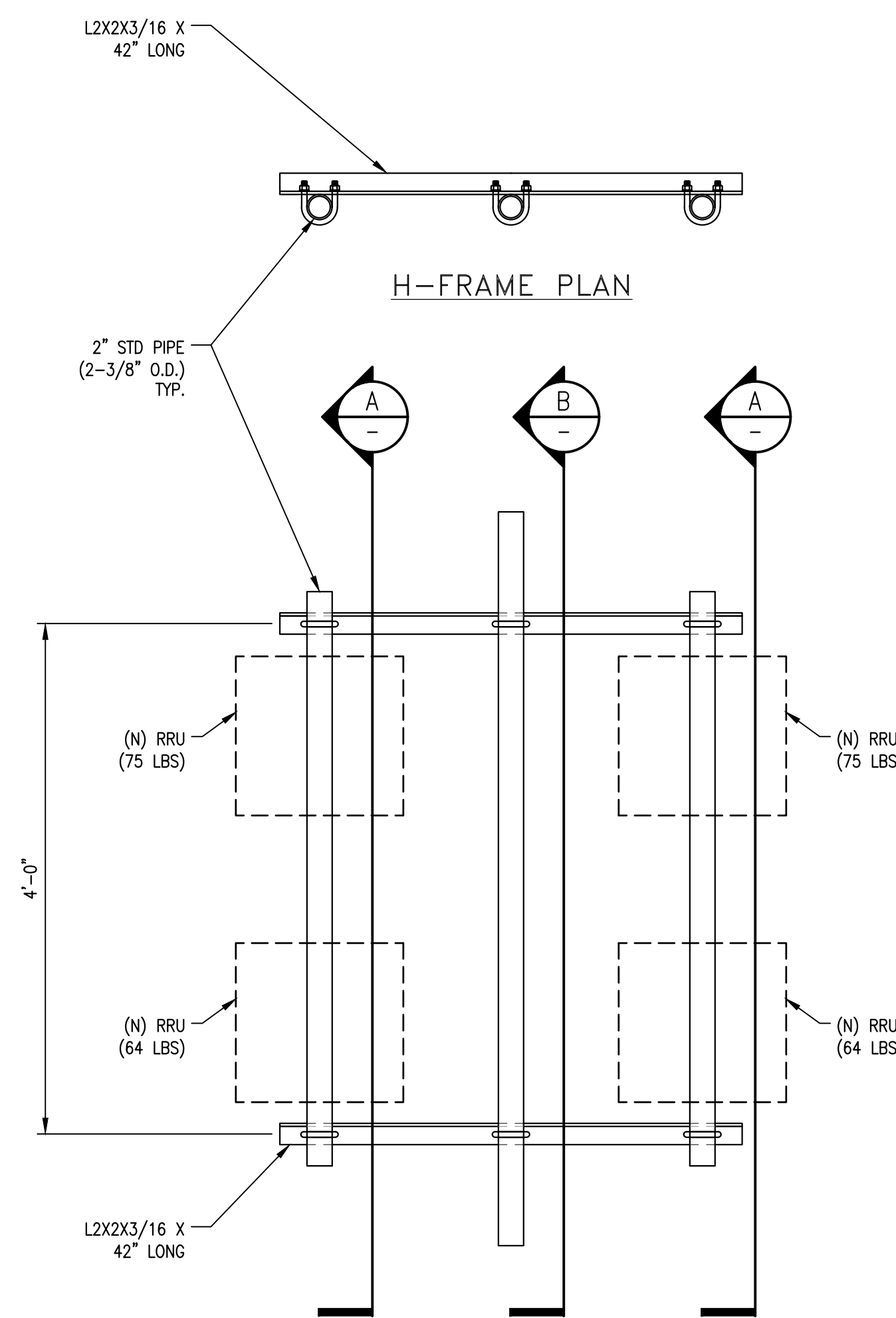
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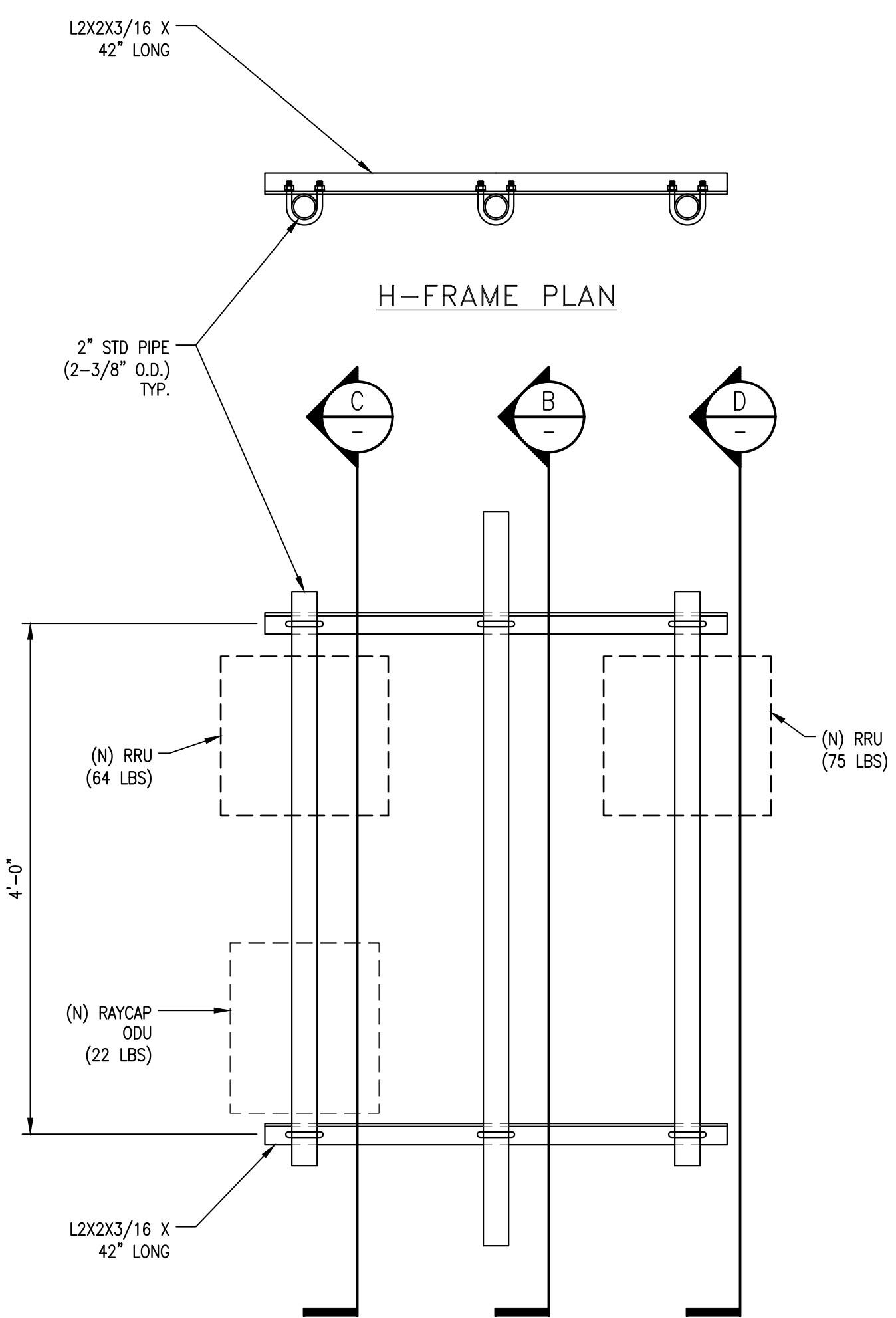
NOT USED

NO SCALE

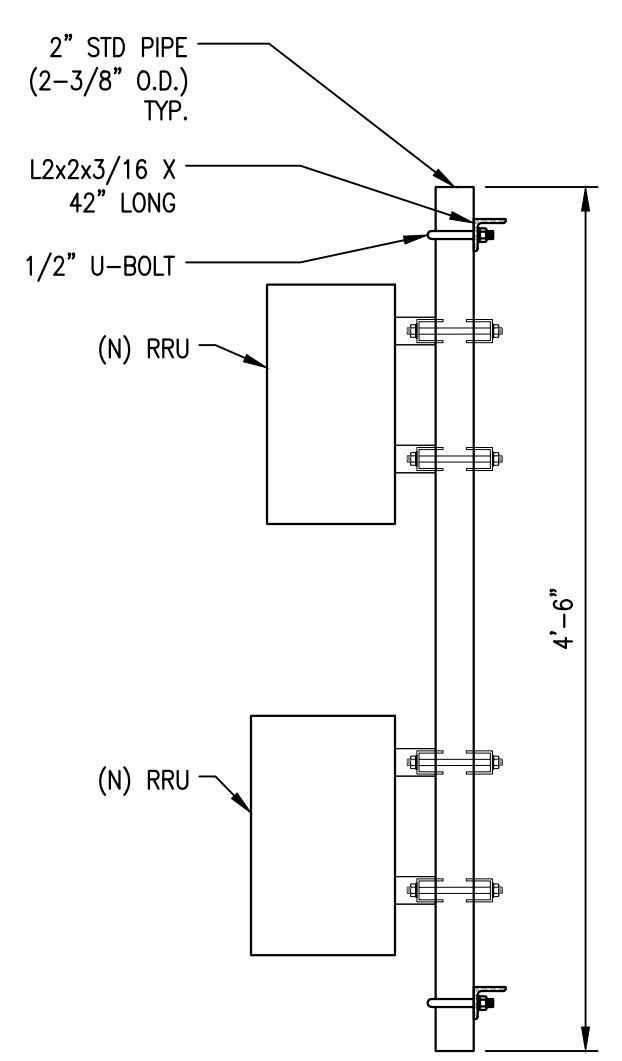
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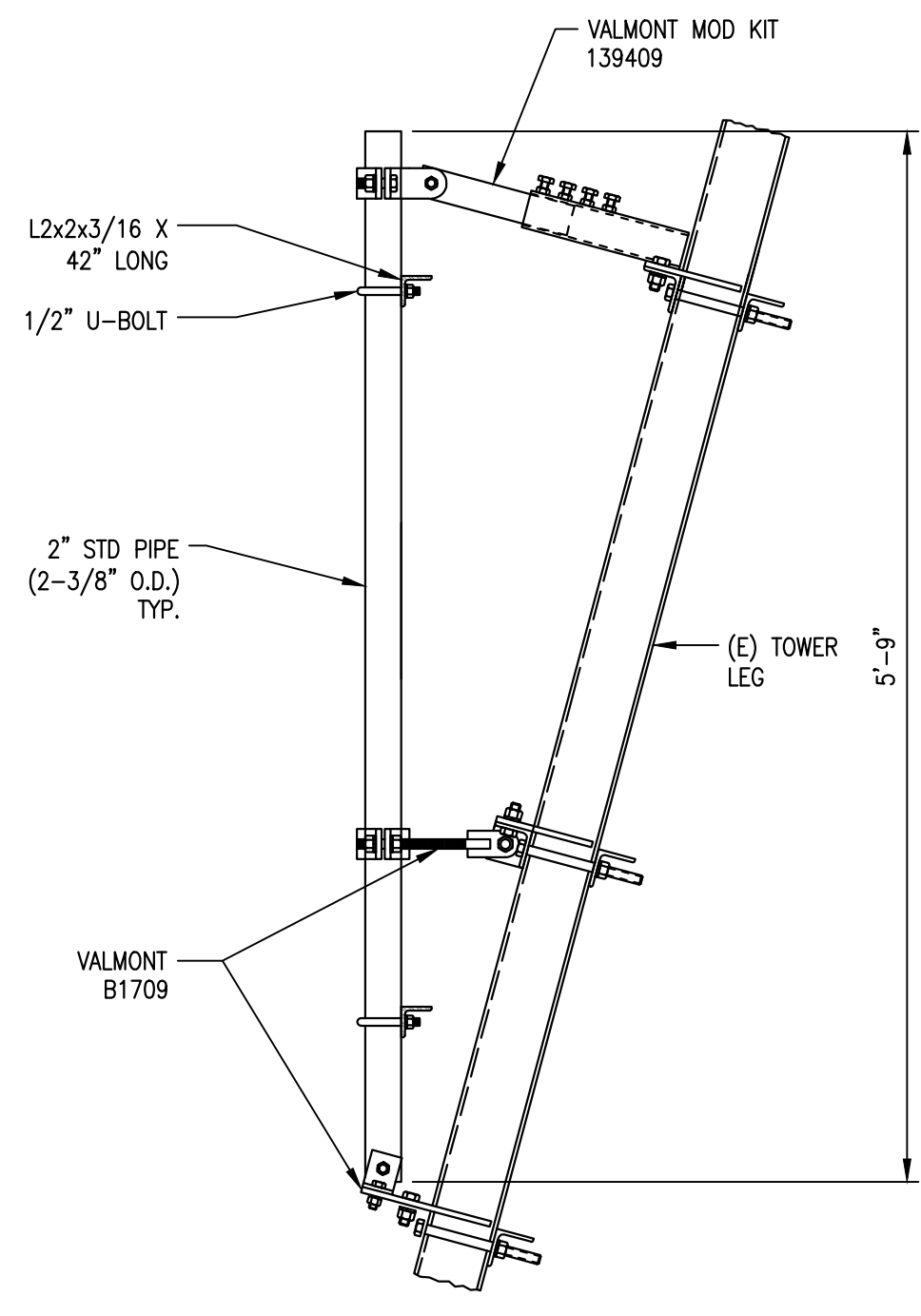
TOP H-FRAME ELEVATION



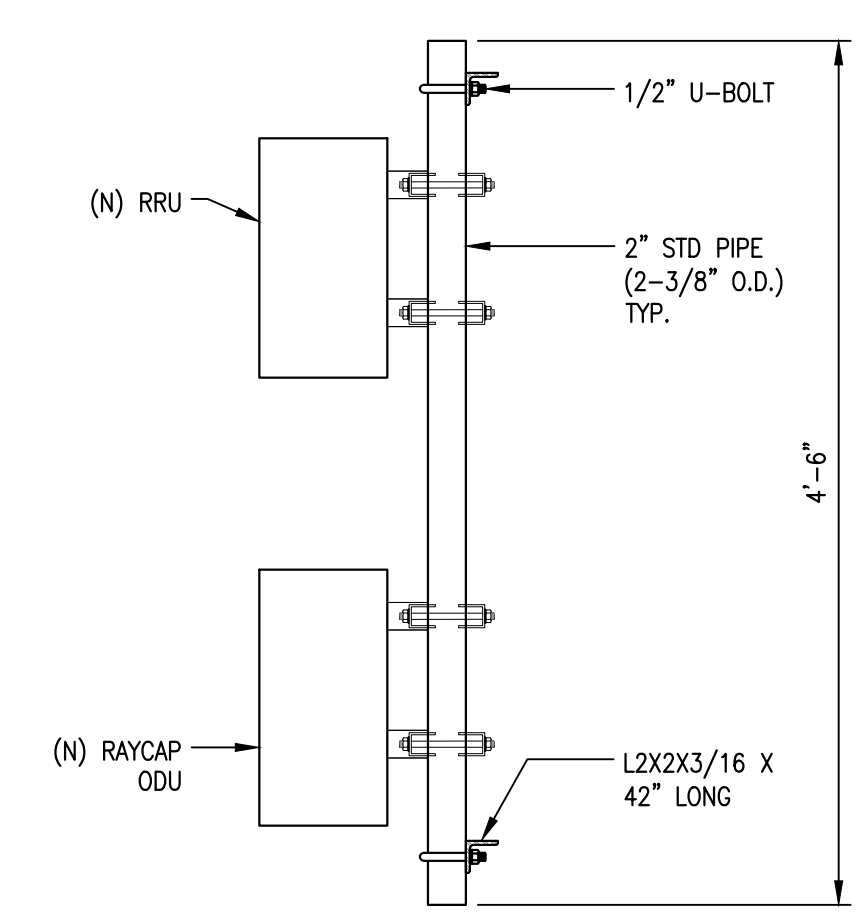
BOTTOM H-FRAME ELEVATION



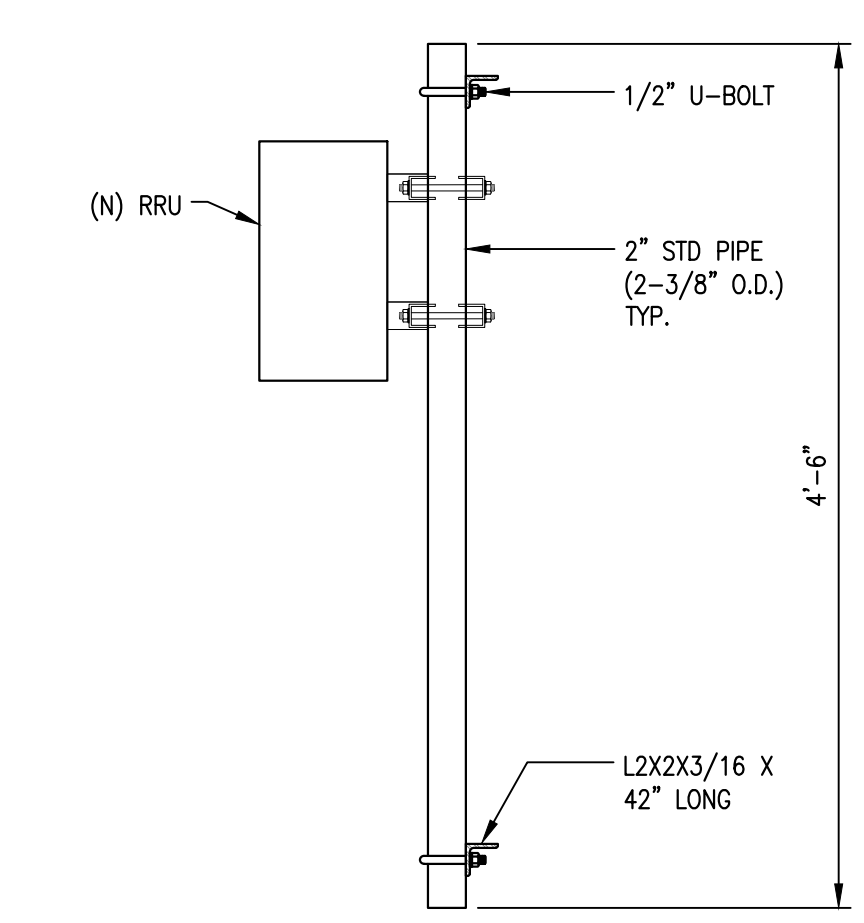
SECTION A



SECTION B



SECTION C



SECTION D

PG&E RRU / RAYCAP H-FRAME (BELOW CONDUCTOR)

