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CROWN CASTLE
CROWN CASTLE 695 RIVER
OAKS PARKWAY SAN JOSE,
CA 95134

RECORD DRAWINGS ISSUE DATE: 02.26.19

PROJECT NAME: SAN FRANCISCO BAY EXPANSION - 58 SITES
 PROJECT ADDRESS: ACROSS 304 MISSION AVE, SAN RAFAEL, CA
 PROJECT TYPE: EXIST. WOOD JPA POLE
 CUSTOMER NODE ID #: SF90XS3T5
 CROWN NODE ID #: SFB004m1
 HUB NAME: SF40XC103
 COORDINATES: LAT: 37.972172 LONG: -122.515749
 CROWN CASTLE BILLING / SCU #: 479641

SHIFT

Shift Companies, LLC
3334 N. 20TH ST.
PHOENIX, ARIZONA 85016
ph: 480.264.0829
fax: 480.264.0163

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RELEASE	
DATE	SUBMITTAL
02.26.19	1ST SUBMITTAL
03.19.19	2ND SUBMITTAL
11.14.19	RESUBMITTAL

REVISIONS		
NO.	DATE	COMMENT

PROJECT NAME
SAN FRANCISCO BAY EXPANSION - 58 SITES

NODE NUMBER
SFB004m1

NODE ADDRESS
ACROSS 304 MISSION AVE
SAN RAFAEL, CA

HUB AREA
SF40XC103

SHIFT JOB NUMBER 150601 IN HOUSE
DRAWN BY: RA
CHECKED BY: CM

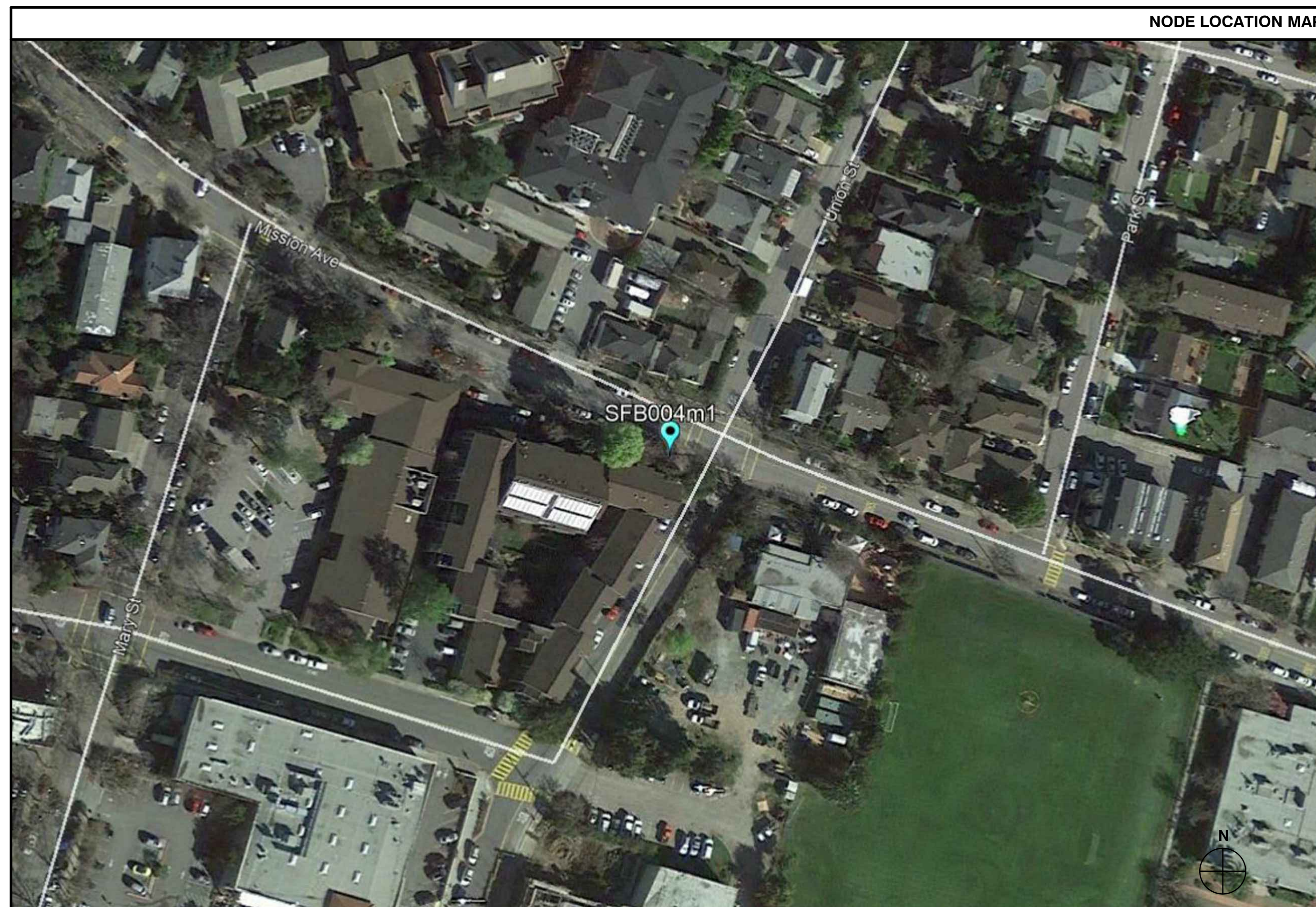
SHEET TITLE
TITLE SHEET

SHEET NUMBER T1.1 PAGE 1 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PROJECT TEAM	
ARCHITECT Company: SHIFT CONSULTING Address: 3334 N. 20TH ST. PHOENIX, AZ 85016 Phone Number: 480.264.0829 Fax Number: 480.264.0163 Contact: CHRIS MYERS	OWNER INFO Company: CROWN CASTLE Address: 695 RIVER OAKS PARKWAY SAN JOSE, CA 95134 Phone Number: 707.756.2030 Fax Number: Contact: JOHN GRIFFITHS
STRUCTURAL Company: STRUKTUR STUDIO, LLC Address: 1525 N. GRANITE REEF RD., STE. 9 SCOTTSDALE, AZ 85257 Phone Number: 480.425.2250 Fax Number: 480.425.2225 Contact: DAVID LUNENG	RF ENGINEER Company: CROWN CASTLE Address: 695 RIVER OAKS PARKWAY SAN JOSE, CA 95134 Phone Number: 408.468.5546 Fax Number: Contact: ERNESTO FIGUEROA

PROJECT SUMMARY	
JURISDICTION: SAN RAFAEL PUBLIC WORKS 111 MORPHEW ST. SAN RAFAEL, CA 94901 PHONE: 415.485.3355	APPLICANT: CROWN CASTLE 695 RIVER OAKS PARKWAY SAN JOSE, CA 95134
HANDICAPPED REQUIREMENTS: -FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.	CODES: GENERAL ORDER (GO) 95, RULE 94 2012 INTERNATIONAL BUILDING CODE (IBC) 2014 NATIONAL ELECTRICAL CODE (NEC)
-HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.	PLUMBING REQUIREMENTS: FACILITY HAS NO PLUMBING
	POWER COMPANY: PACIFIC GAS AND ELECTRIC (PG&E)

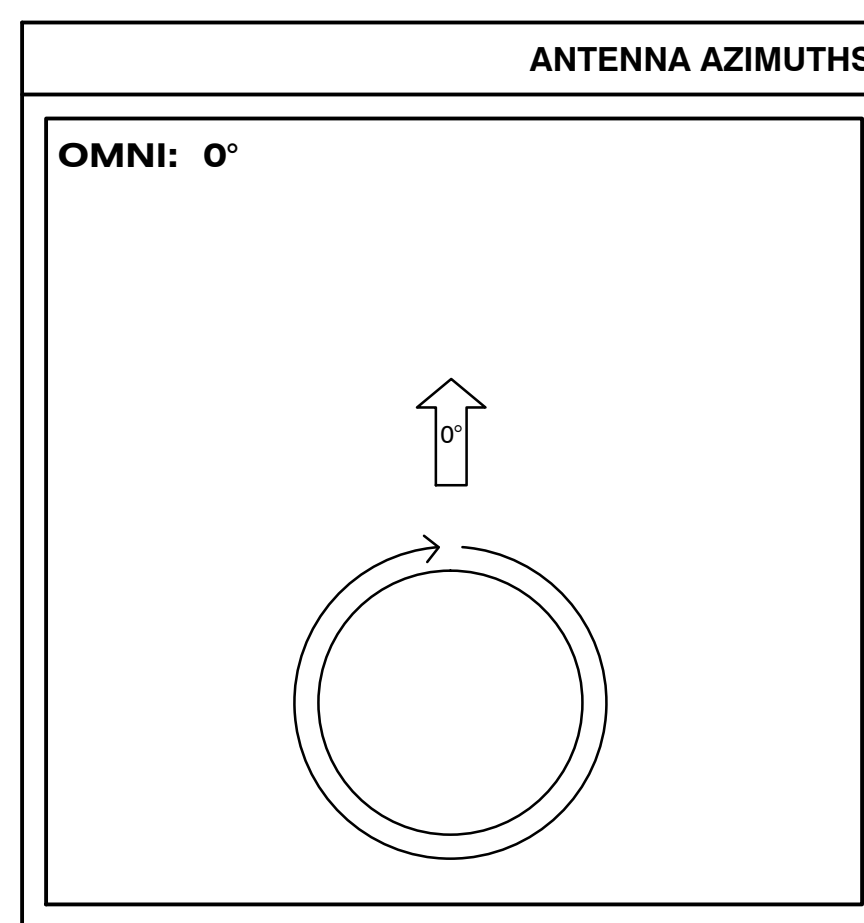
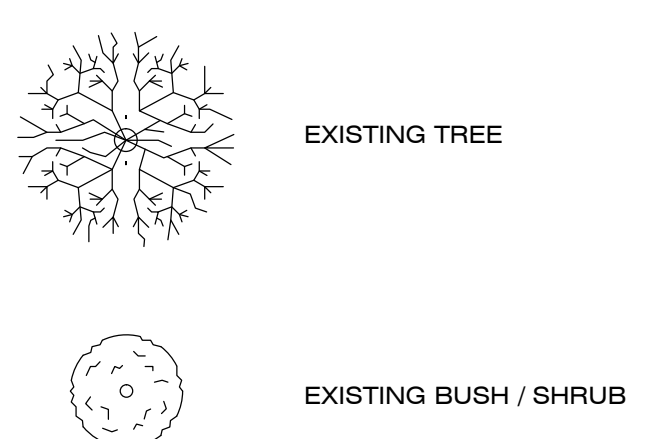


PROJECT DESCRIPTION
THIS PROJECT WILL CONSIST OF ADDING A NEW WOOD POLE-TOP EXTENSION AND CANISTER ANTENNA TO THE TOP OF THE POLE. A SIDE-MOUNTED EQUIPMENT CHASSIS WILL ALSO BE INSTALLED TO THE EXISTING POLE. THE EQUIPMENT CHASSIS WILL CONTAIN THE FOLLOWING: (1) NEW RADIO UNIT (1) FIBER ENCLOSURE BOX (1) ELECTRICAL LOAD CENTER / DISTRIBUTION PANEL (1) ELECTRICAL POWER METER

- RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
- ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
- ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
- ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
- TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
- CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
- ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY LIMIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIONS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTER, SIDEWALK, ETC. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.

- — — — — CENTER LINE
- - - - - PROPERTY LINE
- - - - - RIGHT-OF-WAY
- F — F — FIBER
- G — G — GAS
- P — P — POWER
- S — S — SANITARY SEWER
- SD — SD — STORM DRAIN
- W — W — WATER
- P — P — LIGHT CIRCUIT POWER
- OHE — OHE — OVERHEAD POWER LINE

- △ 3 REVISION
- ◇ A01 KEY NOTE
- ⊙ 1 A1 DETAIL REFERENCE
- ⊙ 8 A-2 ELEVATION REFERENCE
- ⊙ 17 A-3 SECTION REFERENCE
- ⊙ ELEVATION MARKER
- ⊙ A.5 PHOTOSIM REFERENCE
- ← # ANTENNA AZIMUTH



SUBJECT POLE: SFB004m1

GPS COORDINATES:
 LAT: 37.972172
 LONG: -122.515749

POLE TYPE: EXIST. WOOD JPA POLE

POLE ID #: 120001512
ANTENNA MODEL: AMPHENOL 2C4U3MT360X06F444S0
ANTENNA RAD CENTER: 38'-0" A.G.L.

SUBJECT POLE IS LOCATED IN:
 CITY OF SAN RAFAEL R.O.W.

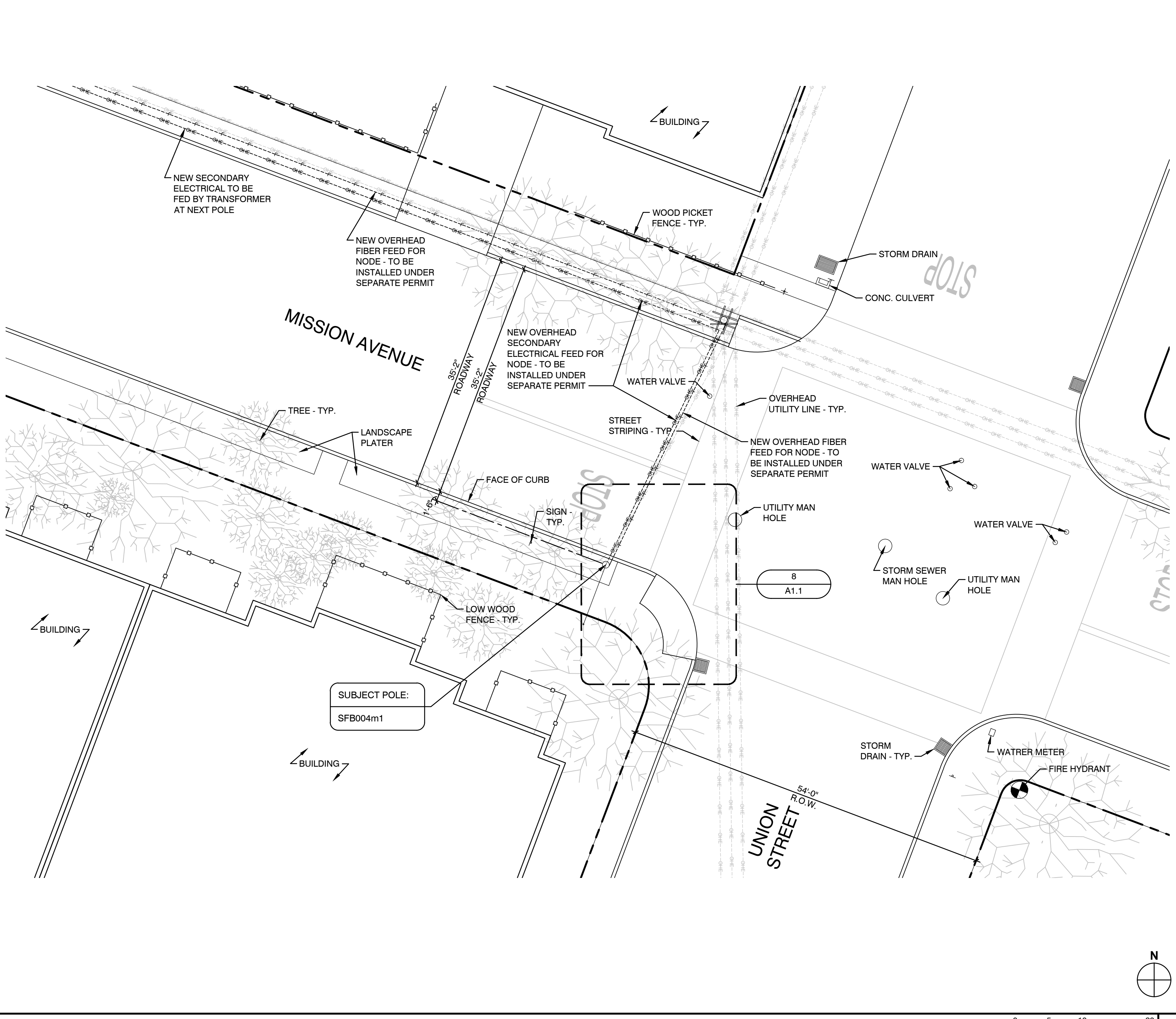
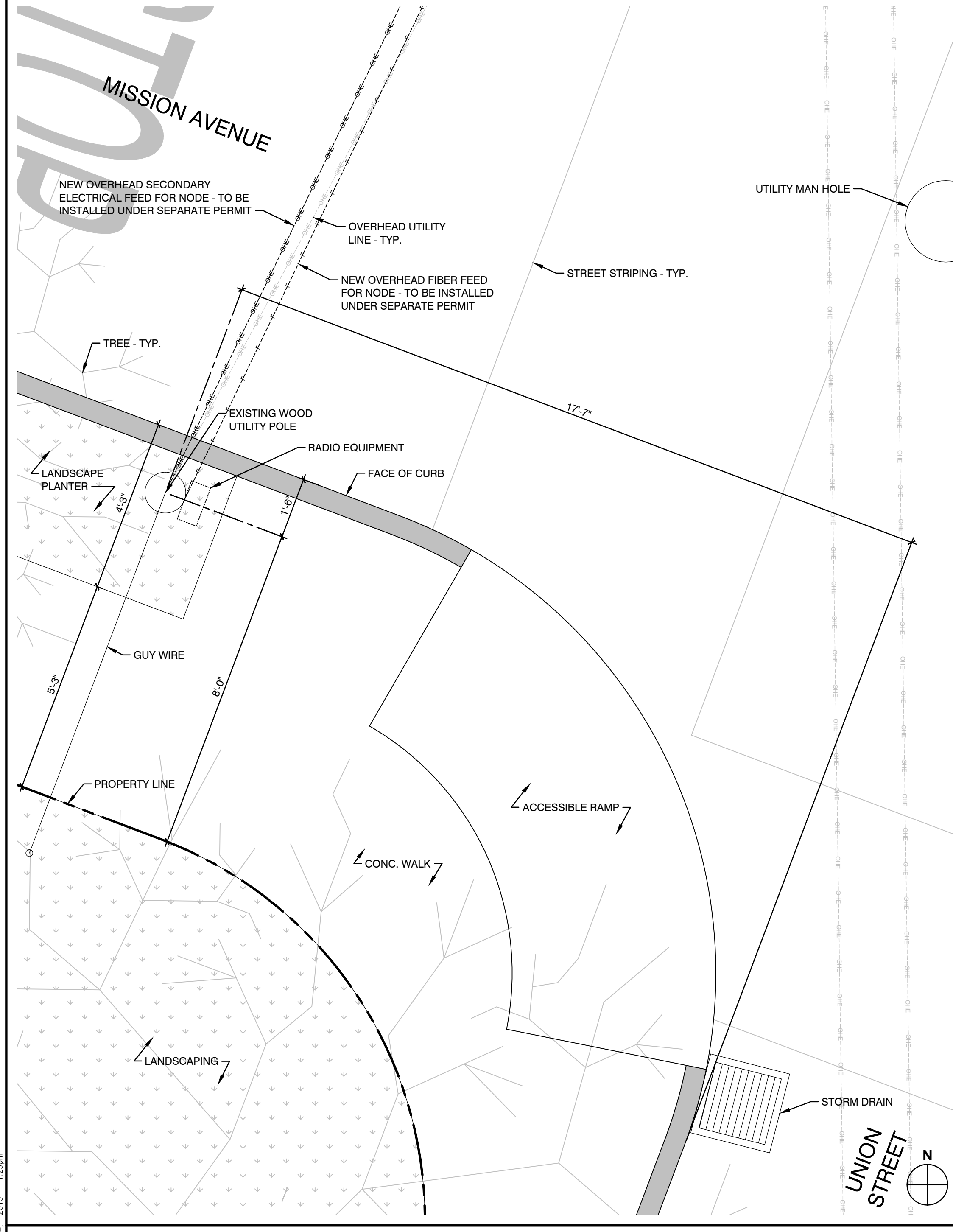


CROWN CASTLE
 CROWN CASTLE 695 RIVER
 OAKS PARKWAY SAN JOSE,
 CA 95134

RECORD DRAWINGS ISSUE DATE: 02.26.19

GENERAL PROJECT NOTES SCALE: NTS 1

ABBREVIATIONS AND SYMBOLS SCALE: NTS 9



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NO.	DATE	COMMENT

PROJECT NAME
 SAN FRANCISCO BAY EXPANSION - 58 SITES

NODE NUMBER
 SFB004m1

NODE ADDRESS
 ACROSS 304 MISSION AVE
 SAN RAFAEL, CA

HUB AREA
 SF40XC103

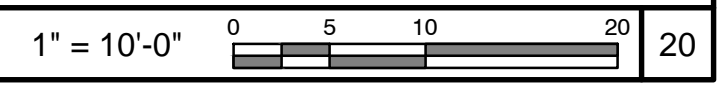
SHIFT JOB NUMBER 150601
IN HOUSE DRAWN BY: RA
 CHECKED BY: CM