NO SCALE

4

dish
WIRELESS

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LITTLETON, CO 80120

BUTLER
America Telecom
LLC

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SFSF00884A

DISH WIRELESS PROJECT NUMBER

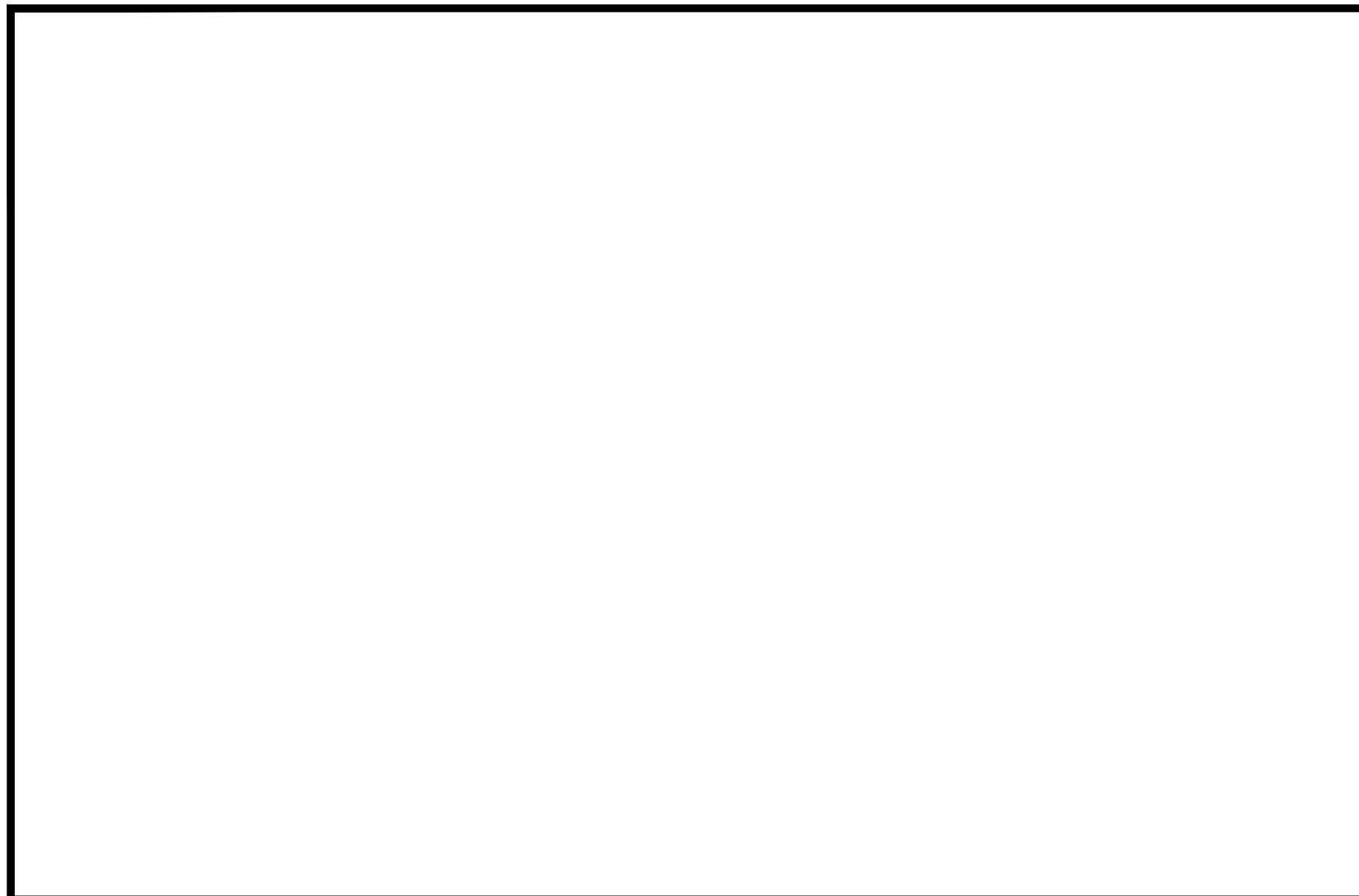
SFSF00884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

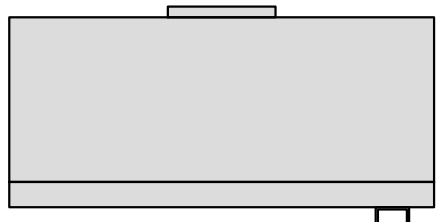
SHEET TITLE
DETAILS

SHEET NUMBER

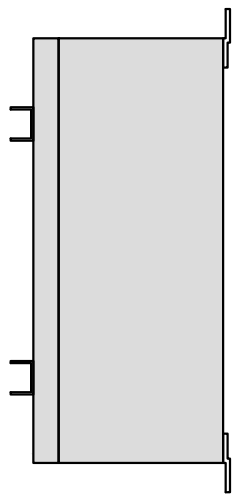
D-3



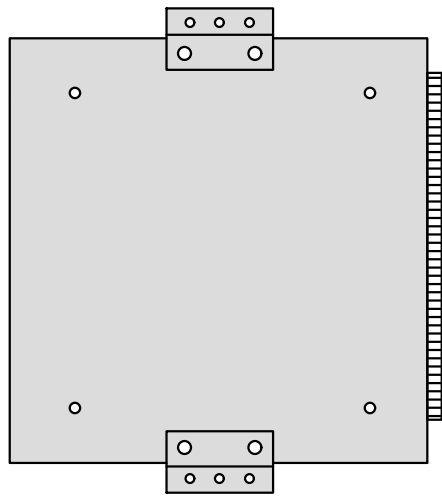
CHARLES CFIT-PF2020DSH1 FIBER TELCO ENCLOSURE	
DIMENSIONS (HxWxD)	20"x20"x9"
TOTAL WEIGHT	20 lbs
MOUNTING	WALL OR H-FRAME
COMPLIANCE	TYPE 4



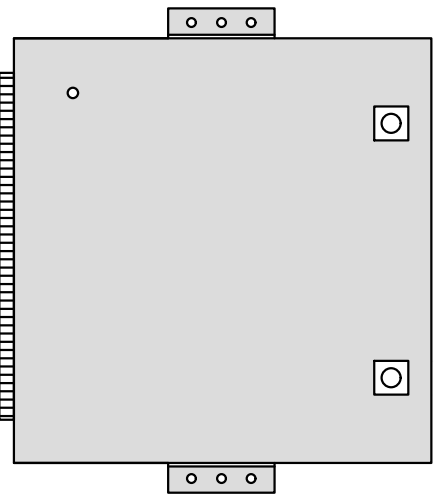
TOP



SIDE

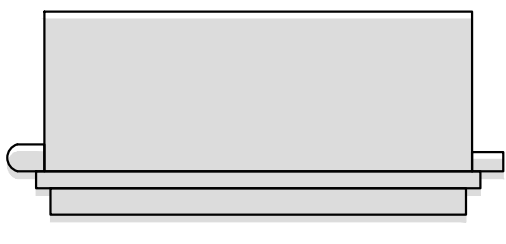


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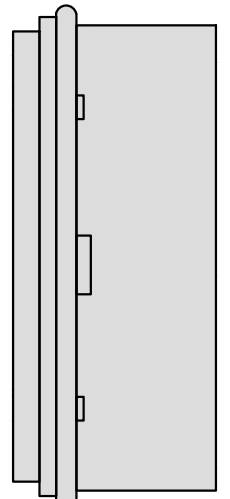


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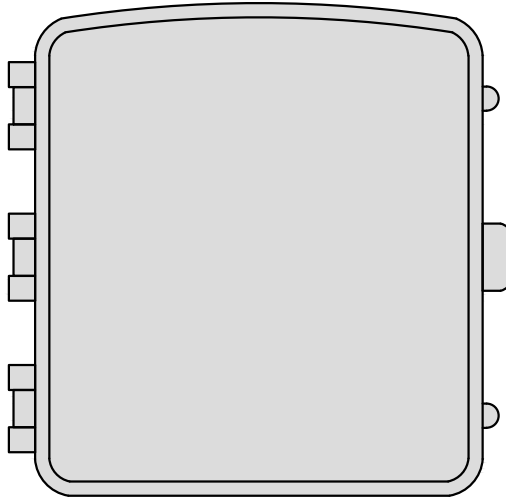
CIENA 3931 FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	17"x16.8"x7"
TOTAL WEIGHT	25.6 lbs



TOP



SIDE



FRONT

NOT USED

NO SCALE

1

FIBER ENCLOSURE DETAIL

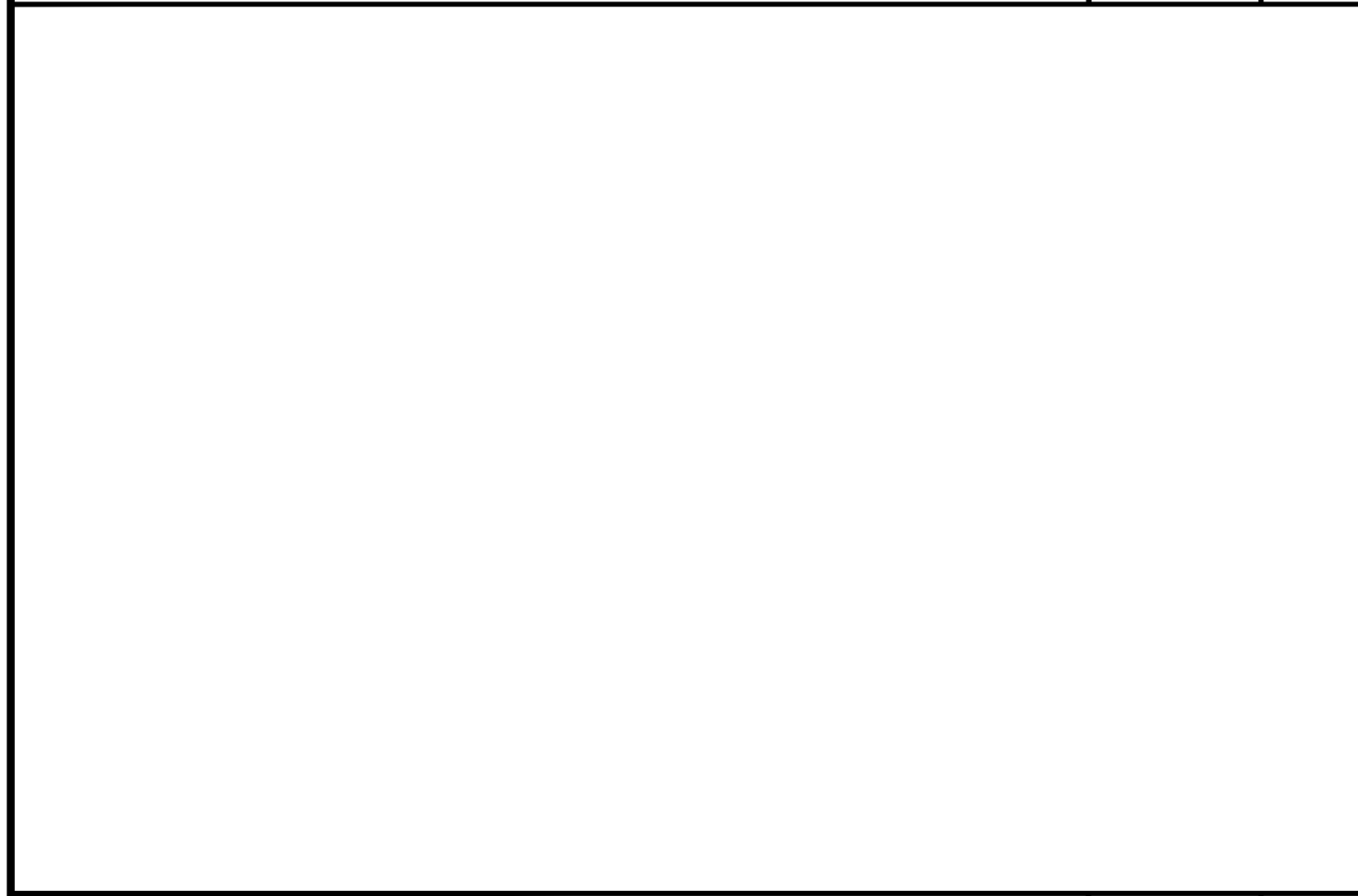
NO SCALE

2

FIBER NID DETAIL

NO SCALE

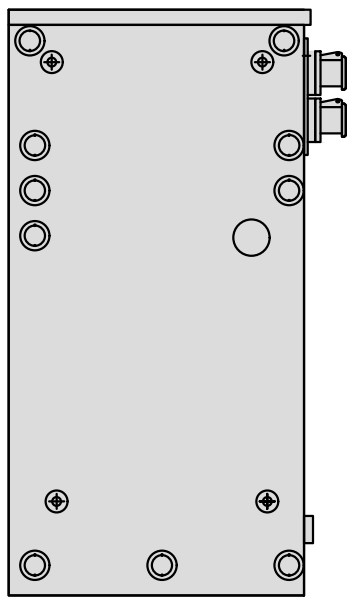
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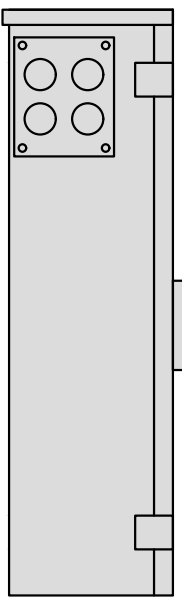
RAYCAP PPC RDIAC-2465-P-240-MTS	
DIMENSIONS (HxWxD)	39"x22.7"x12.6"
TOTAL WEIGHT	80 lbs
OPERATING AC VOLTAGE	120/240 1Ø 3W



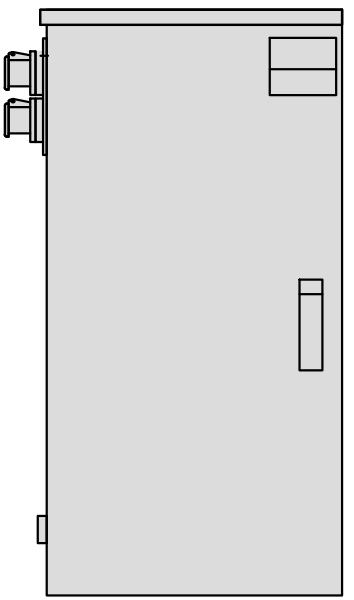
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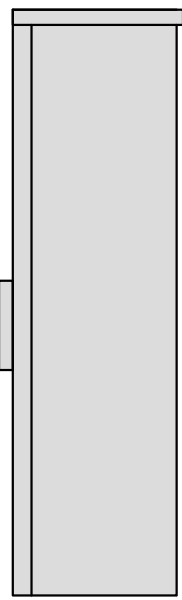
BACK



SIDE

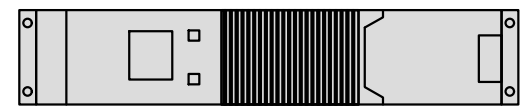


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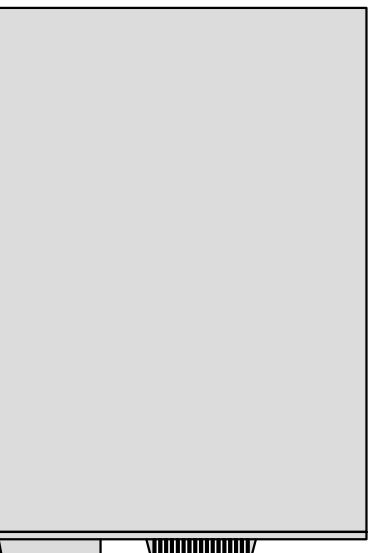