SHEET TITLE
 SITE PLAN

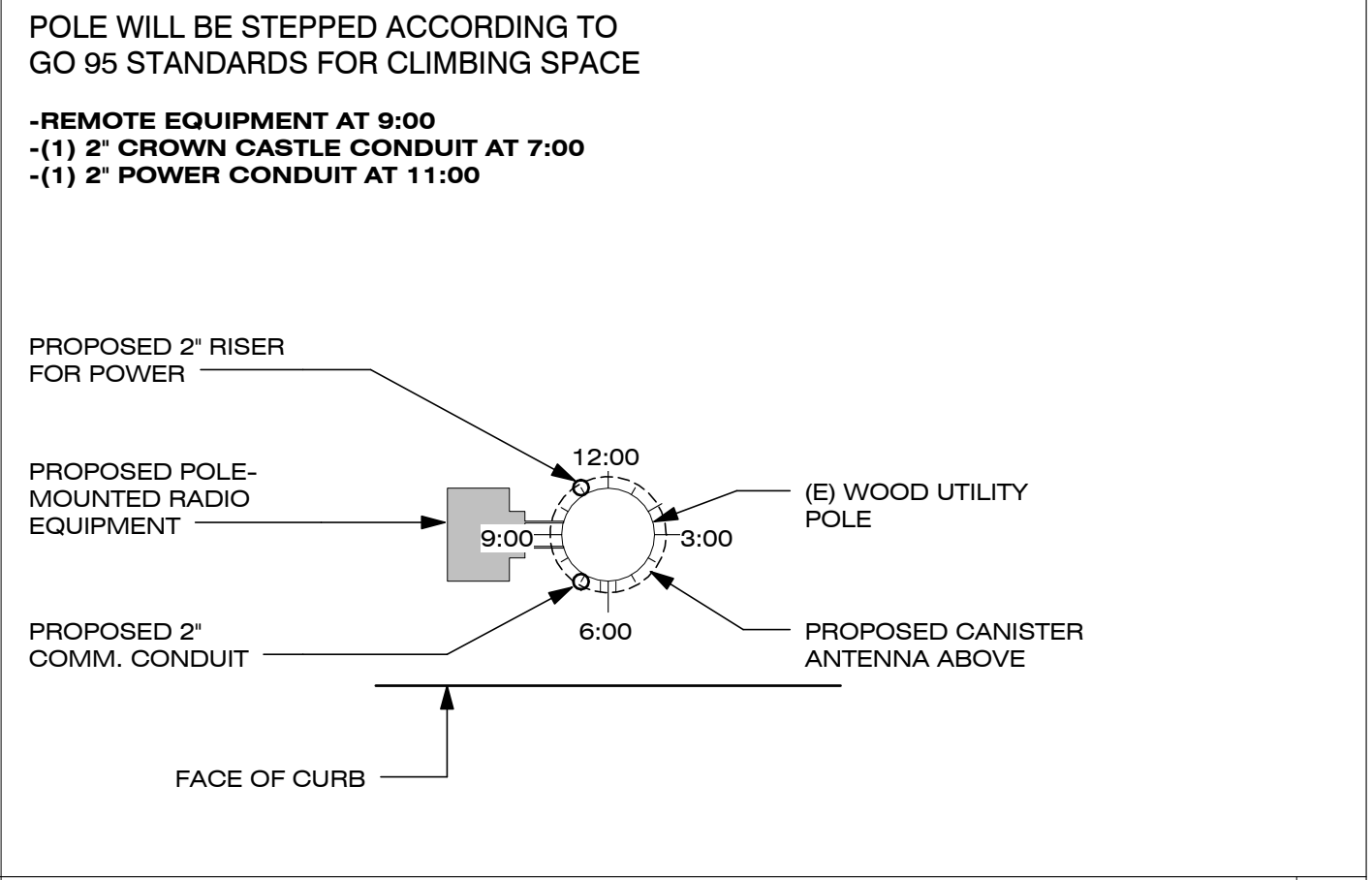
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PAGE 2 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

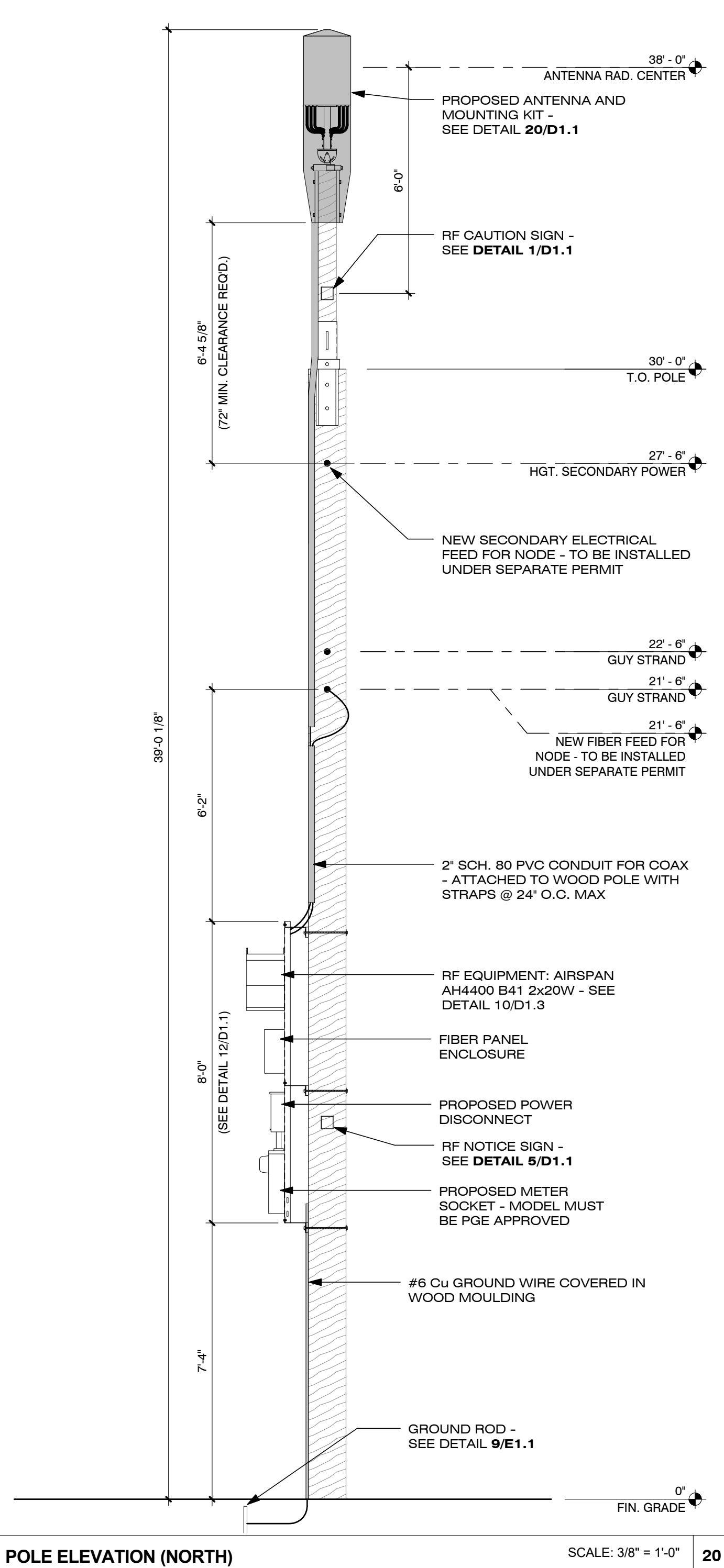
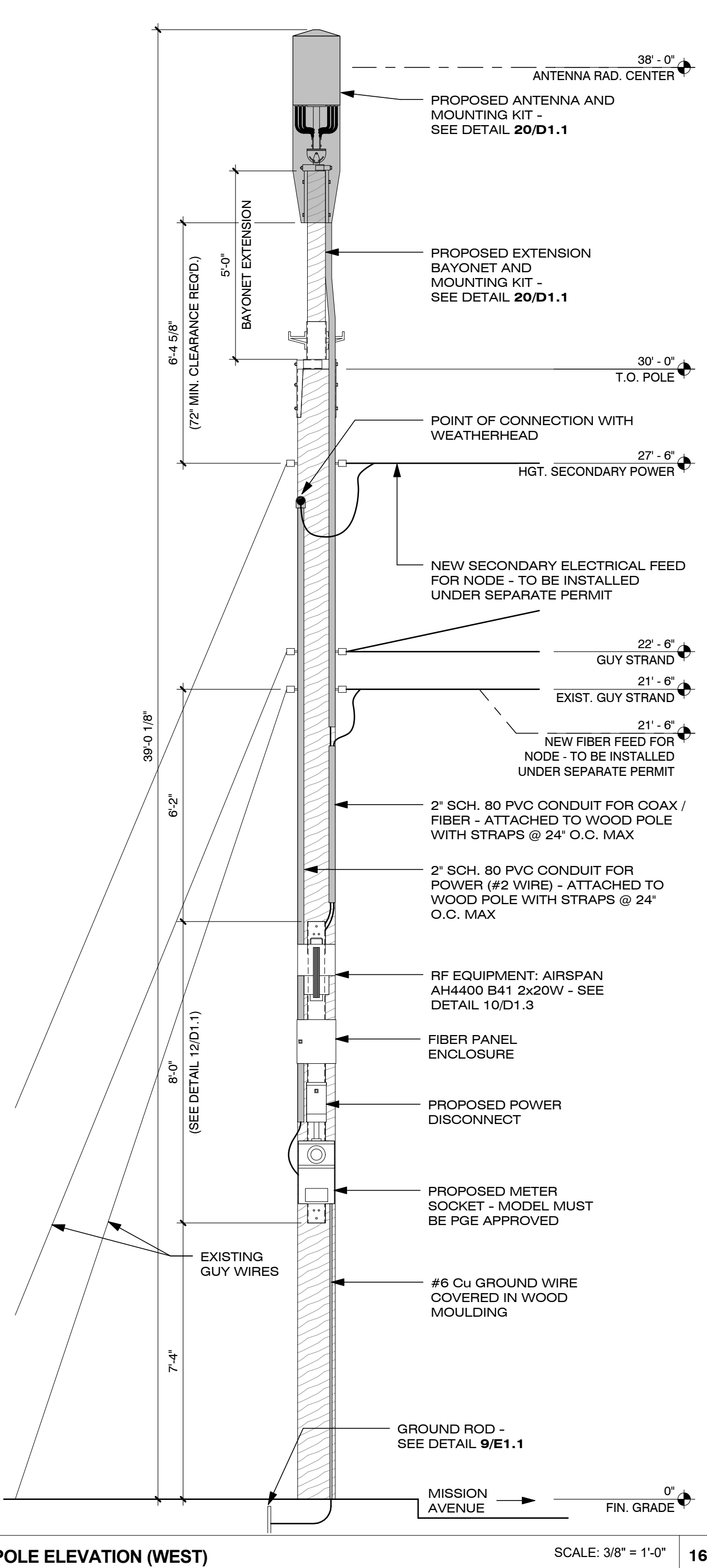
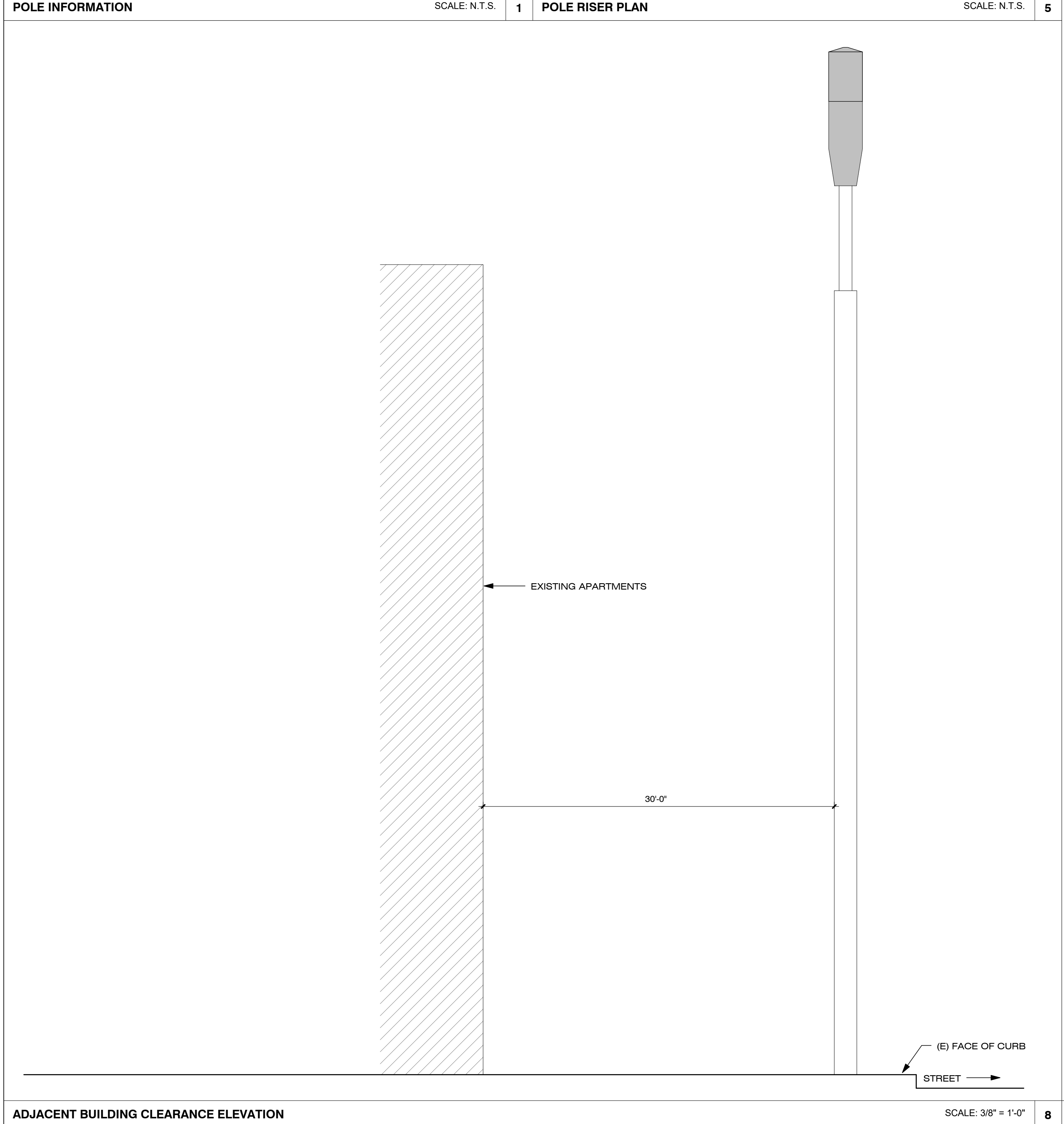
C:\Users\Barka\Google Drive\Projects\Shift Companies\San Francisco_SF_013 (10.26.18)\SFB-004.dwg
 Nov 15, 2019 1:23pm



EXISTING POLE TYPE = EXIST. PG&E-OWNED WOOD JPA POLE
 EXISTING POLE CLASS = 3
 EXISTING POLE WIDTH = 12' - 0"
 EXISTING POLE HEIGHT = 30' - 0"



ANTENNA (INCLUDING SHROUD): 6.381 CuFt.
 EQUIPMENT ON SLED: 2.374 CuFt.
 TOTAL EQUIPMENT AND ANTENNAS: 8.755 CuFt



CROWN CASTLE
 695 RIVER OAKS PARKWAY
 SAN JOSE, CA 95134

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NO.	DATE	COMMENT

PROJECT NAME

SAN FRANCISCO BAY EXPANSION - 58 SITES

NODE NUMBER

SFB004m1

NODE ADDRESS

304 MISSION AVE., SAN RAFAEL, CA 94901

HUB AREA

SF36XC052

SHIFT JOB NUMBER

150601

SHEET TITLE

POLE ELEVATIONS

SHEET NUMBER

A1.2

PAGE

3 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #



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NODE NUMBER
SFB004m1

NODE ADDRESS
ACROSS 304 MISSION AVE
SAN RAFAEL, CA

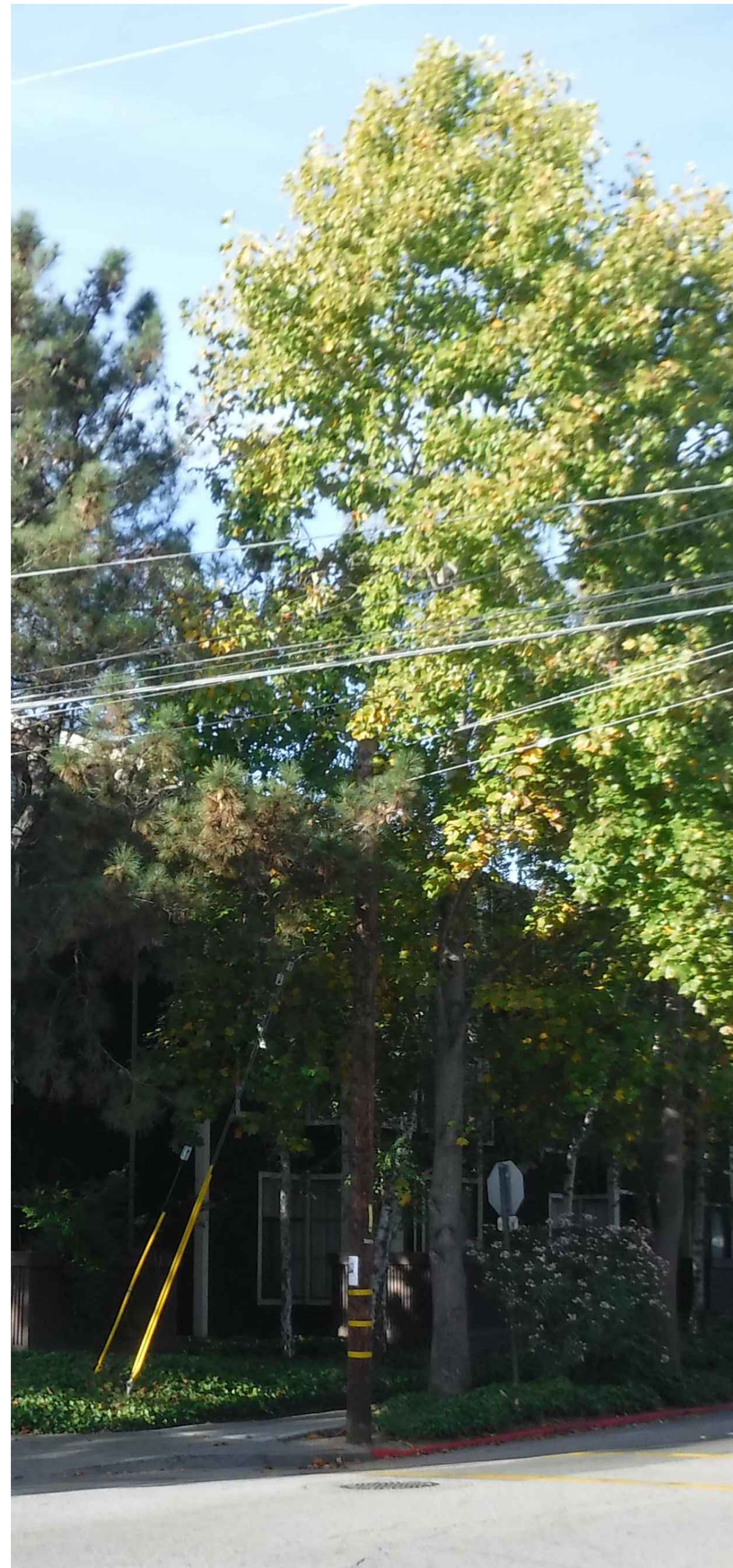
HUB AREA
SF40XC103

SHIFT JOB NUMBER 150601 **IN HOUSE**
DRAWN BY: RA
CHECKED BY: CM

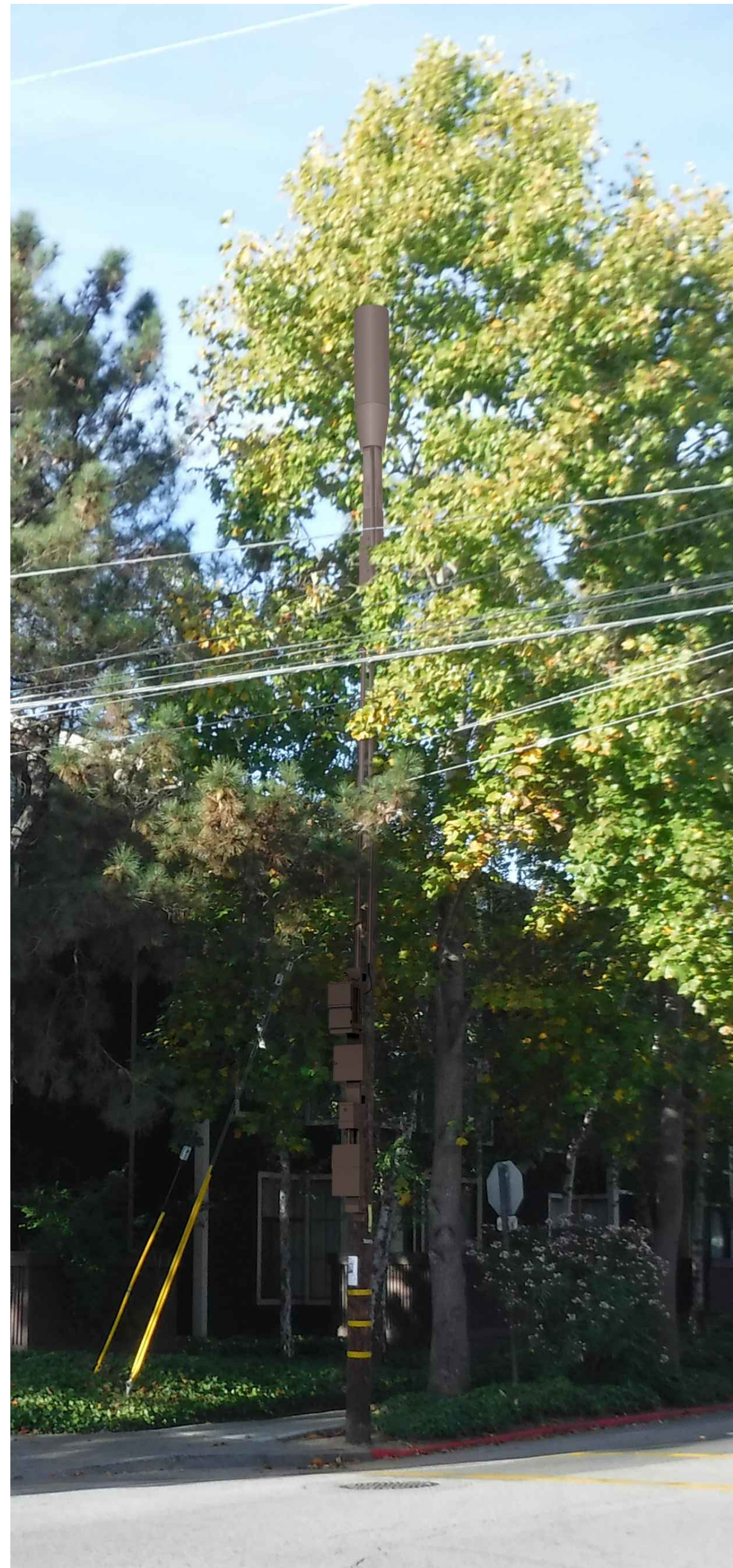
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PHOTO SIMULATIONS