SIDE

POLARIUM BATTERY SLB48-200-228-1U	
DIMENSIONS (HxWxD)	21.4"x28.5"x3.4"
TOTAL WEIGHT	116.8 lbs
RATED VOLTAGE	48V



FRONT



TOP

NOT USED

NO SCALE

4

POWER PROTECTION CABINET (PPC) DETAIL

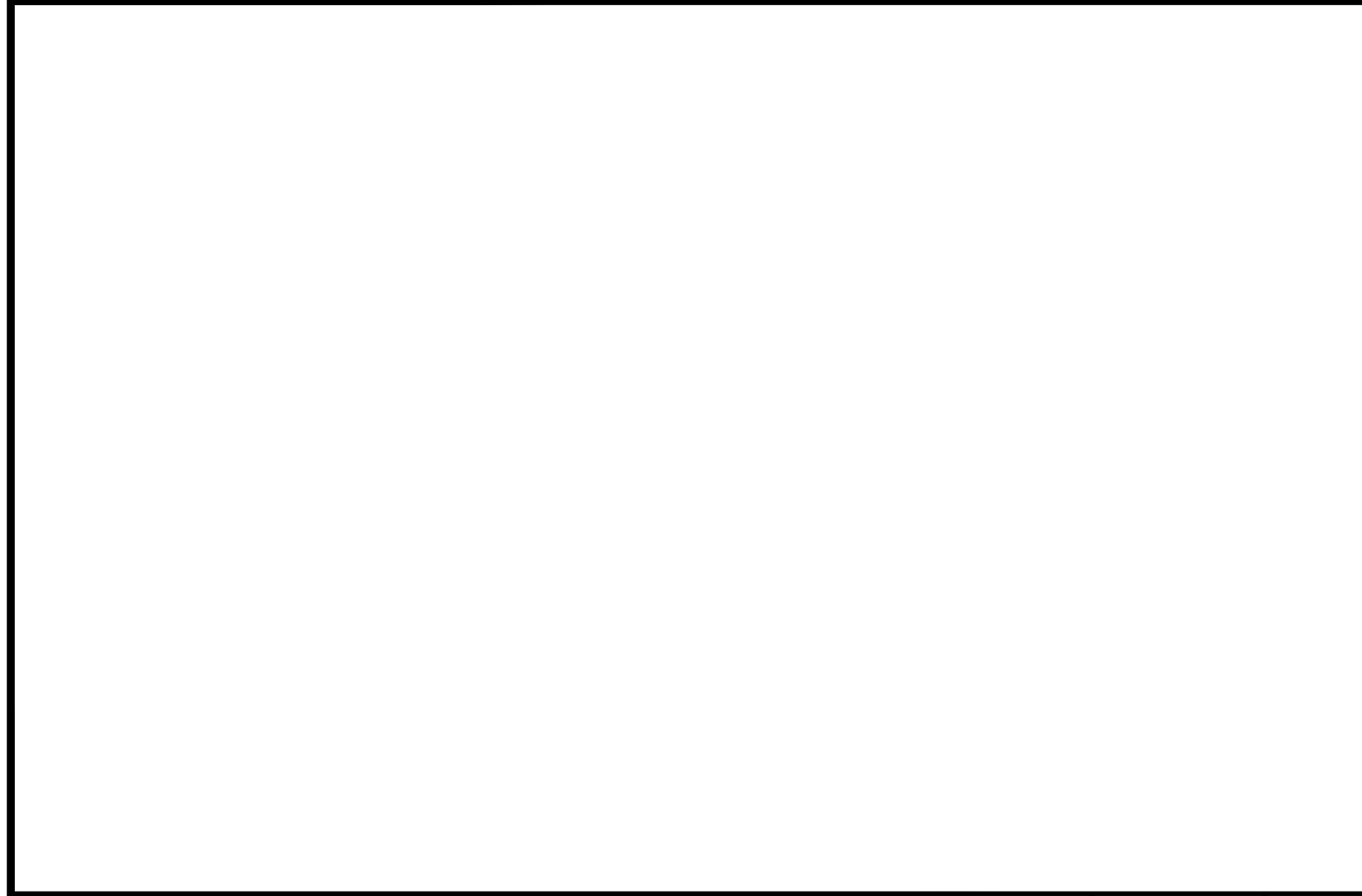
NO SCALE

5

BATTERY DETAIL

NO SCALE

6



NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

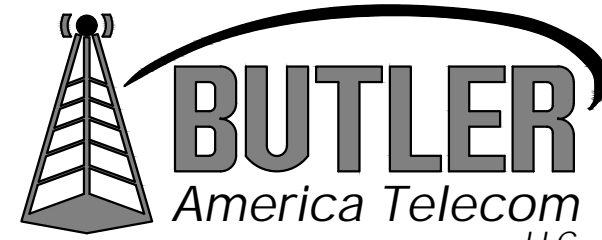
NOT USED

NO SCALE

9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120



1511 E. ORANGETHORPE AVE., SUITE D
FULLERTON, CA 92831

CDG

22431 ANTONIO PKWY
SUITE B160-131
RANCHO SANTA MARGARITA CA 92688
dconnell@connelldesigngroup.com
949-306-4644



DATE STAMPED: 07/22/2022

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OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:
LE JPC DC

RFDS REV #4 DATED 11/16/2021

**CONSTRUCTION
DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/24/2022	ISSUED FOR 90% CD REVIEW
1	06/19/2022	ISSUED FOR 100% CD
2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSF000884A

DISH WIRELESS PROJECT NUMBER
SFSF000884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
DETAILS

SHEET NUMBER

D-4

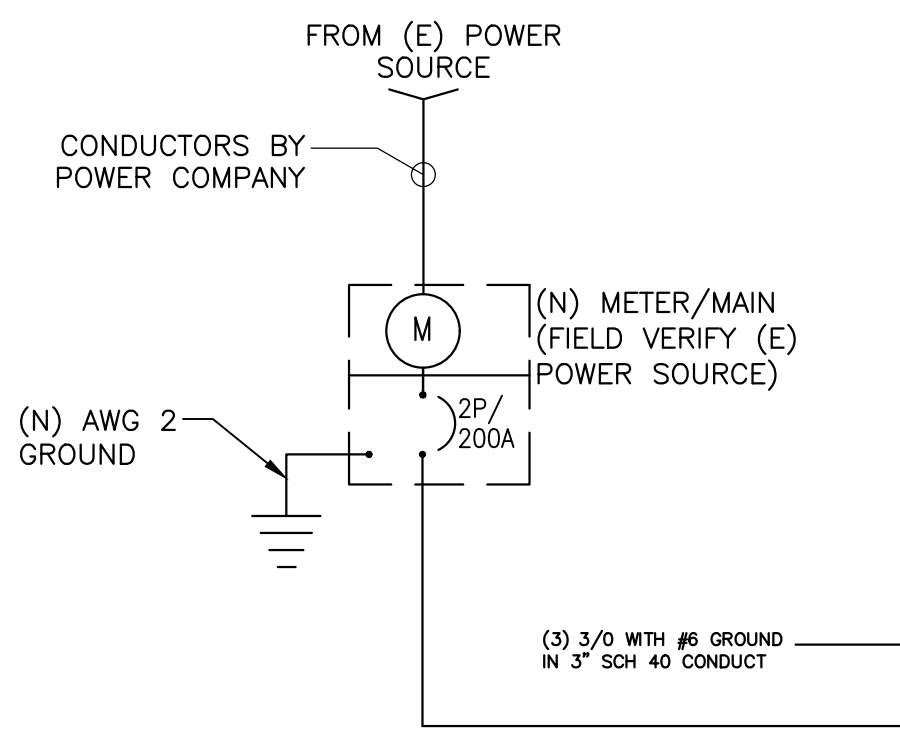
ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL LOCAL AND STATE CODE, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
- CONTRACTOR SHALL COORDINATE WITH LOCAL POWER COMPANY FOR REQUIREMENTS OF POWER SERVICE LINE TO THE METER BASE. POWER SERVICE REQUIREMENT IS COMMERCIAL AC NOMINAL 120/208 VOLT OR 120/240 VOLT, SINGLE PHASE WITH 200 AMP RATING.
- CONTRACTOR SHALL COORDINATE WITH LOCAL TELEPHONE COMPANY FOR REQUIREMENTS OF "T1" SERVICE LINE TO TERMINATE AT THE PPC CABINET.
- CONTRACTOR SHALL FURNISH AND INSTALL ELECTRIC METER BASE AND 200A DISCONNECT SWITCH PER SITE PLAN AND DETAIL DRAWINGS. THE METER BASE SHOULD BE LOCATED IN A MANNER WHERE ACCESSIBLE BY THE LOCAL POWER COMPANY.
- LOCAL POWER COMPANY SHALL PROVIDE 200 AMP ELECTRIC METER. CONTRACTOR SHALL COORDINATE INSTALLATION OF METER WITH LOCAL POWER COMPANY.
- UNDERGROUND POWER AND TELCO SERVICE LINES SHALL BE ROUTED IN A COMMON TRENCH. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 AND CONDUIT EXPOSED ABOVE GROUND SHALL BE RIGID GALVANIZED STEEL UNLESS OTHERWISE INDICATED.
- ALL TELCO CONDUIT LINES SHALL BE 4" SCH. 40 PVC CONDUIT UNLESS OTHERWISE INDICATED. THE TELCO CONDUIT FROM THE PPC SHALL BE ROUTED AND TERMINATED AT DESIGNATED TELCO DEMARCATION OR 2-FEET OUTSIDE FENCED AREA, NEAR UTILITY POLE (IN FENCED AREA), OR END CAP OFF AND PROVIDE MARKER STAKE PAINTED BRIGHT ORANGE WITH DESIGNATION FOR TELCO SERVICE.
- CONDUITS INSTALLED AT PCS EQUIPMENT ENDS PRIOR TO THE EQUIPMENT INSTALLATION SHALL BE STUBBED AND CAPPED AT 6" ABOVE GRADE OR PLATFORM. IF SERVICE LINES CAN'T BE INSTALLED INITIALLY, PROVIDE NYLON PULL CORD IN CONDUITS.
- THE DISH WIRELESS CABINET, INCLUDING 200 AMP LOAD PANEL AND TELCO PANEL, SHALL BE PROVIDED BY OWNER AND INSTALLED BY THE CONTRACTOR. CONTRACTOR IS TO INSTALL BREAKER(S) NOT PROVIDED BY MANUFACTURER. SEE PANEL SCHEDULE ON THIS SHEET FOR BREAKER REQUIREMENTS.
- LOCATION OF ELECTRIC METER AND DISCONNECT SWITCH TO BE COORDINATED BY ELECTRICAL CONTRACTOR AND FIELD CONSTRUCTION MANAGER.
- #2 WIRE TO BE UTILIZED IN ELECTRIC SERVICE RUNS EXCEEDING 100'.
- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS 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.
- LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROUGH-IN.
- THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
- PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
- ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH NEC TABLE 346-10. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
- ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
- ALL WIRE SHALL BE TYPE THWN, SOLID, ANNEALED COPPER UP TO SIZE #10 AWG (#8 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C, (167 DEGREES F), 98% CONDUCTIVITY, MINIMUM #12.
- ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES, J-BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY, OR APPROVED EQUAL.
- ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION TO CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
- ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN NOT HAND WRITTEN.
- INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.
- THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS, DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
- ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS.)
- ALL ELECTRICAL DEVICES AND INSTALLATIONS OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
- PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTION MANAGERS APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.
- ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT (THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS).
- LOCATION OF ALL OUTLET, BOXES, ETC., AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.

ELECTRICAL NOTES

NO SCALE

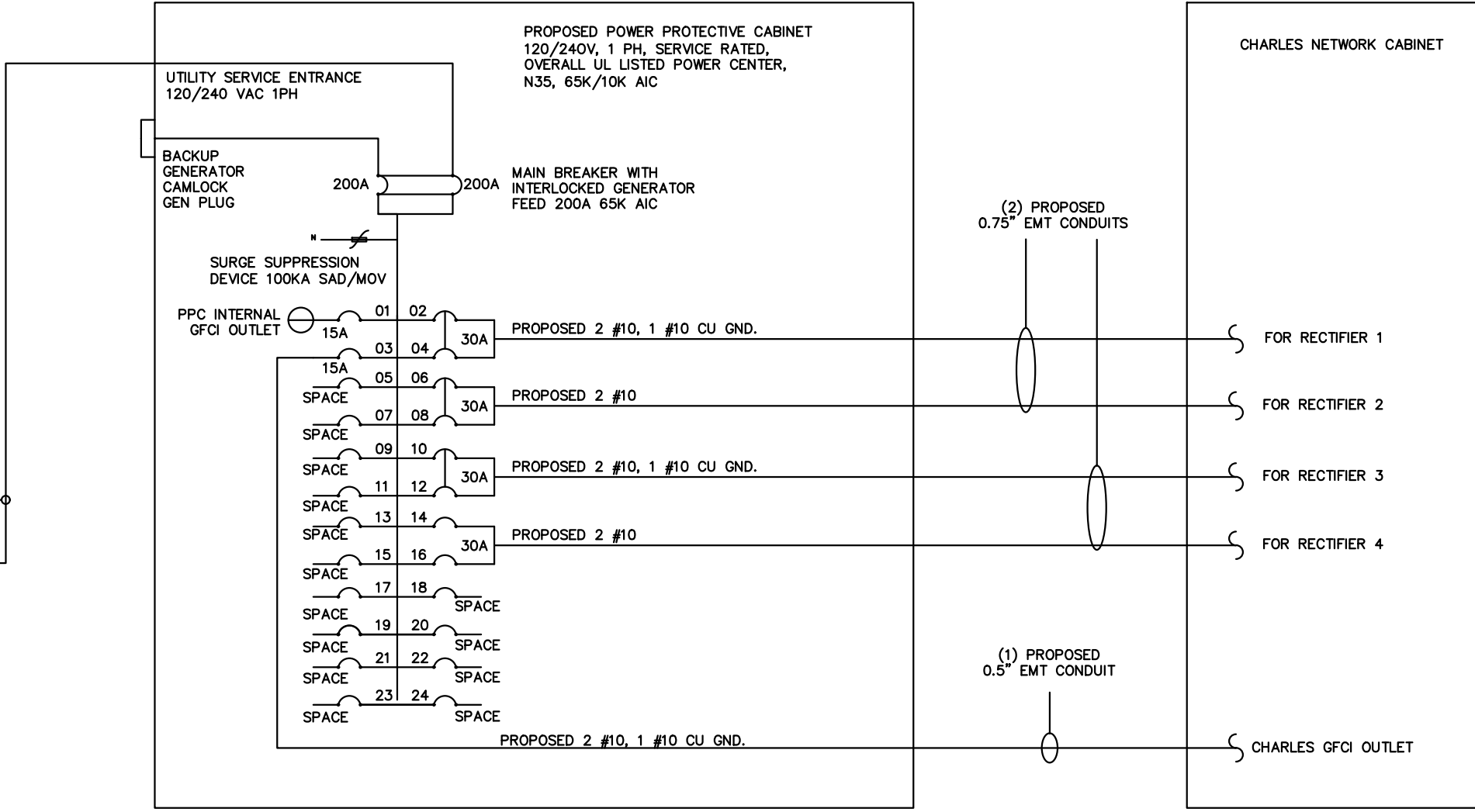
3



NOTE: REFER TO SHEET A-1 FOR UTILITY ROUTING PLAN

GENERAL NOTES:
 1. GENERAL CONTRACTOR TO NOTIFY CDG IF THERE ARE ANY DISCREPANCIES BETWEEN THE ACTUAL SITE CONDITIONS AND THE DRAWINGS
 2. ALL WORK TO BE COMPLIED WITH NFPA 70E AND OSHA TITLE 29.
 3. ALL BOXES AND ENCLOSURES (INCLUDING TRANSFER SWITCHES, GENERATORS AND POWER PANELS) FOR EMERGENCY CIRCUITS SHALL BE PERMANENTLY MARKED SO THEY WILL BE READILY IDENTIFIABLE AS A COMPONENT OF AN EMERGENCY CIRCUIT OR SYSTEM.

NOTE: THE POWER PLAN IS PRELIMINARY PENDING THE FINAL P&GE DESIGN



NOTE: BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105C, 600V, AND PVC INSULATED, IN THE SIZE SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.
 BREAKERS REQUIRED:
 (4) 30A, 2P BREAKER - SQUARE D P/N: 00230
 (2) 15A, 1P BREAKER - SQUARE D P/N: 00115

SINGLE LINE DIAGRAM

NO SCALE

1

**PROPOSED PANEL SCHEDULE
 RAYCAP PPC CABINET
 200A, 120/240V, 1Ø, 3W, 65kA**

LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI	180		15A	1	A	2	30A	2880	2880	RECTIFIER #1
SPACE				3	B	4	30A	2880	2880	RECTIFIER #2
				5	A	6	30A	2880	2880	RECTIFIER #2
				7	B	8	30A	2880	2880	RECTIFIER #3
				9	A	10	30A	2880	2880	RECTIFIER #3
				11	B	12	30A	2880	2880	RECTIFIER #3
				13	A	14	30A	2880	2880	RECTIFIER #3
				15	B	16	15A	180	180	CHARLES GFCI
				17	A	18				
				19	B	20				
				21	A	22				
				23	B	24				
				25	A	26				
				27	B	28				
				29	A	30				
VOLT AMPS	180	0						11700	11520	
200A MCB, 1Ø, 3W, 120/240V				L1	L2					
MB RATING: 22,000 AIC				11880	11520			VOLT AMPS		
				49.5	48			AMPS		
					97.5			MAX AMPS		
					121.9			MAX 125%		

PANEL SCHEDULE

NO SCALE

2

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATING FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.
 THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH NEC LISTED ON T-1) ARTICLE 210.19(A)(1) FPM NO. 4.
 THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 3014/717 NEC TABLE 310.15(B)(3)(A) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.
 #12 FOR 15A-20A/1P BREAKER: 0.8 X 30A = 24.0A
 #10 FOR 25A-30A/2P BREAKER: 0.8 X 40A = 32.0A
 #8 FOR 35A-40A/2P BREAKER: 0.8 X 55A = 44.0A
 #6 FOR 45A-60A/2P BREAKER: 0.8 X 75A = 60.0A
 CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358
 0.5" CONDUIT - 0.122 SQ. IN AREA
 0.75" CONDUIT - 0.213 SQ. IN AREA
 2.0" CONDUIT - 1.316 SQ. IN AREA
 3.0" CONDUIT - 2.907 SQ. IN AREA
 CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.
 #10 - 0.0211 SQ. IN X 2 - 0.0422 SQ. IN
 #10 - 0.0211 SQ. IN X 1 - 0.0211 SQ. IN <GND
 TOTAL - 0.0633 SQ. IN
 0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.
 RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.
 #10 - 0.0266 SQ. IN X 4 - 0.1064 SQ. IN
 #10 - 0.0082 SQ. IN X 1 - 0.0082 SQ. IN <BARE GROUND
 TOTAL - 0.1146 SQ. IN
 0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRES, AS INDICATED ABOVE.
 PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.
 3/0 - 0.5879 SQ. IN X 3 - 0.8637 SQ. IN
 #6 - 0.0507 SQ. IN X 1 - 0.0507 SQ. IN <GROUND
 TOTAL - 0.8544 SQ. IN
 3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES INCLUDING GROUND WIRE, AS INDICATED ABOVE.