SHEET NUMBER A1.3 **PAGE** 4 OF 8

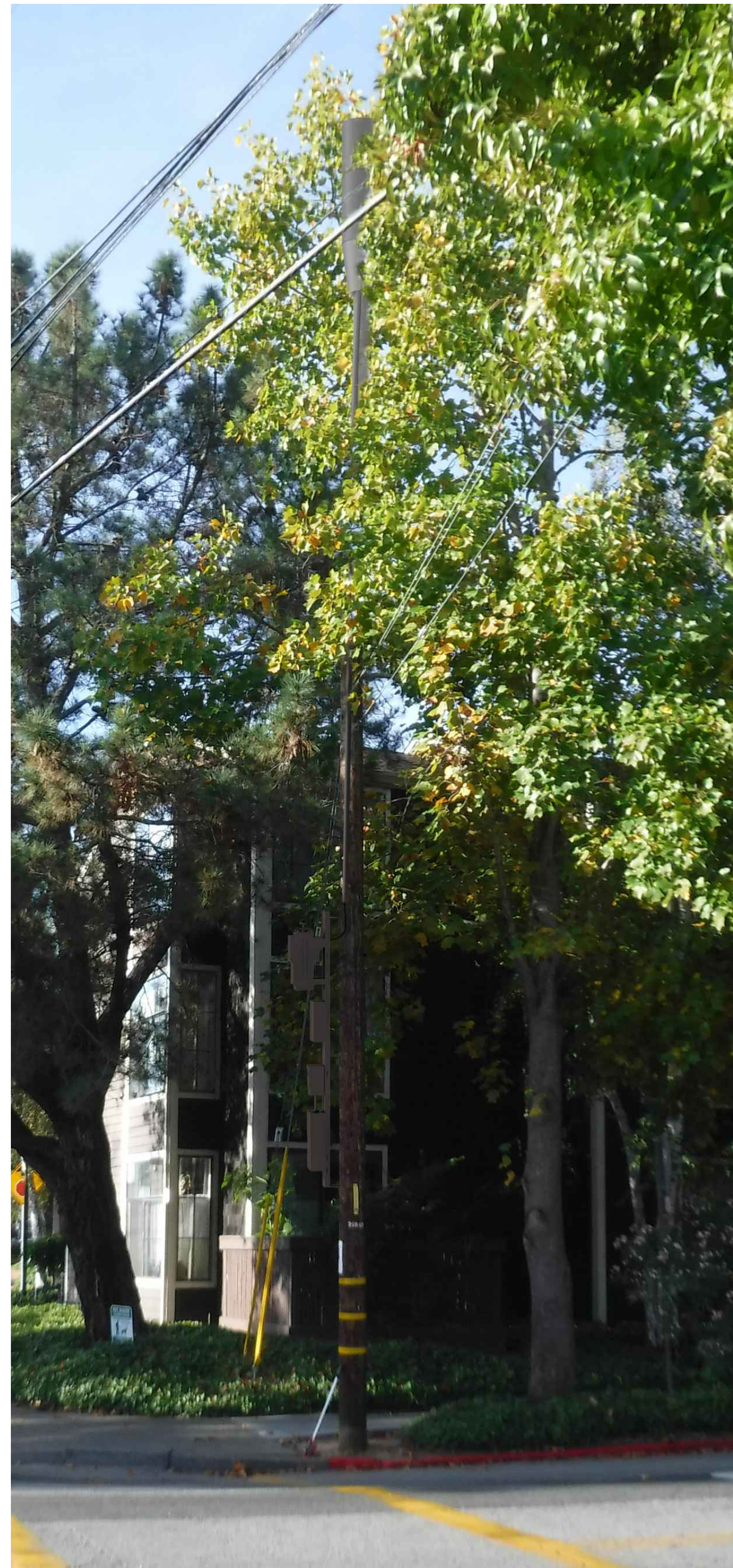
PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"



POLE PHOTO SIMULATION - VIEW 1 (EXISTING) SCALE: NTS 4



POLE PHOTO SIMULATION - VIEW 1 (PROPOSED) SCALE: NTS 8



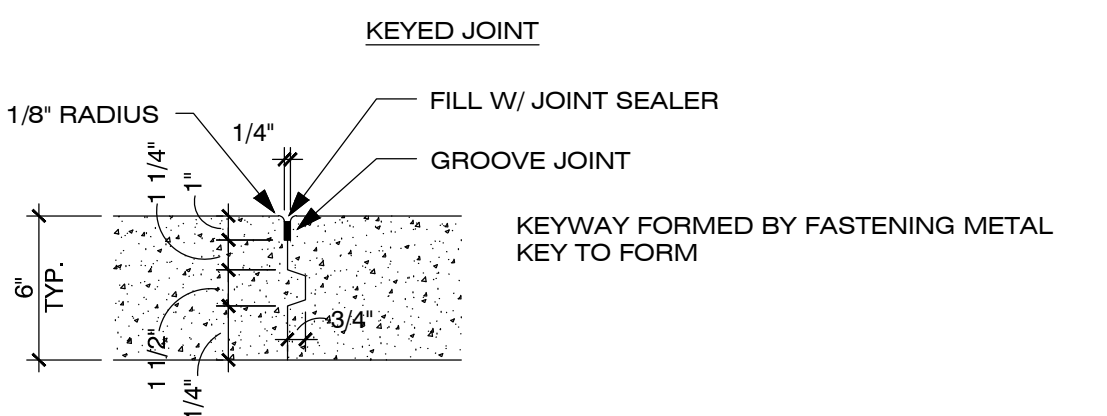
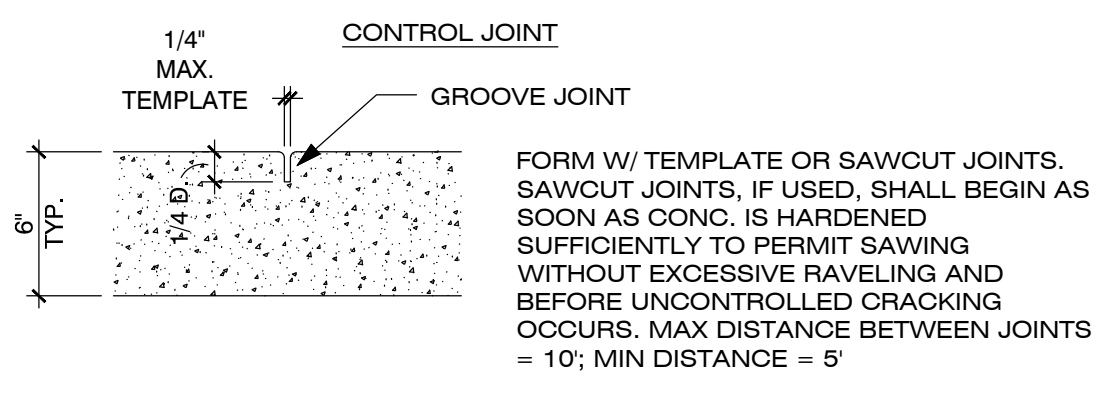
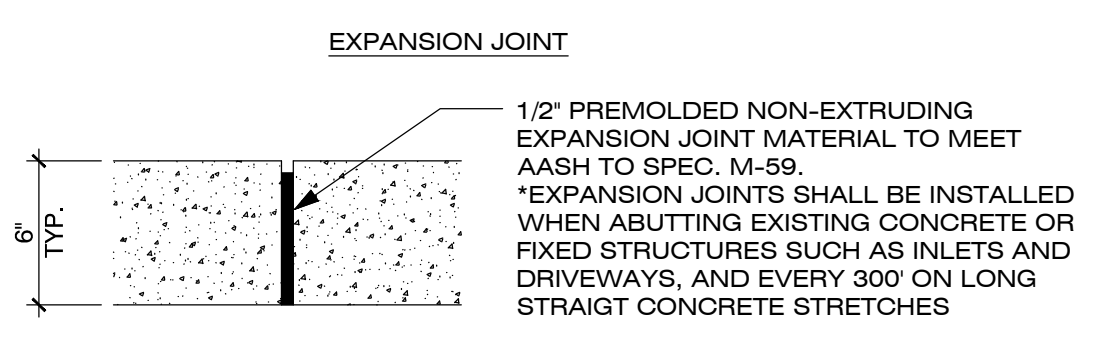
POLE PHOTO SIMULATION - VIEW 2 (PROPOSED) SCALE: NTS 16



POLE PHOTO SIMULATION - VIEW 3 (PROPOSED) SCALE: NTS 20

CAUTION
 Keep Back FT From
 this Antenna. FCC RF Public
 Exposure Limits May Be
 Exceeded Within This Distance.
 Call 888-632-0931 for Instructions.
 Qualified Workers:
 FCC Occupational Limits May Be
 Exceeded Within This Distance.
 Site ID # _____

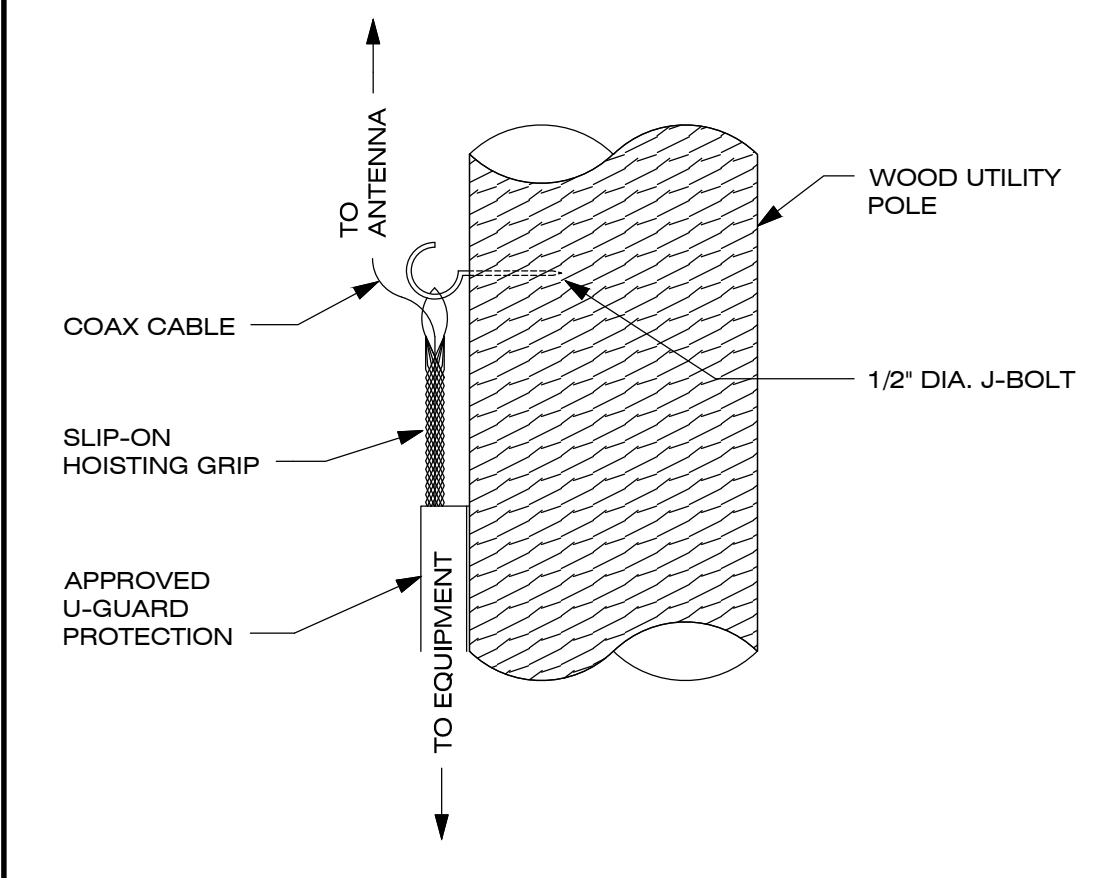
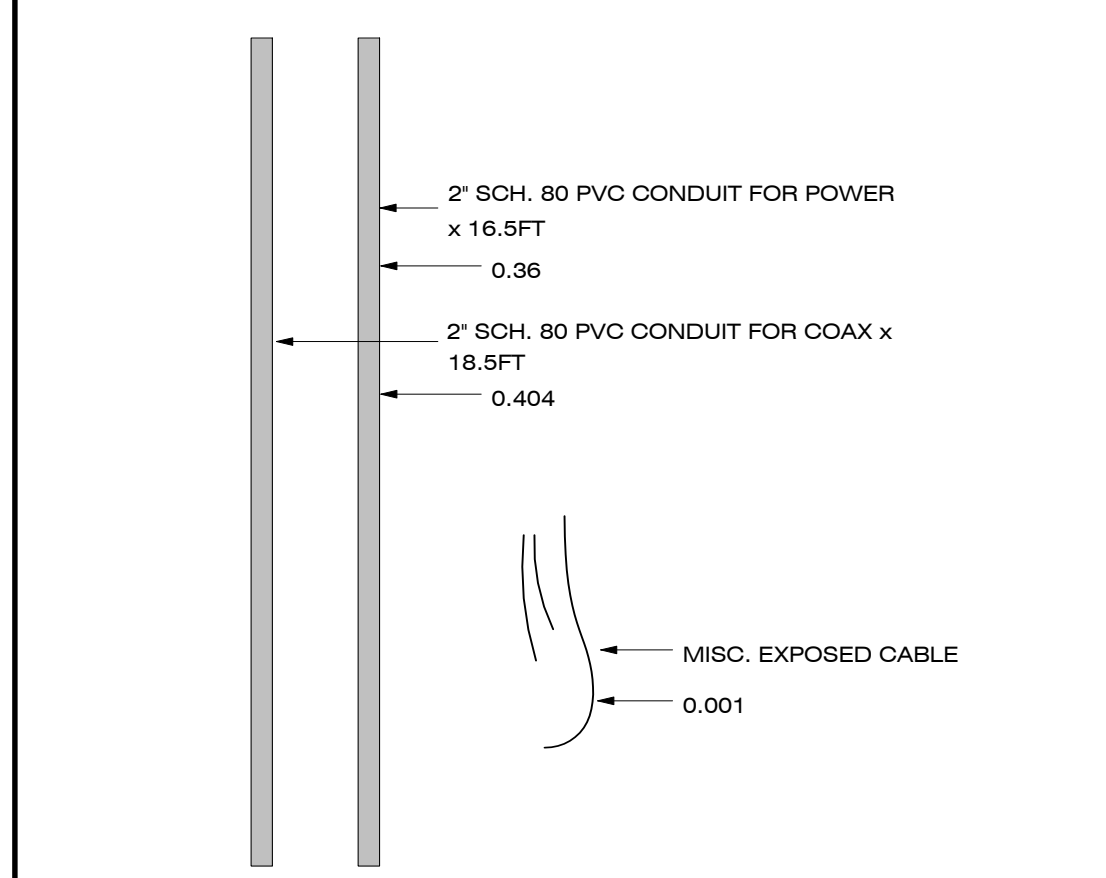
NOTICE
POLE WORKERS
 There is an antenna operation
 high on this pole. Please follow
 guidance on signs near the antenna or
 call the number below.
 Site ID # _____
 CROWN CASTLE 888-632-0931 Rev. A



RF WARNING SIGNAGE SCALE: NTS 1

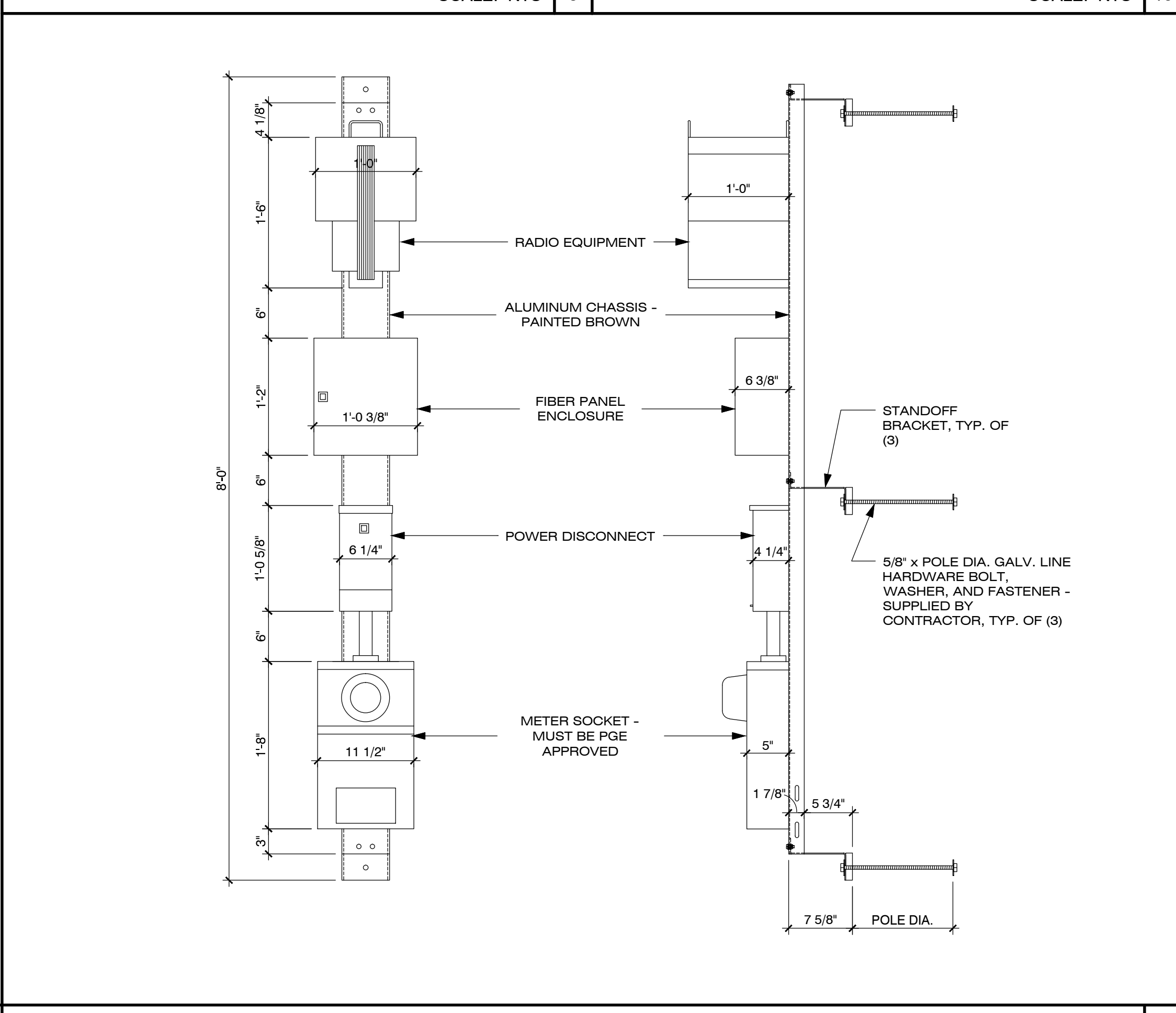
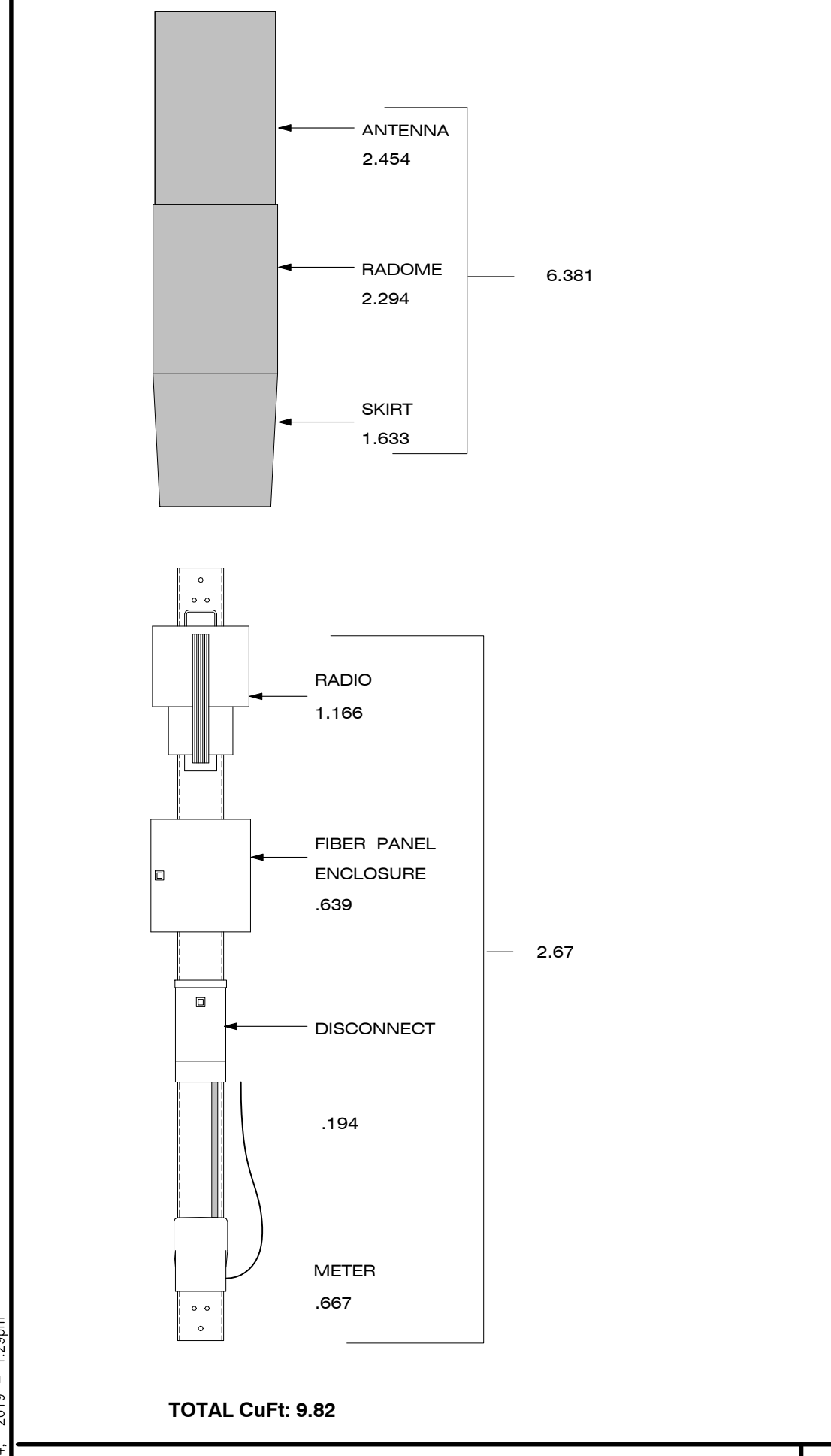
RF WARNING SIGNAGE SCALE: NTS 5