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120



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 FULLERTON, CA 92831

CDG

22431 ANTONIO PKWY
 SUITE 2160-131
 RANCHO SANTA MARGARITA CA 92688
 dconnell@connelldesigngroup.com
 949-306-4644



DATE STAMPED: 07/22/2022

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DRAWN BY: LE CHECKED BY: JPC APPROVED BY: DC

RFDS REV #4 DATED 11/16/2021

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/24/2022	ISSUED FOR 90% CD REVIEW
1	06/19/2022	ISSUED FOR 100% CD
2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSF00884A

DISH WIRELESS PROJECT NUMBER
SFSF00884A

S. EAGLE CREST DRIVE
 DANVILLE, CA 95606
 TRANSMISSION TOWER

SHEET TITLE
S.L.D., PANEL SCHEDULE & NOTES

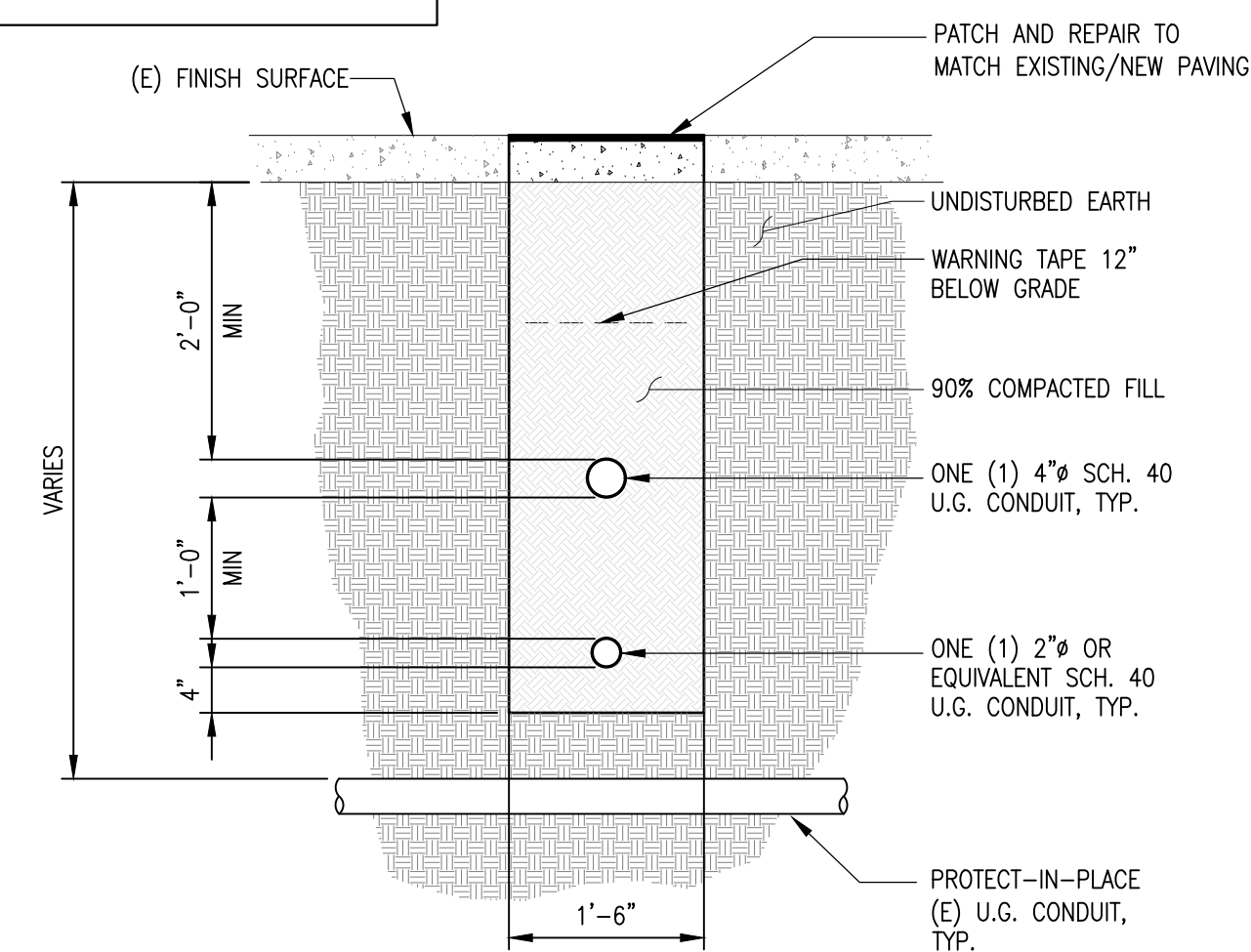
SHEET NUMBER

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.

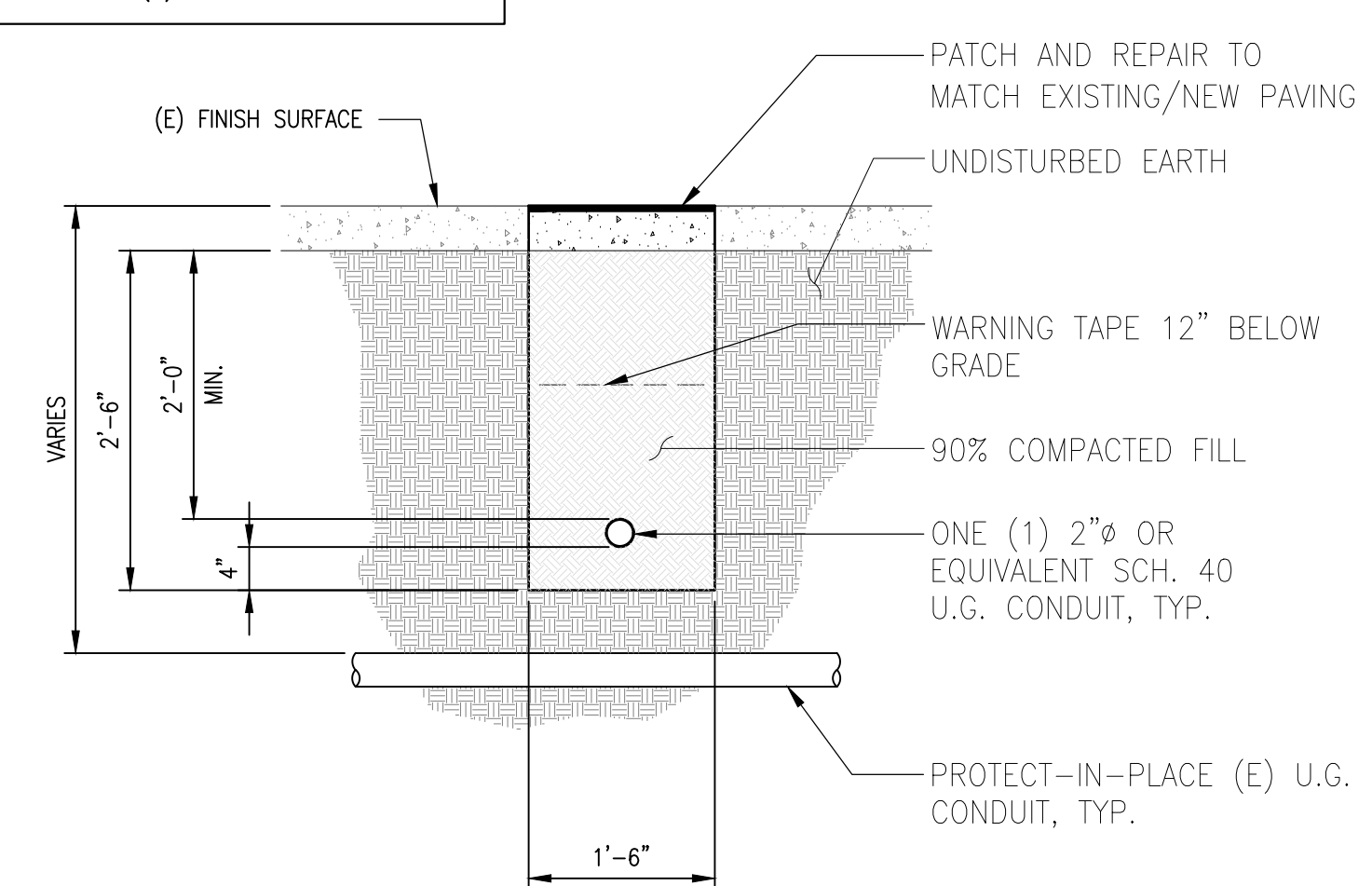
NOTE:
1. VERIFY (E) CONDUIT LOCATION AND CONDITION. DO NOT DAMAGE (E) CONDUIT. (E) CONDUIT TO BE ENCASED IN CONCRETE IF UNDER (N) CONCRETE PAD FOOTING.



TRENCH DETAIL

NO SCALE 2

NOTE:
1. VERIFY (E) CONDUIT LOCATION AND CONDITION. DO NOT DAMAGE (E) CONDUIT. (E) CONDUIT TO BE ENCASED IN CONCRETE IF UNDER (N) CONCRETE PAD FOOTING.

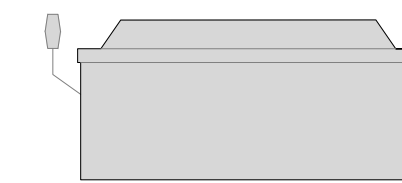


JOINT TRENCH DETAIL

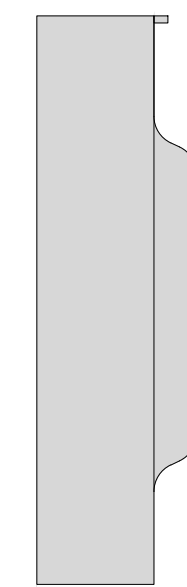
NO SCALE 3

SQUARE D SAFETY SWITCH
D324NRB

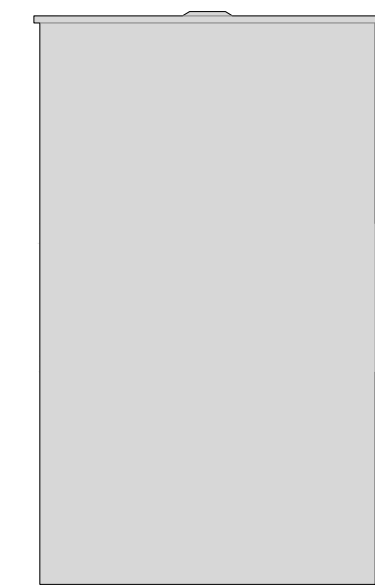
ENCLOSURE DIM (HxWxD)	29.25"x17.25"x8.25"
TOTAL WEIGHT (EMPTY)	45.33 LBS
MAX VOLTAGE/AMPS/WATT	240V/200A/48000W
ENCLOSURE RATING	OUTDOOR NEMA 3R



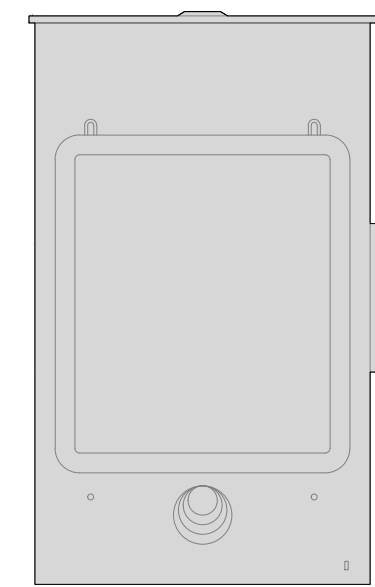
PLAN



SIDE



BACK



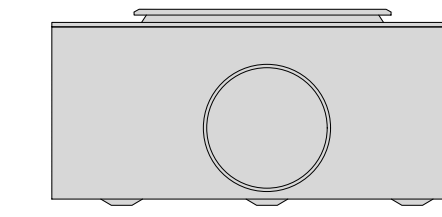
FRONT

SAFETY SWITCH

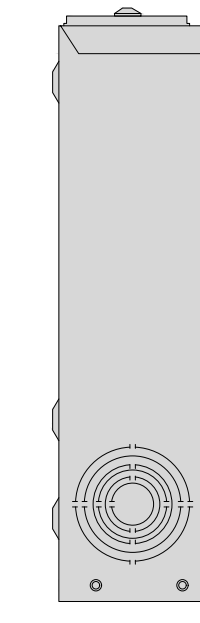
NO SCALE 4

EATON METER SOCKET
UNRRS213BEUSE

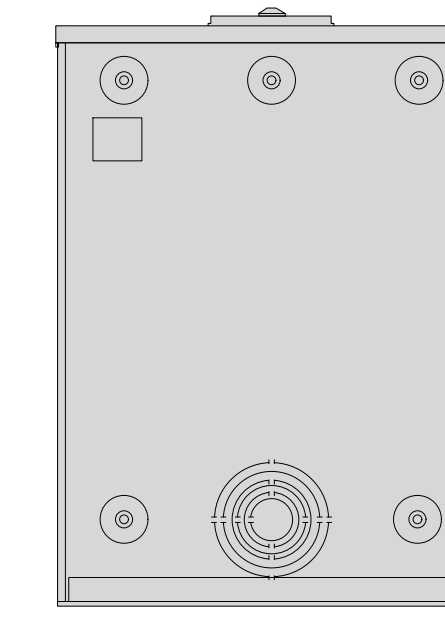
METER SOCKET TYPE	RING
ENCLOSURE DIM (HxWxD)	16"x12"x6"
MAIN AMPERE RATING	200A
WEIGHT	18 LBS



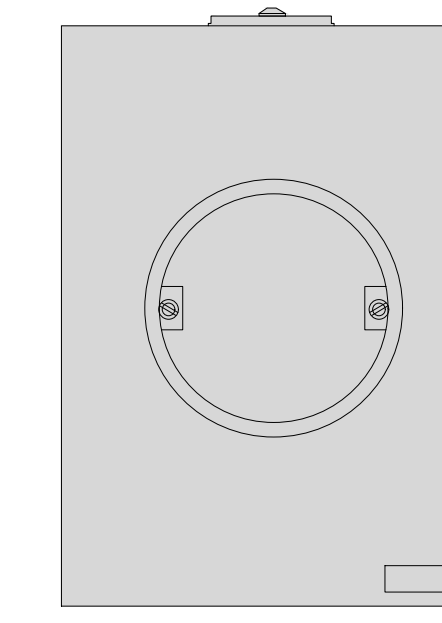
PLAN



SIDE



BACK



FRONT

METER SOCKET DETAIL

NO SCALE 5

ELECTRICAL NOTES

NO SCALE 1

NOT USED

NO SCALE 7

NOT USED

NO SCALE 8

dish
WIRELESS

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

BUTLER
America Telecom
LLC

1511 E. ORANGETHORPE AVE., SUITE D
FULLERTON, CA 92831

CDG

22431 ANTONIO PKWY
SUITE B160-131
RANCHO SANTA MARGARITA CA 92688
dconnell@connelldesigngroup.com
949-306-4644



DATE STAMPED: 07/22/2022

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DRAWN BY: LE CHECKED BY: JPC APPROVED BY: DC

RFDS REV #4 DATED 11/16/2021

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
0	03/24/2022	ISSUED FOR 90% CD REVIEW
1	06/19/2022	ISSUED FOR 100% CD
2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSF00884A

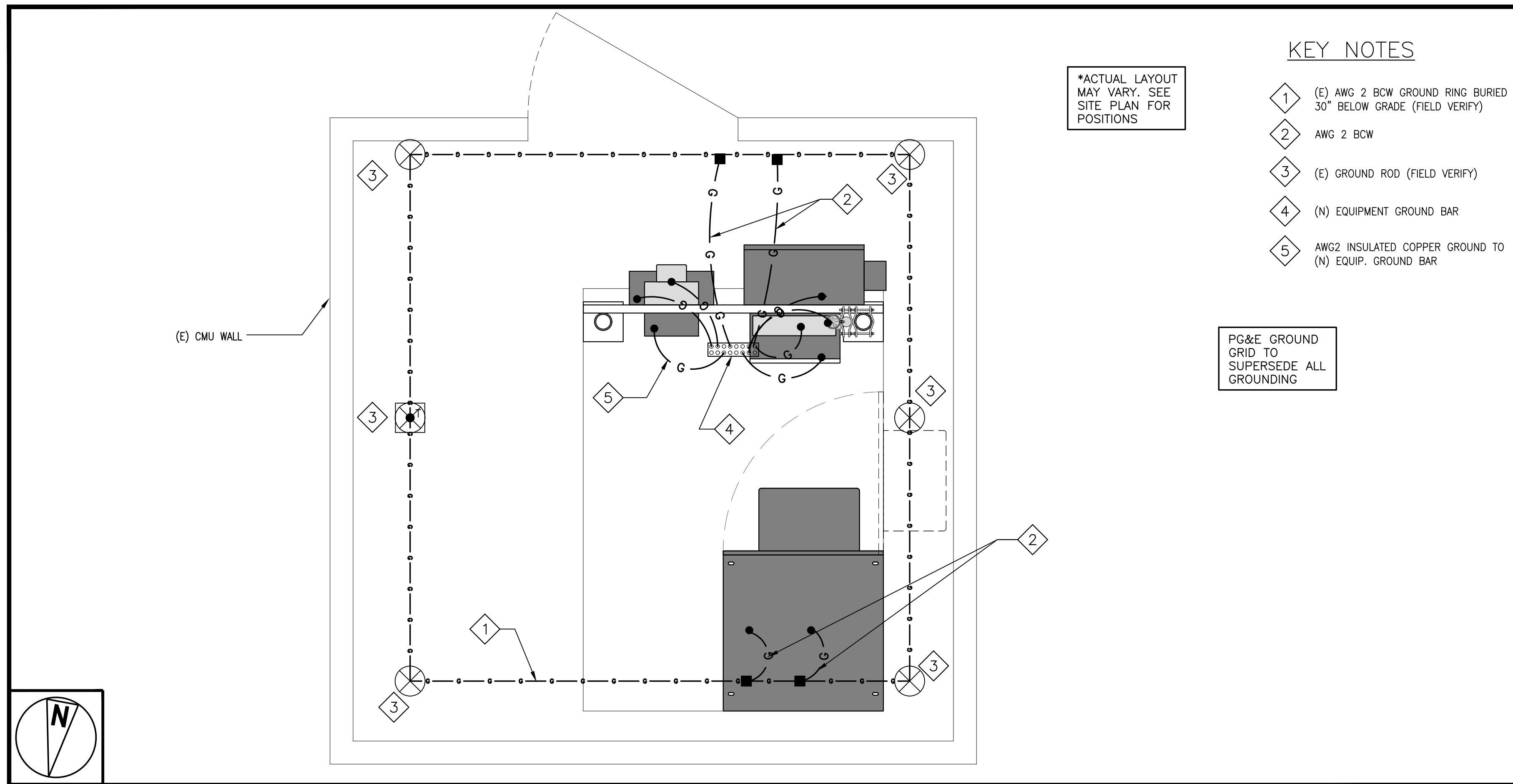
DISH WIRELESS PROJECT NUMBER
SFSF00884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER

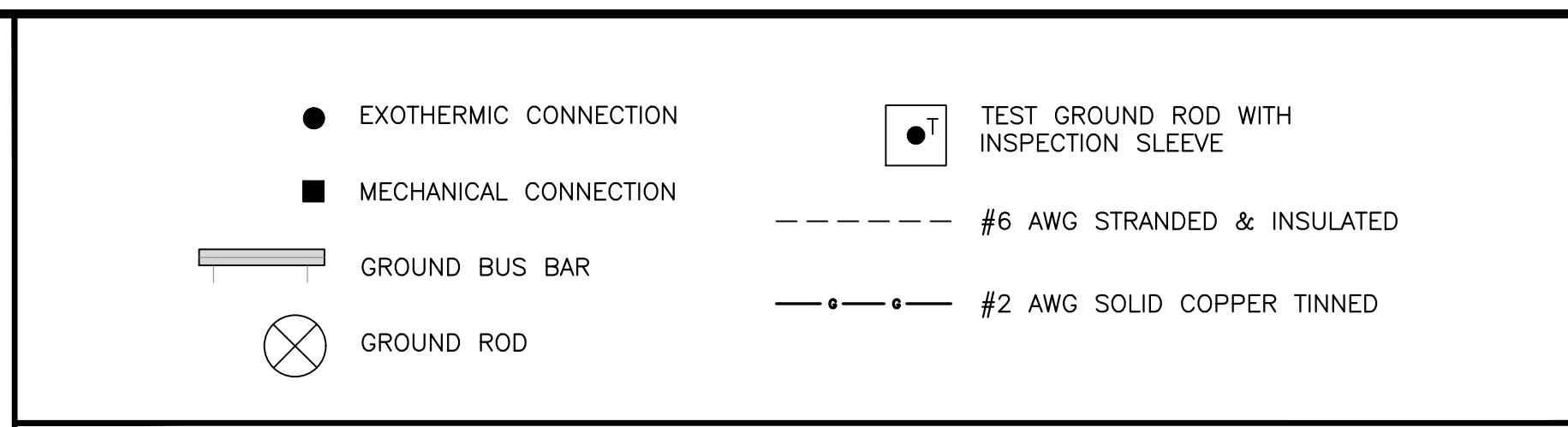
E-2



*ACTUAL LAYOUT MAY VARY. SEE SITE PLAN FOR POSITIONS

- KEY NOTES**
- 1 (E) AWG 2 BCW GROUND RING BURIED 30" BELOW GRADE (FIELD VERIFY)
 - 2 AWG 2 BCW
 - 3 (E) GROUND ROD (FIELD VERIFY)
 - 4 (N) EQUIPMENT GROUND BAR
 - 5 AWG2 INSULATED COPPER GROUND TO (N) EQUIP. GROUND BAR

PG&E GROUND GRID TO SUPERSEDE ALL GROUNDING



GROUNDING LEGEND

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

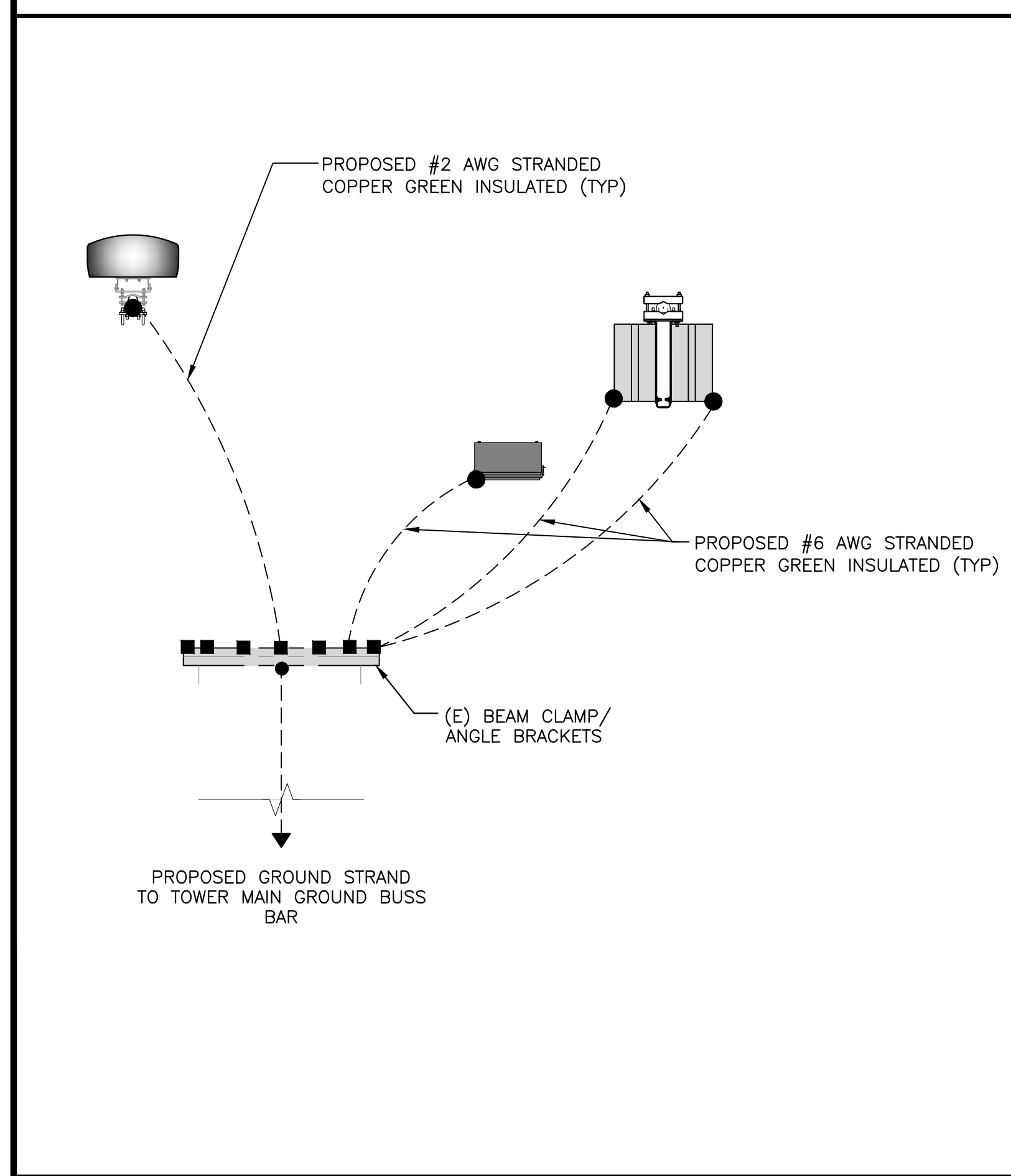
GROUNDING KEY NOTES

- A **ROOF MOUNTED SUPPORT STRUCTURES:** BOND ROOF-MOUNTED ANTENNA MASTS AND SUPPORT STRUCTURES TO THE EXISTING LIGHTNING PROTECTION SYSTEM, EXISTING BUILDING GROUND, NON-FIRE SUPPRESSION COLD WATER PIPE, OR GROUND RIN/ROD AT GROUND LEVEL USING #2 STRANDED GREEN INSULATED COPPER WIRE.
- B **BONDING:** ALL ROOFTOP GROUND CONNECTIONS SHALL BE MECHANICAL WITH ANTI OXIDIZING COMPOUND BETWEEN MATING SURFACES. EXOTHERMIC WELDS ARE NOT ALLOWED ON ROOFTOP OR IN-BUILDING APPLICATIONS UNLESS THE COMPONENT IS SUPPLIED FROM THE MANUFACTURER PRE-WELDED.
- C **EXTERIOR GROUND RING:** #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- D **INTERIOR GROUND RING:** #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- E **BOND TO INTERIOR GROUND RING:** #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- F **GROUND ROD:** UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR. CHEMICAL GROUND RODS MAY BE USED WHEN APPLICABLE.
- G **CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING OR GROUND LEVEL GROUND ROD WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- H **HATCH PLATE GROUND BAR:** BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- J **EXTERIOR CABLE ENTRY PORT GROUND BARS:** LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- K **FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUSSBAR THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK. BOND THE FRAME GROUND TO THE "I" SECTION OF THE CELL REFERENCE GROUND BAR OR SUPPLEMENTARY CONDUCTOR. (SHEET G3 DETAIL1)
- L **INTERIOR UNIT BONDS:** METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- M **FENCE AND GATE GROUNDING:** METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS. IF THE FENCE AND GATE IS IN-BUILDING OR ON ROOF IT SHALL BE BONDED TO THE MAIN BUSSBAR GROUNDING SYSTEM. USING #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR
- N **EXTERIOR UNIT BONDS:** METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE MAIN BUSSBAR GROUNDING SYSTEM. USING #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR
- P **CABLE TRAYS:** EACH SECTION SHALL BE BONDED TO THE NEXT WITH #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR JUMPER. PROVIDE TWO HOLE LUGS AT BOTH ENDS OF THE JUMPER AND APPLY NO-OXIDIZING COMPOUND BETWEEN THE LUG AND CABLE TRAY. THE CABLE TRAY SHALL BE GROUNDED TO THE NEAREST BUSSBAR IN THE SAME MANNER.
- Q **DURING ALL DC POWER SYSTEM CHANGES** INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR
- R **ALL ROOFTOP BUSSBARS** ARE TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT.

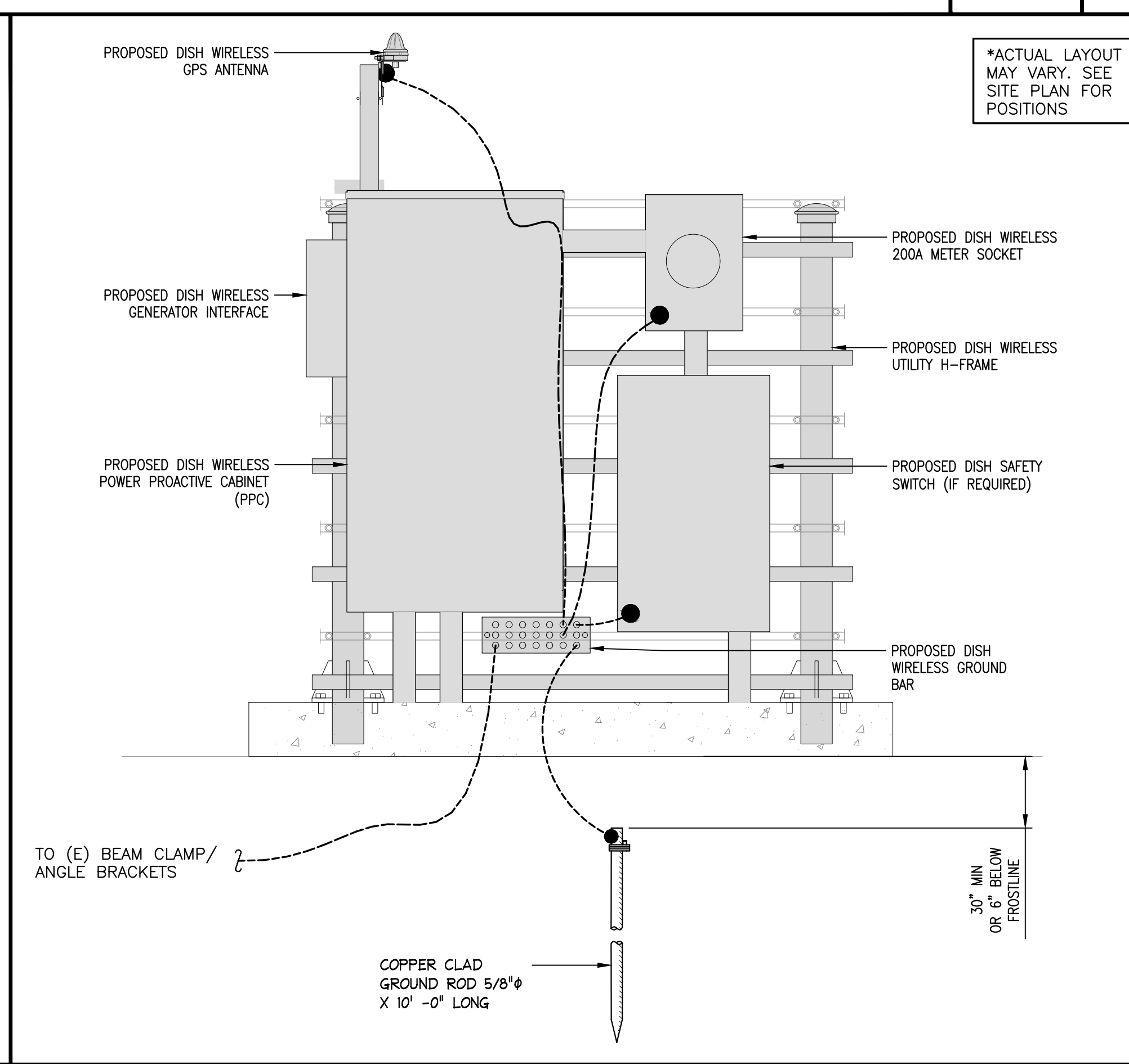
REFER TO DISH WIRELESS GROUNDING NOTES.