CONCRETE JOINT DETAILS SCALE: NTS 10



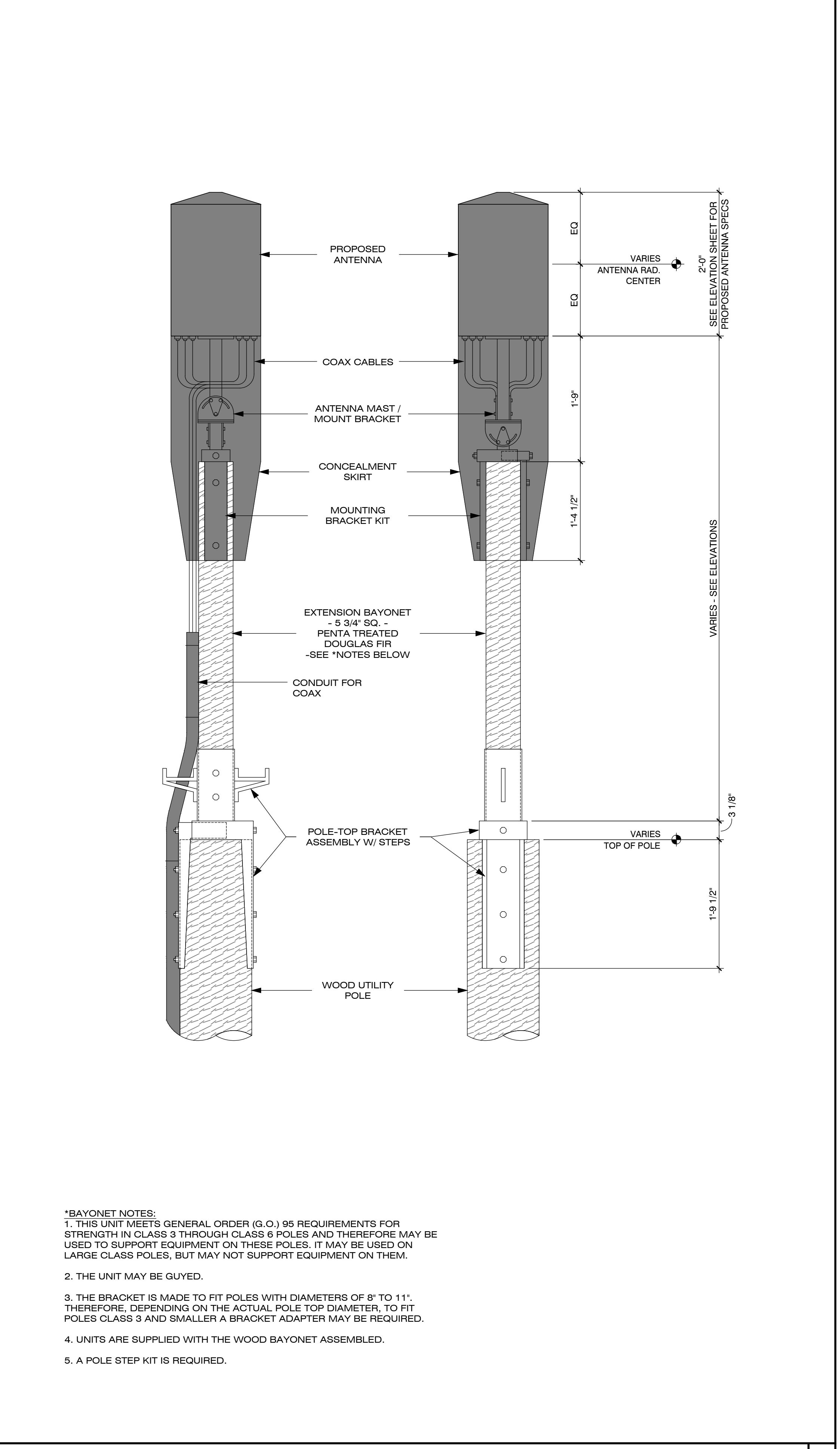
COAX HANGER DETAIL SCALE: NTS 6

CONCRETE JOINT DETAILS SCALE: NTS 10



EQUIPMENT MOUNTING CHASSIS DETAIL SCALE: 1" = 1'-0" 4

EQUIPMENT MOUNTING CHASSIS DETAIL SCALE: 1" = 1'-0" 12



POLE-TOP EXTENSION / ANTENNA DETAIL SCALE: 1" = 1'-0" 20

***BAYONET NOTES:**
 1. THIS UNIT MEETS GENERAL ORDER (G.O.) 95 REQUIREMENTS FOR STRENGTH IN CLASS 3 THROUGH CLASS 6 POLES AND THEREFORE MAY BE USED TO SUPPORT EQUIPMENT ON THESE POLES. IT MAY BE USED ON LARGE CLASS POLES, BUT MAY NOT SUPPORT EQUIPMENT ON THEM.
 2. THE UNIT MAY BE GUYED.
 3. THE BRACKET IS MADE TO FIT POLES WITH DIAMETERS OF 8" TO 11". THEREFORE, DEPENDING ON THE ACTUAL POLE TOP DIAMETER, TO FIT POLES CLASS 3 AND SMALLER A BRACKET ADAPTER MAY BE REQUIRED.
 4. UNITS ARE SUPPLIED WITH THE WOOD BAYONET ASSEMBLED.
 5. A POLE STEP KIT IS REQUIRED.



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 OAKS PARKWAY SAN JOSE,
 CA 95134