GROUNDING PLAN

NO SCALE 1



*ACTUAL LAYOUT MAY VARY. SEE SITE PLAN FOR POSITIONS

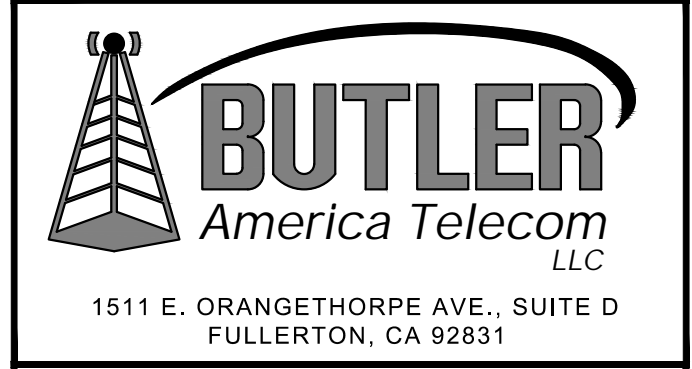


H-FRAME GROUNDING DETAIL

NO SCALE 1

GROUNDING KEY NOTES

NO SCALE 2



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DRAWN BY: LE CHECKED BY: JPC APPROVED BY: DC

RFDS REV #4 DATED 11/16/2021

CONSTRUCTION DOCUMENTS

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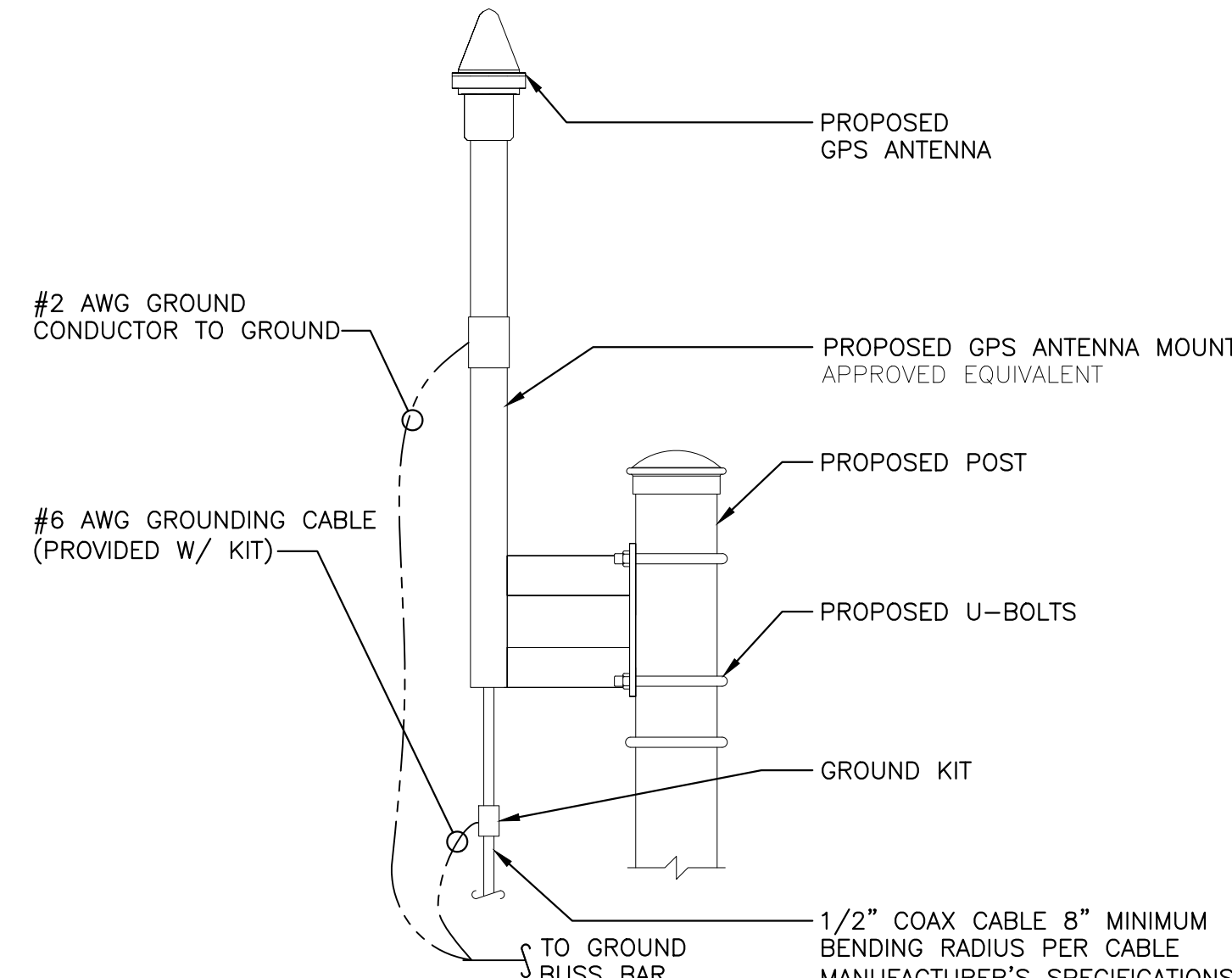
DISH WIRELESS PROJECT NUMBER
SFSF00884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
GROUNDING PLAN/NOTES

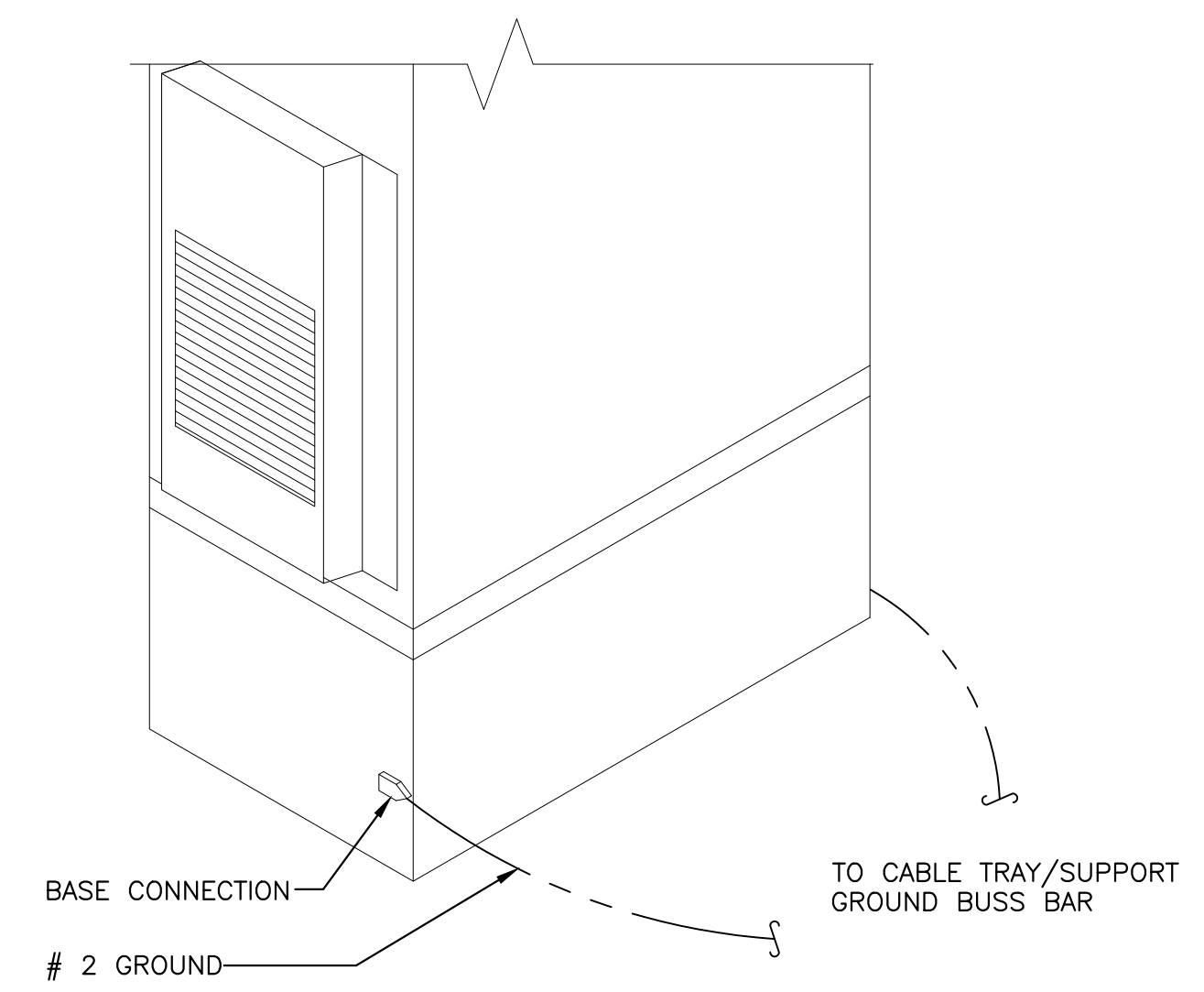
SHEET NUMBER

G-1



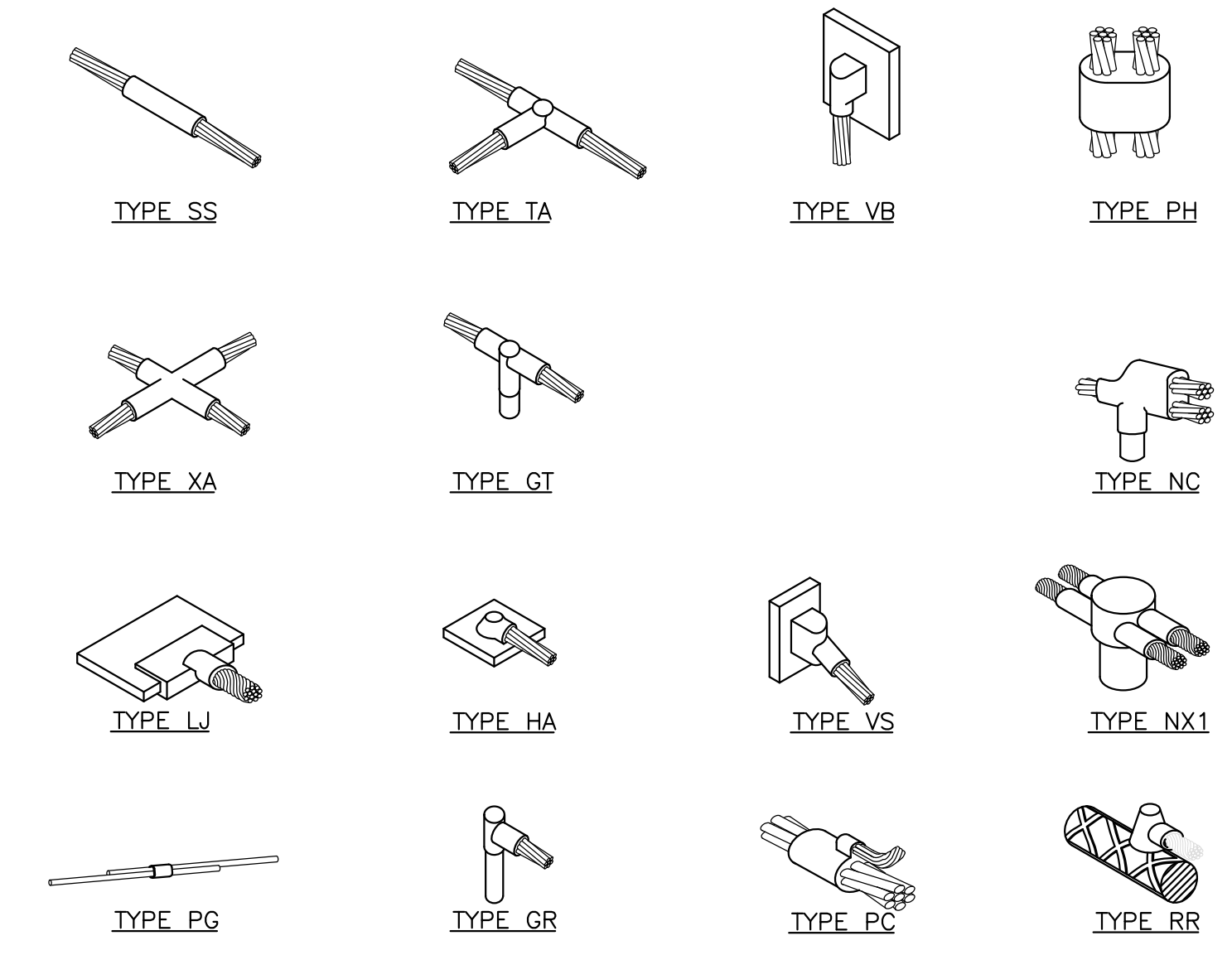
TYPICAL GPS UNIT GROUNDING

NO SCALE 1



OUTDOOR CABINET GROUNDING

NO SCALE 2



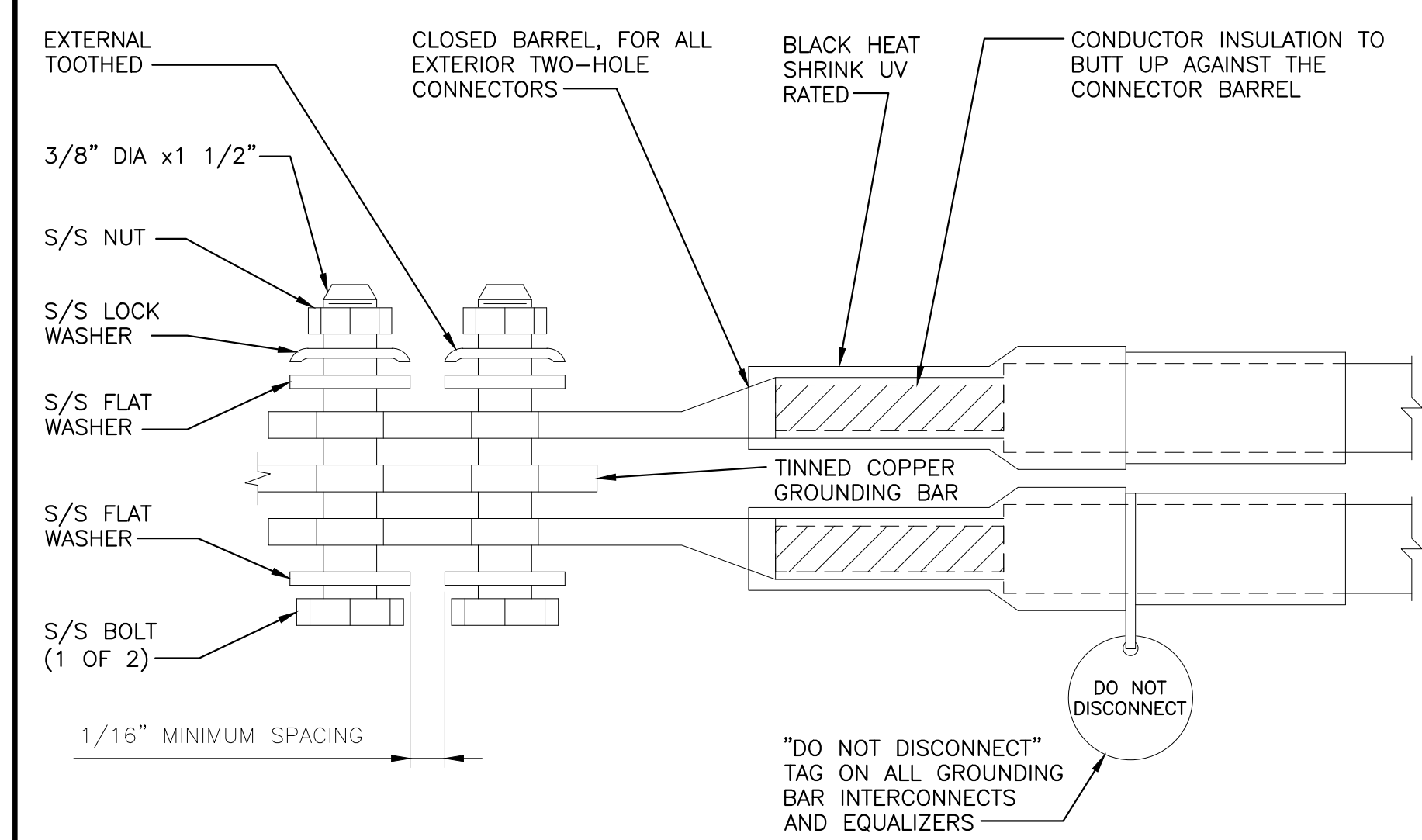
CADWELD CONNECTIONS

NO SCALE 3

- EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
- ALL GROUND BARS SHALL BE STAMPED IN TO THE METAL "IF STOLEN DO NOT RECYCLE." THE CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "T") WITH 1" HIGH LETTERS.
- ALL HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
- FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
- DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
- NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
- ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
- ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

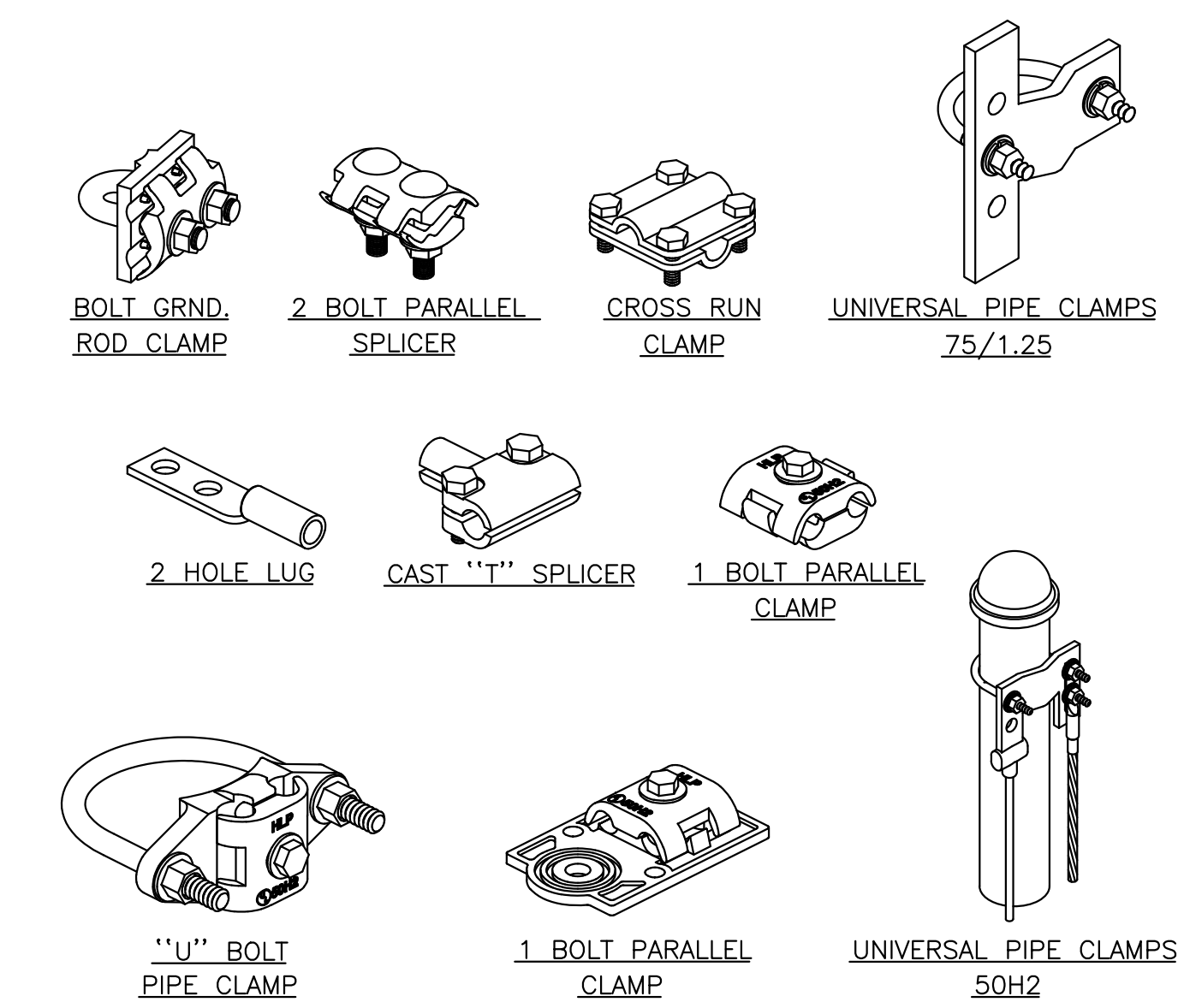
TYPICAL GROUNDING NOTES

NO SCALE 4



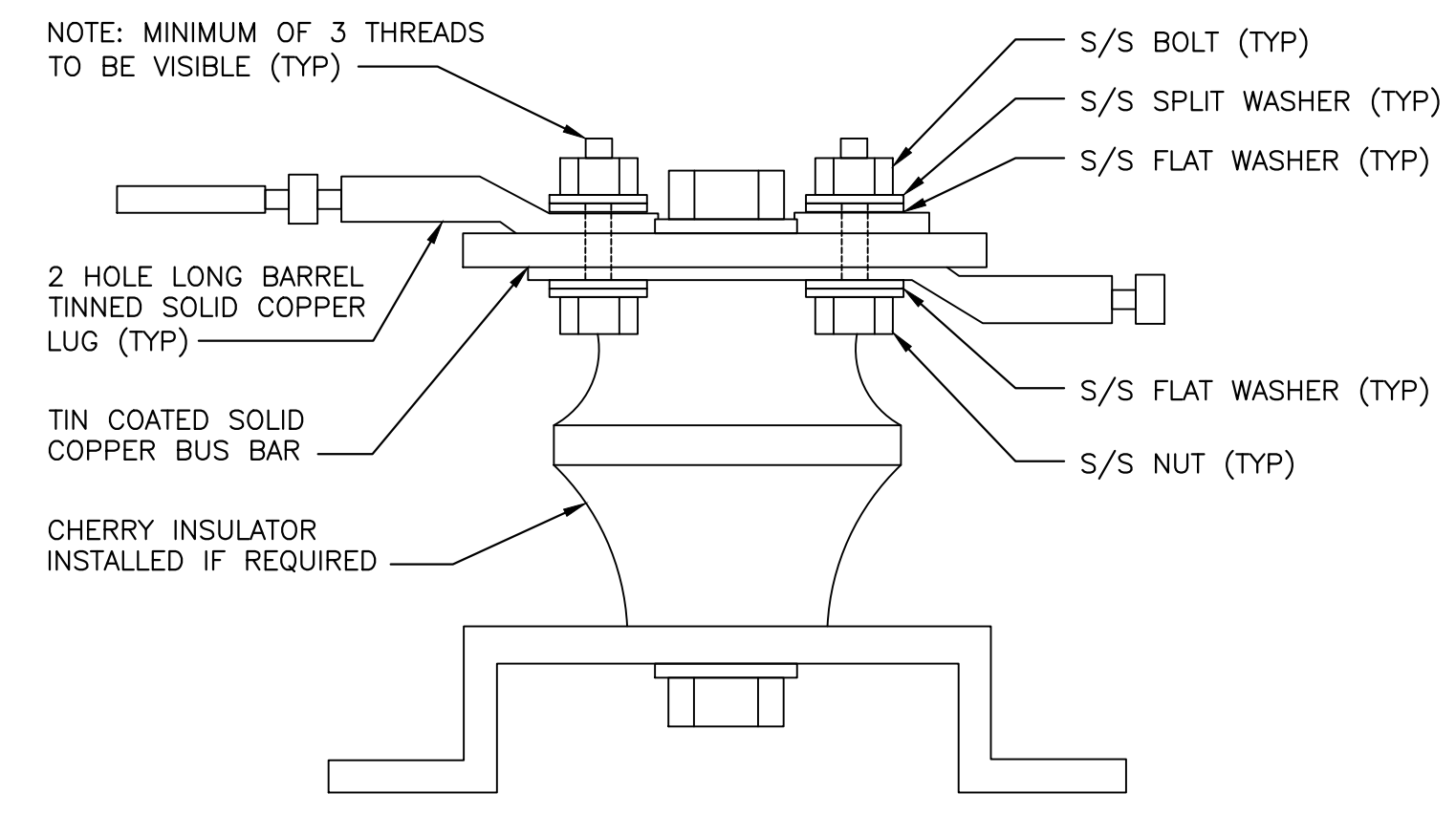
TYPICAL EXTERIOR TWO HOLE LUG

NO SCALE 5



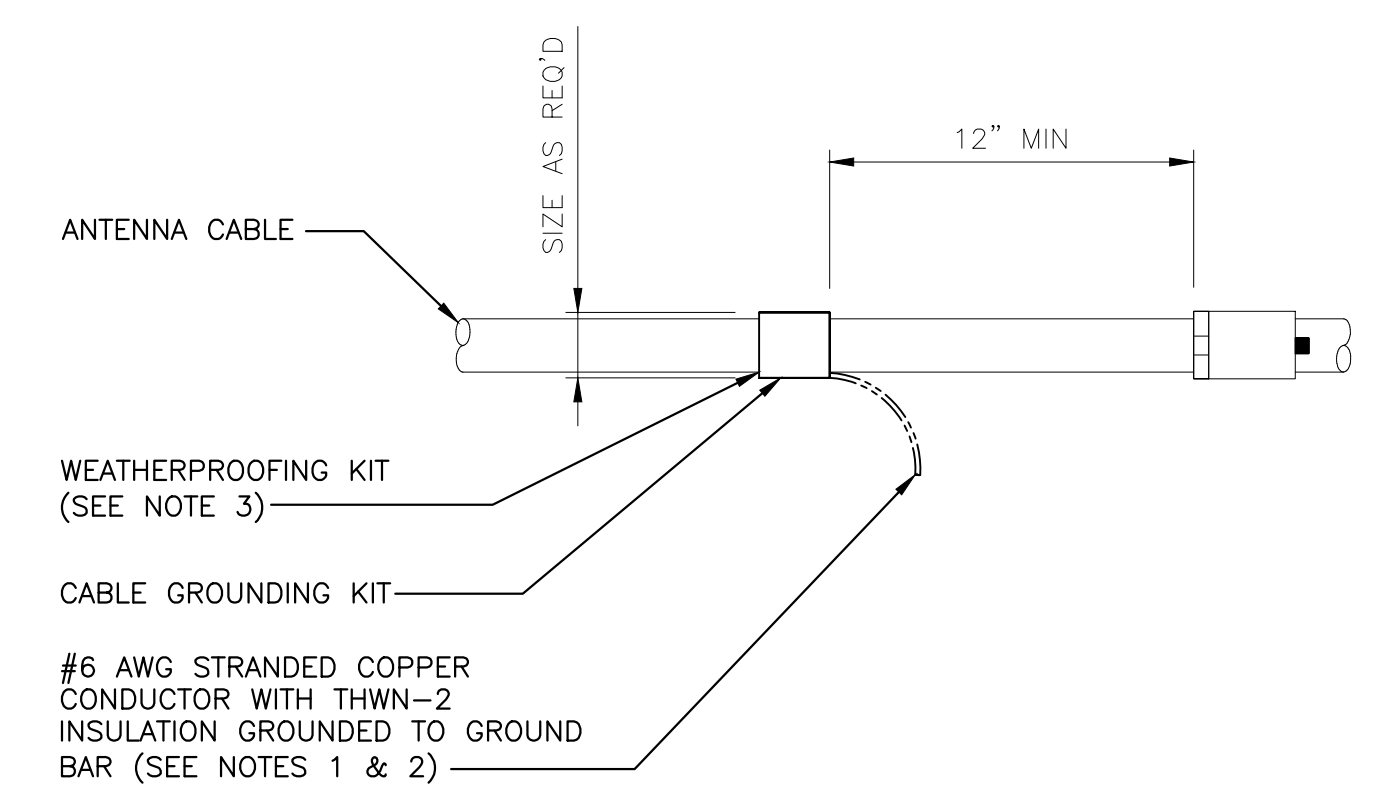
MECHANICAL CONNECTIONS

NO SCALE 6



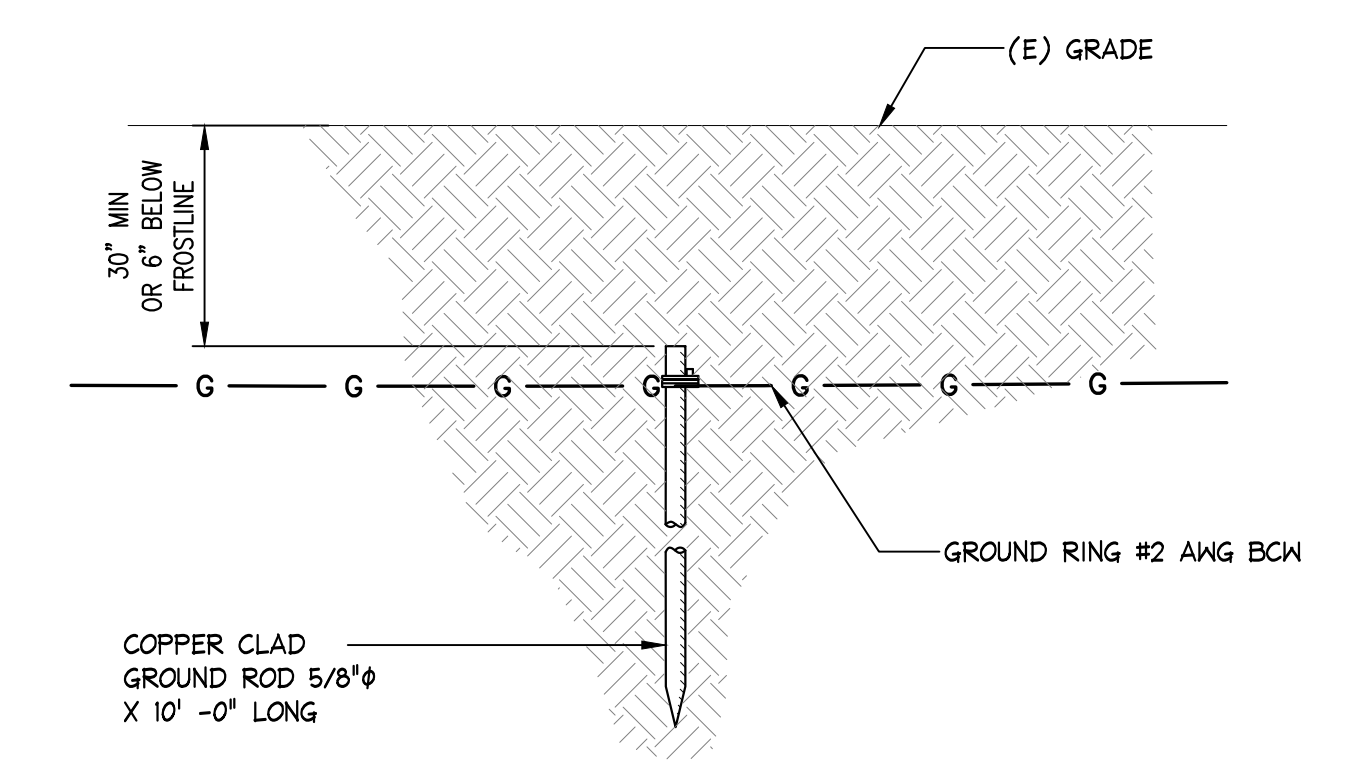
LUG DETAIL

NO SCALE 7



CONNECTION OF HYBRID CABLE GROUNDING KIT TO HYBRID TRUNK

NO SCALE 8



GROUND ROD DETAIL

NO SCALE 9

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

1511 E. ORANGETHORPE AVE., SUITE D
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22431 ANTONIO PKWY
SUITE B160-131
RANCHO SANTA MARGARITA CA 92688
dconnel@connelldesigngroup.com
949-306-4644

REGISTERED PROFESSIONAL ENGINEER
DANIEL MICHAEL CONNELL
NO. 62543
EXP. 12/31/23
CIVIL
STATE OF CALIFORNIA
DATE STAMPED: 07/22/2022

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LE	JPC	DC

RFD5 REV #4 DATED 11/16/2021

CONSTRUCTION DOCUMENTS

SUBMITTALS		
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0	03/24/2022	ISSUED FOR 90% CD REVIEW
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(VENDOR) PROJECT NUMBER
SFSF00884A

DISH WIRELESS PROJECT NUMBER
SFSF00884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2

dish WIRELESS RF DESIGN SHEET

Issue Date: 11/16/2021	RFDS Status: Preliminary
Revision: 4	Created By: Scott, Cesar [Outlook]

SITE INFORMATION	
DISH Site Number	SFSF00884A
DISH Site Name	0
Prerequisite ID	
ADI	San Jose-SF-Oakland
PEA	0
Latitude	37.817405
Longitude	-121.902897
Address	5 Eagle Crest Drive
City	Danville
State	CA
ZIP Code	94506
Country	Country Costa
Rad Center (ft)	128.25
RAD Confirmed	No Confirmed RAD
Structure Type	Transmission Line Tower

PROJECT ASSIGNMENTS	
Market Manager	Mark Sika
Site Development Mgr.	Scott Lovelless
RF Engineer	Fahrooz Abmed/Shanlou
Site Acq Specialist/Develop. Coord.	Jake Wooten / Ellen Evans
SAC Vendor/A&E Vendor	BUTLER AMERICA LLC / BUTLER AMERICA LLC
Asset Owner/Asset #	Pacific Gas & Electric
Construction Mgr. (Lead/Field)	James Ferguson / James Ferguson
Contractor (General/Tower/Civil)	/ /
Power Company / Fiber Provider	PG&E - CA / Comcast

EMERGENCY CONTACT INFORMATION	
Name	Temporary Emergency Line
Phone	866-624-6874

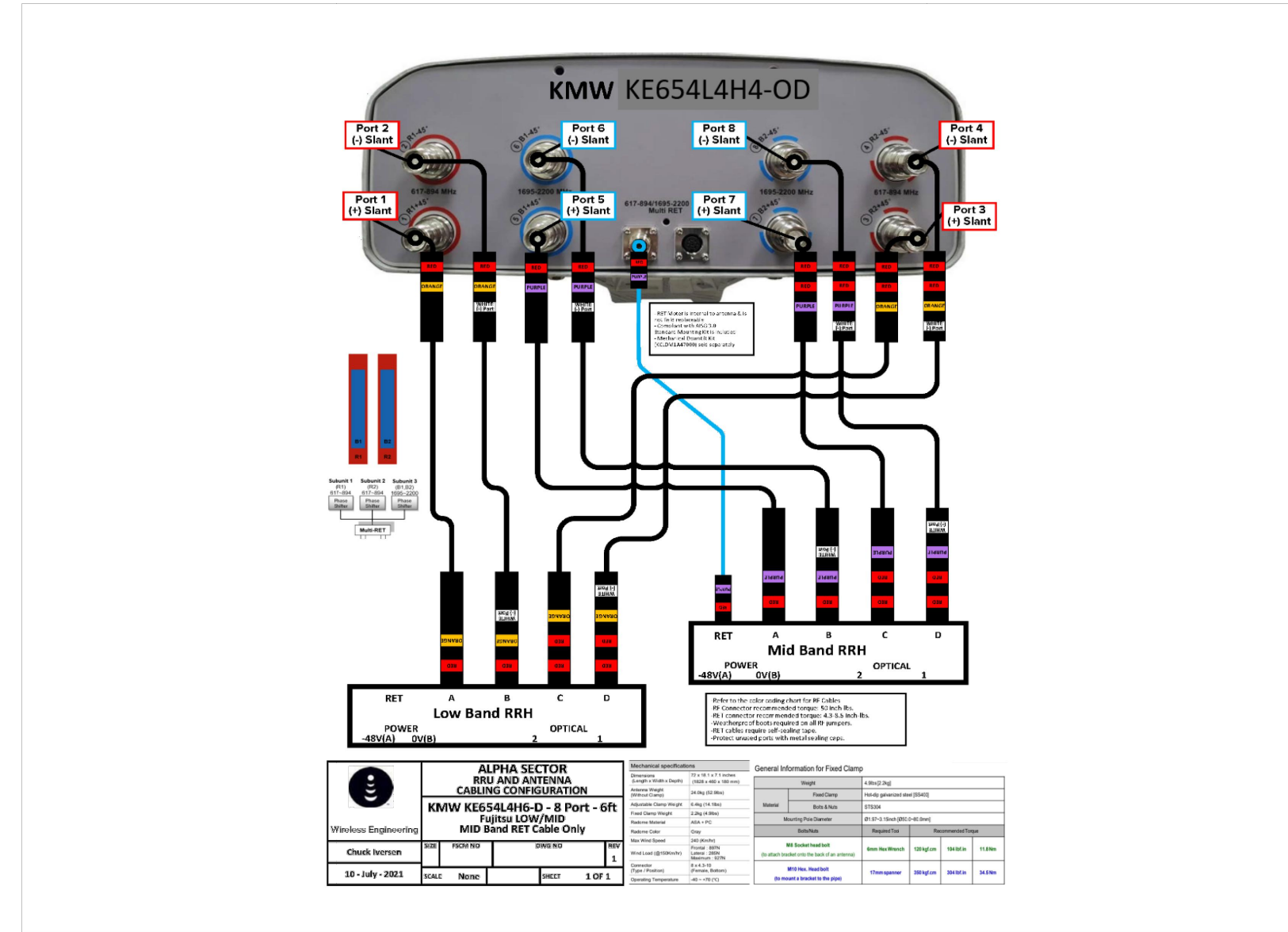
LEASE AREA	
Dimensions (ft.)	5x7
Type	Concrete Pad
Baseband Cabinet	Charles(Ampheco)H/EX
Dimensions (in)	12" x 12.1" x 74"
Baseband (PDS-C)	
Generator Required	No
Make/Model	

RF EQUIPMENT INFORMATION

ISSUE DATE/REVISION	REVISION	DATE	BY	REASON
11/16/2021	1			
11/16/2021	2			
11/16/2021	3			
11/16/2021	4			

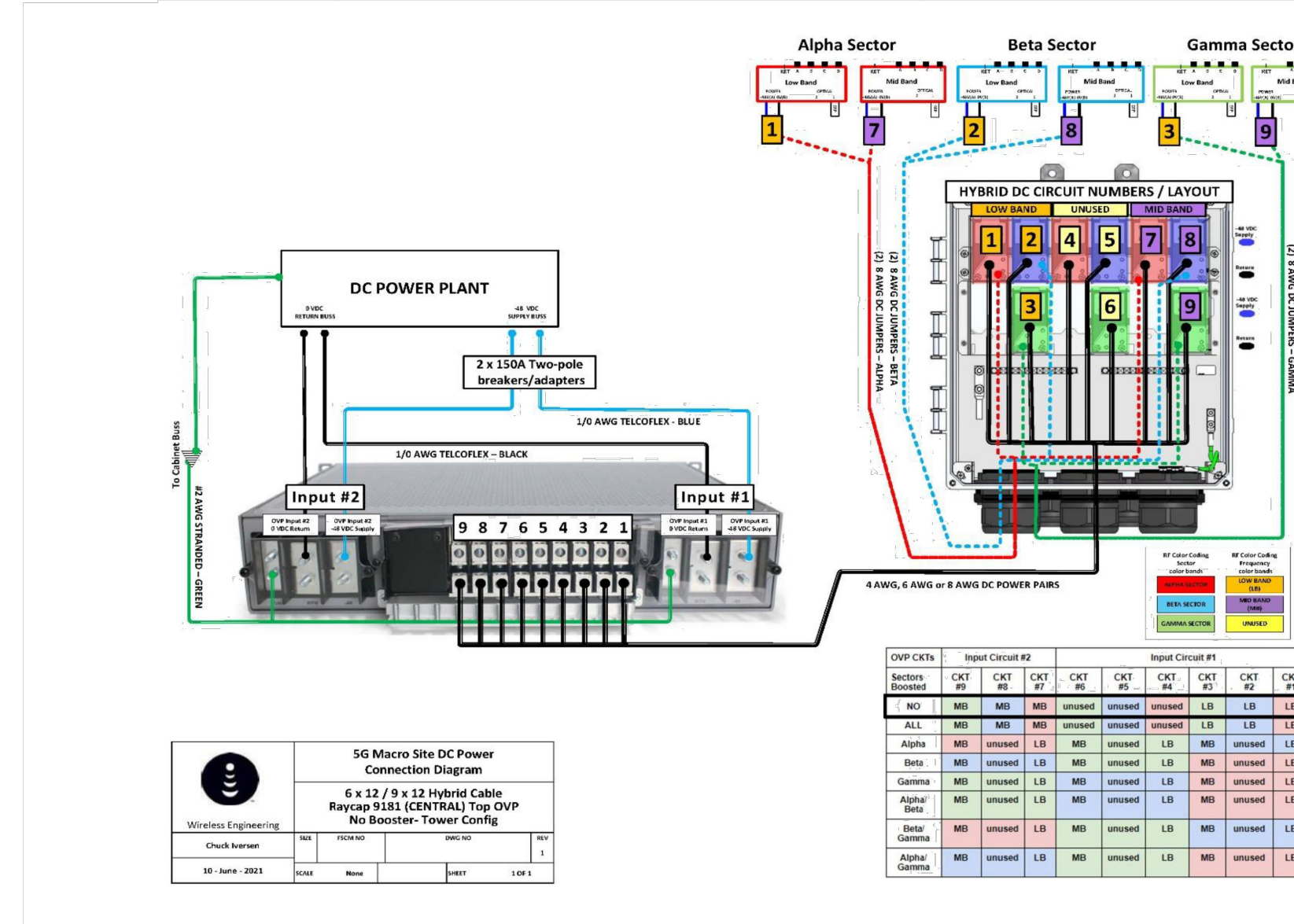
ANTENNA	1	2	3	4	5	6	7	8	9	10
Antenna Mount Position	1	2	3	4	5	6	7	8	9	10
Manufacturer	K&W	K&W	K&W	K&W	K&W	K&W	K&W	K&W	K&W	K&W
Model Number	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD	KE654LH4-OD
Dimensions H x W x D (in)	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"	48.75 x 18.5" x 7.1"
Weight (lbs.)	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5	48.5
TA Power Output (Watts)	40000	40000	40000	40000	40000	40000	40000	40000	40000	40000
ERP (dBm)	76.92	76.92	76.92	76.92	76.92	76.92	76.92	76.92	76.92	76.92
RF Connector Height (ft.)	128.25	128.25	128.25	128.25	128.25	128.25	128.25	128.25	128.25	128.25
Azimuth (True North)	130°	130°	130°	130°	130°	130°	130°	130°	130°	130°
Beam Down (ft)	0"	0"	0"	0"	0"	0"	0"	0"	0"	0"
Duct Mount	Generic	Generic	Generic	Generic	Generic	Generic	Generic	Generic	Generic	Generic

PLUMBING DIAGRAM ANTENNA

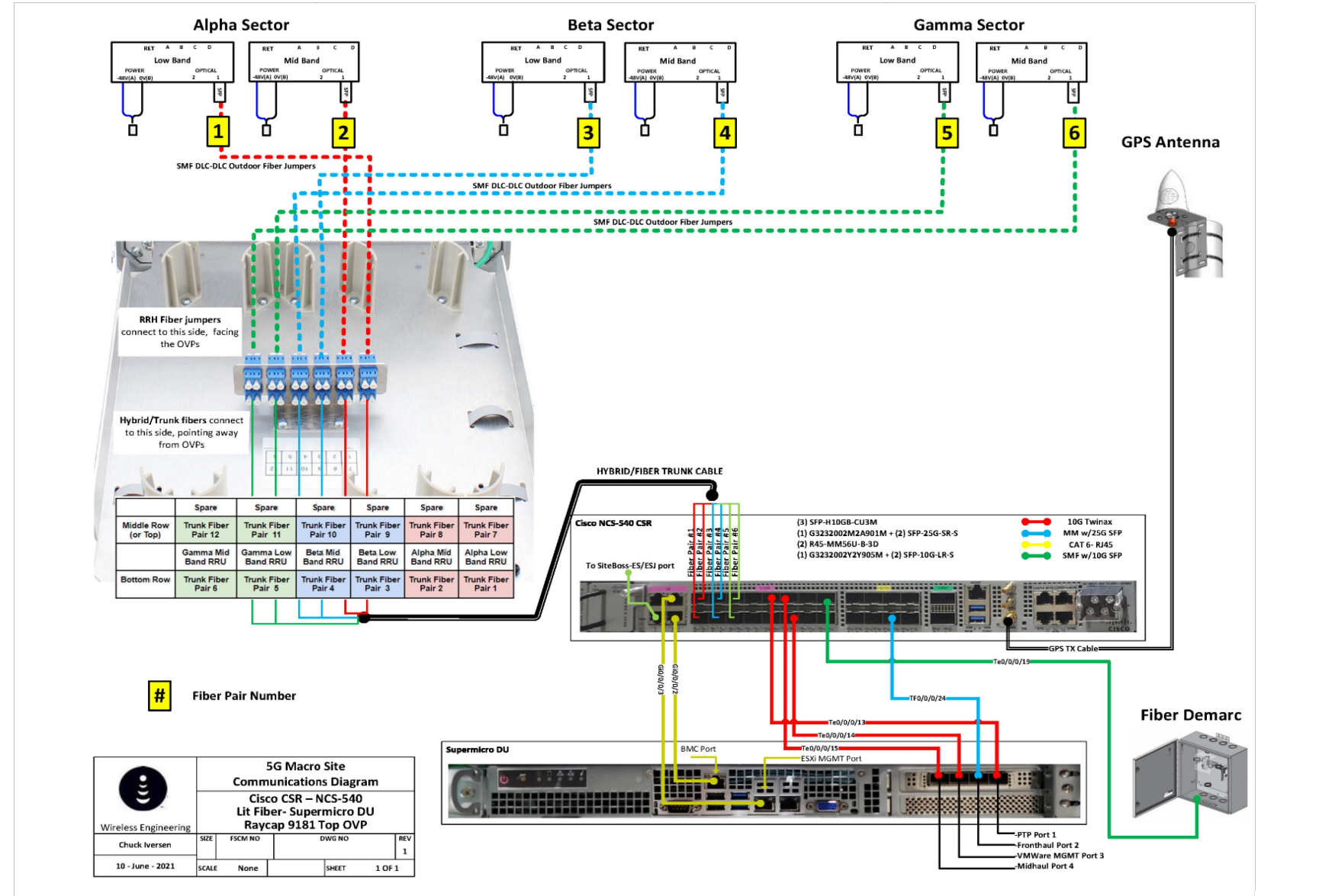


RFDS Template V1 DISH Network Confidential

PLUMBING DIAGRAM OVP



PLUMBING DIAGRAM NETWORK



RF COLOR CODING

RF Cable Color Codes	Low Band (0-1.9GHz)	Mid Band (1.9-3.5GHz)	CBS Tech (1.9GHz)	Positive Ground Port (All Antennas)
RF Jumper Color Coding	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow
Mid Band RRH (CBS Series 866-870)	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow
Fiber Jumper to RRHs	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow
Power Cables to RRHs	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow
RET motors at Antennas	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow
MicroWave Radio Links	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow	Red, Blue, Green, Yellow



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DISH WIRELESS PROJECT NUMBER
SFSF00884A

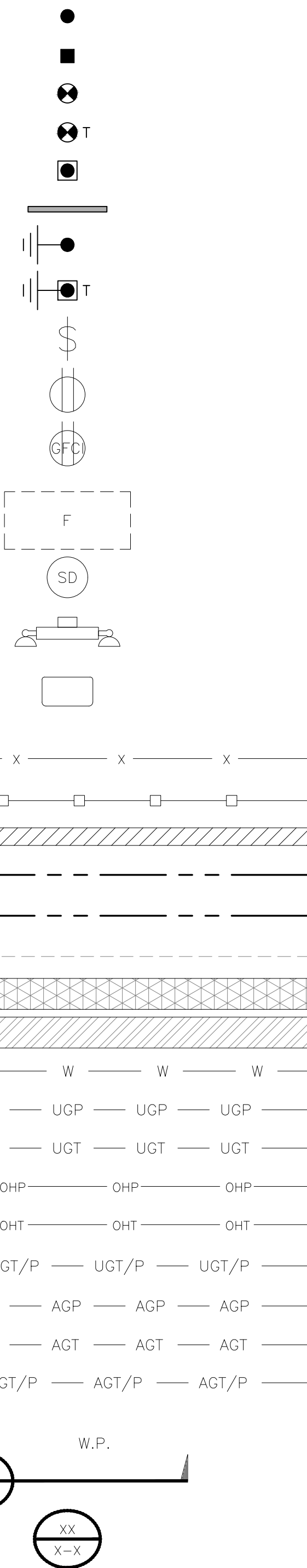
S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
RF DATA

SHEET NUMBER

RF-1

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

ABBREVIATIONS



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DATE STAMPED: 07/22/2022

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DRAWN BY:	CHECKED BY:	APPROVED BY:
LE	JPC	DC

RFDS REV #4 DATED 11/16/2021

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	03/24/2022	ISSUED FOR 90% CD REVIEW
1	06/19/2022	ISSUED FOR 100% CD
2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSF00884A

DISH WIRELESS PROJECT NUMBER
SFSF00884A

S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER

SHEET TITLE
LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS AND TOWER OWNER NOC & THE DISH WIRELESS AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH WIRELESS 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 AND DISH WIRELESS AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

- 1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER:DISH WIRELESS
TOWER OWNER:TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

DISCLAIMER NOTE:

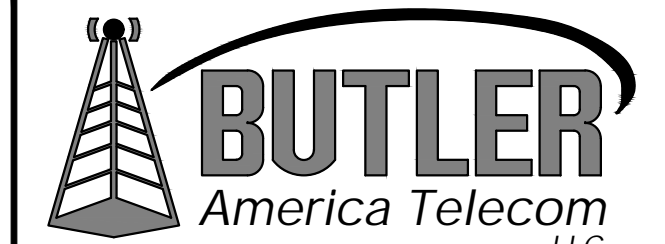
THE DESIGN SHOWN IN THESE PLANS ASSUME THAT ALL EXISTING STRUCTURAL ITEMS ARE IN "LIKE NEW" CONDITION AND THAT THE STRUCTURES HAVE BEEN PROPERLY MAINTAINED BY THE OWNER, INCLUDING ALL TOWER AND BUILDING COMPONENTS.

INSTALLATION PROCEDURES AND RELATED LOADINGS ARE NOT WITHIN THE SCOPE OF THIS DESIGN/DRAWING. A CONTRACTOR EXPERIENCED IN SIMILAR WORK SHOULD PERFORM ALL INSTALLATION WORK. THE ENGINEERING SERVICES PROVIDED BY CDG ARE LIMITED TO THE DESIGN OF THE STRUCTURE WITH THE PROPOSED AND EXISTING LOADS. THESE DRAWINGS ARE CONSIDERED VOID IF THE LOADING MENTIONED IN THESE DRAWINGS IS CHANGED OR IS DIFFERENT AS INSTALLED. IT IS ASSUMED THAT THE EXISTING STRUCTURE IS PROPERLY MAINTAINED AND IS IN GOOD CONDITION FREE OF ANY DEFECTS. ALSO THE VERIFICATION OF ANCHORAGE, PLATE AND BOLTS ARE NOT CHECKED AS COMPLETE ENGINEERING DATA IN NOT AVAILABLE FOR VERIFICATION. THE SCOPE OF THESE DRAWINGS DOES NOT INCLUDE EXISTING CONNECTIONS, EXCEPT AS NOTED. ALL EXISTING & PROPOSED ANTENNA/STRUCTURE DATA WAS PROVIDED BY OWNER. CDG IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY EXISTING DATA.

THESE DRAWINGS GENERATED BY CDG ARE FOR THE SCOPE GIVEN BY CDG, INC. AND THEIR CLIENT ONLY. WE DISCLAIM ANY RESPONSIBILITY OF THIS DRAWING BEING USED BY ANY PARTY OTHER THAN OUR CLIENT. CDG DOES NOT MAKE ANY WARRANTIES, EXPRESSED OR IMPLIED IN CONNECTION WITH THIS ENGINEERING DRAWING AND DISCLAIMS ANY LIABILITY ARISING FROM DEFICIENCIES OR ANY EXISTING CONDITIONS OF THE ORIGINAL STRUCTURE. CDG WILL NOT BE RESPONSIBLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SUSTAINED BY ANY PARTIES AS A RESULT OF ANY DATA OR CONCLUSIONS INCLUDED IN THIS DRAWING. THE MAXIMUM LIABILITY OF CDG PURSUANT TO THIS DRAWING SHALL BE LIMITED TO THE CONSULTING FEE RECEIVED FOR THE PREPARATION OF THE REPORT. ALL SERVICES ARE PERFORMED, RESULTS OBTAINED AND RECOMMENDATIONS MADE ARE IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES. CDG IS NOT RESPONSIBLE FOR THE CONCLUSIONS, OPINIONS AND RECOMMENDATIONS MADE BY OTHERS BASED ON THE INFORMATION OR DATA PROVIDED BY US.



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CONSTRUCTION DOCUMENTS

SUBMITTALS		
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0	03/24/2022	ISSUED FOR 90% CD REVIEW
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(VENDOR) PROJECT NUMBER
SFSF00884A

DISH WIRELESS PROJECT NUMBER
SFSF00884A

**S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER**

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
 - 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
 - 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS 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".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

dish
WIRELESS

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0	03/24/2022	ISSUED FOR 90% CD REVIEW
1	06/19/2022	ISSUED FOR 100% CD
2	07/22/2022	ISSUED FOR 100% CD

(VENDOR) PROJECT NUMBER
SFSF00884A

DISH WIRELESS PROJECT NUMBER
SFSF00884A

**S. EAGLE CREST DRIVE
DANVILLE, CA 95606
TRANSMISSION TOWER**

SHEET TITLE
GENERAL NOTES

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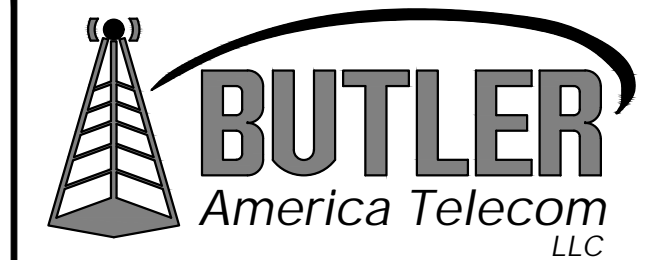
GN-3

GROUNDING NOTES:

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



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