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NODE NUMBER
 SFB004m1

NODE ADDRESS
 ACROSS 304 MISSION AVE
 SAN RAFAEL, CA

HUB AREA
 SF40XC103

SHIFT JOB NUMBER **IN HOUSE**
 150601 DRAWN BY: RA
 CHECKED BY: CM

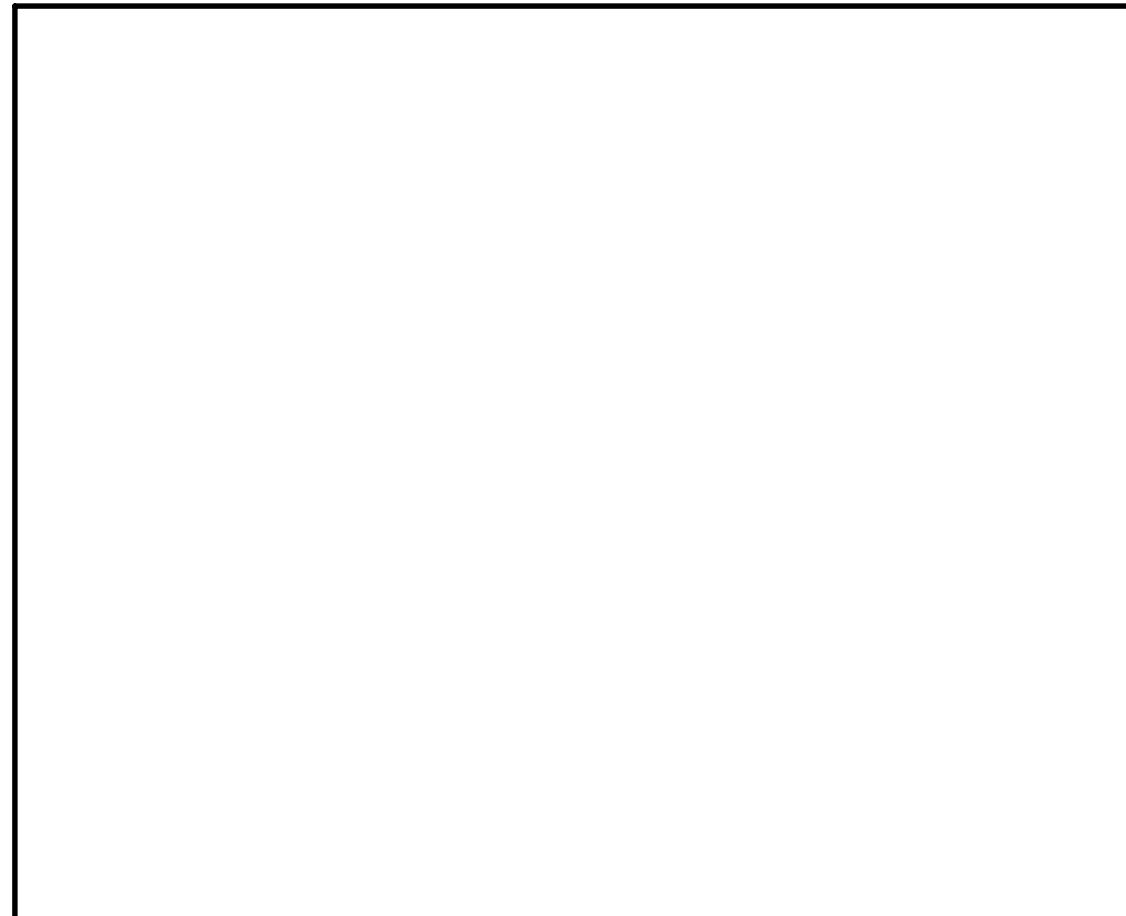
SHEET TITLE
 CONSTRUCTION
 DETAILS

SHEET NUMBER **PAGE**

D1.1 5 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

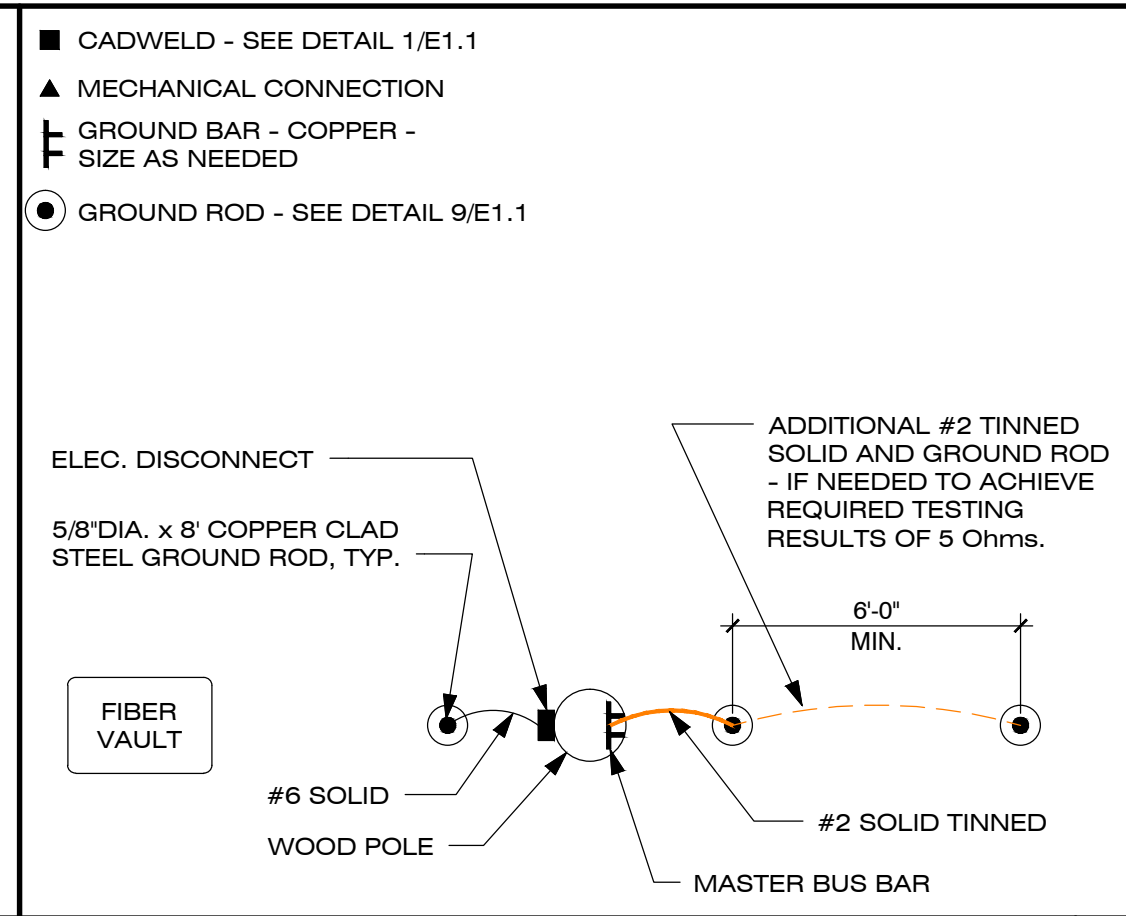
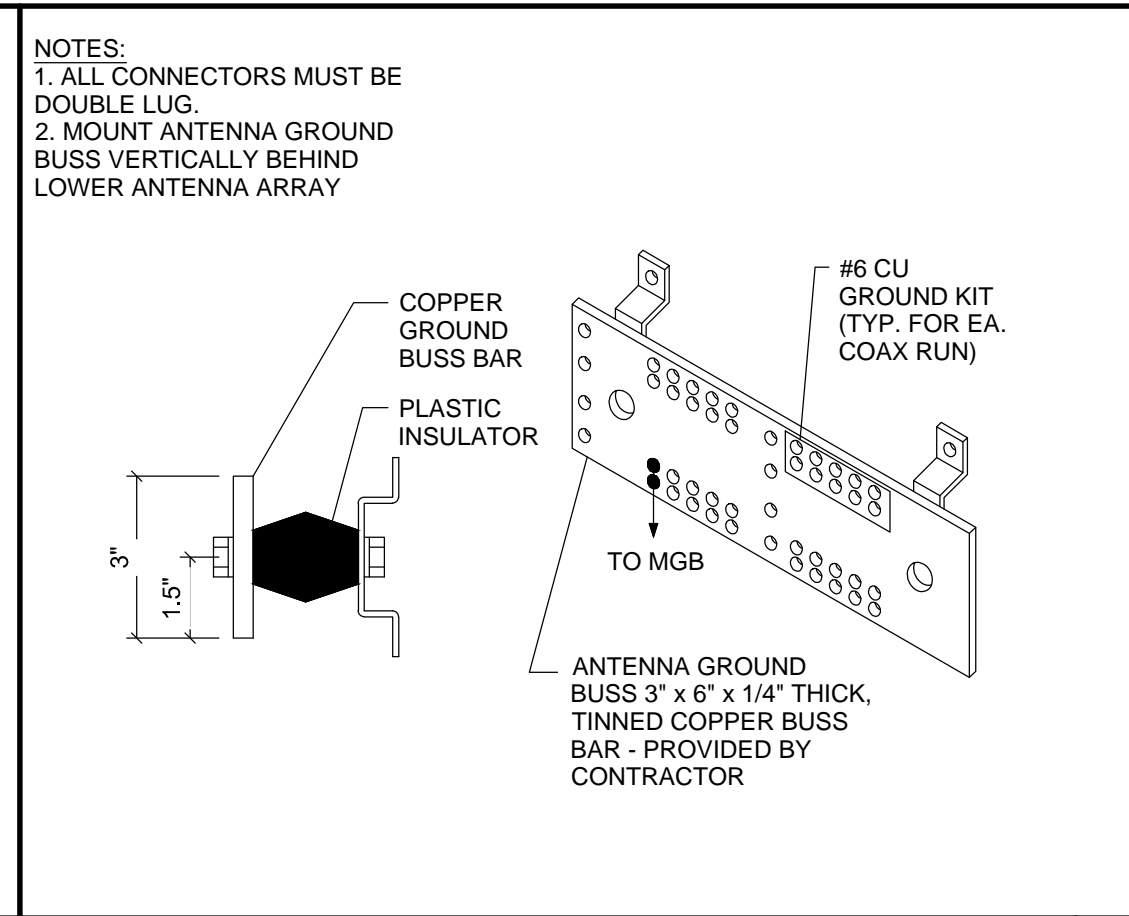
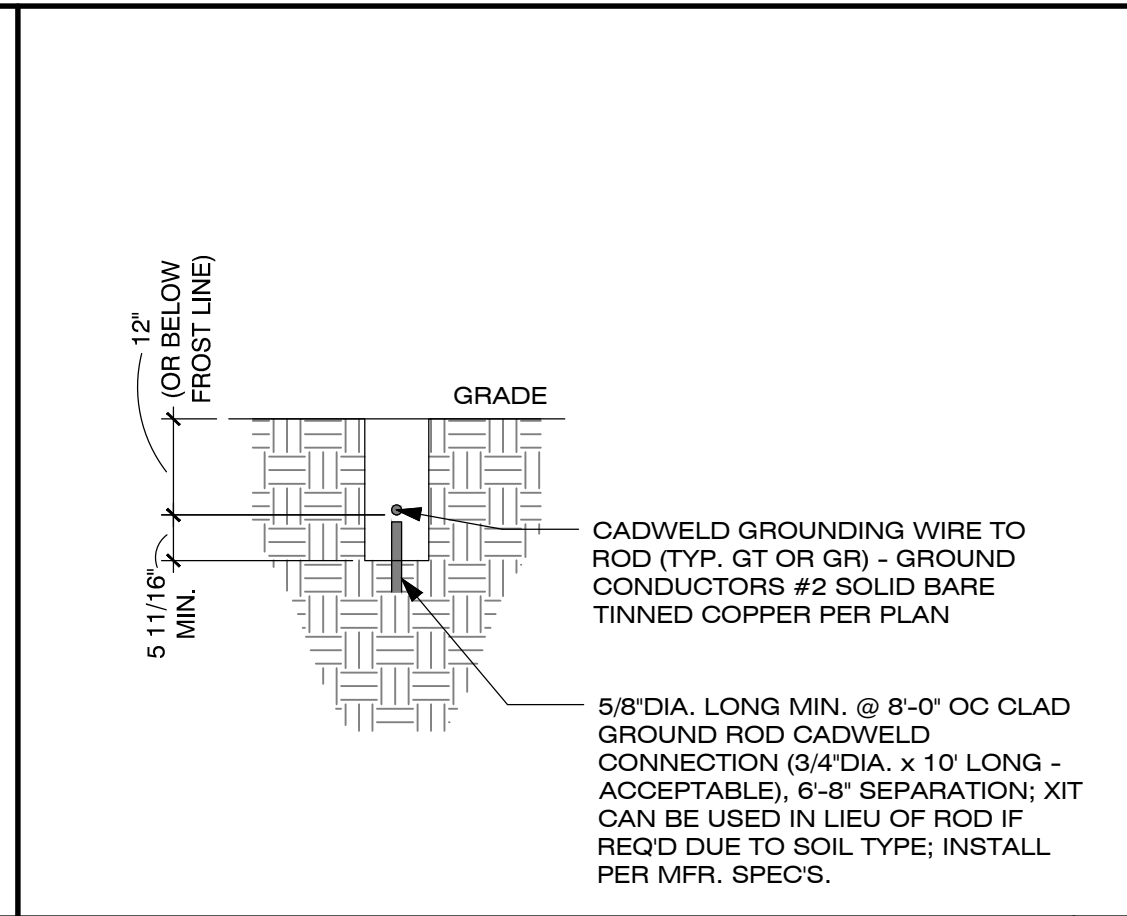
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 Nov 15, 2019 - 1:29pm



FOR ALL COAX WATERPROOFING INSTALLATIONS, SEE INSTALLATION INSTRUCTIONS FOR

JMA WIRELESS "JMA WEATHER PROTECTION SYSTEM"

- 1) FOR 1/2" CONNECTIONS TO ANTENNA OR DEVICE
- 2) FOR 1/2" CONNECTIONS TO ANTENNA OR DEVICE USING WPS-DF-CUTTER
- 3) FOR WPS-N, 1/2" NM CONNECTOR TO PORT
- 4) FOR WPS-DRA, MALE TO PORT
- 5) FOR 1/4" CONNECTIONS TO ANTENNA OR DEVICE

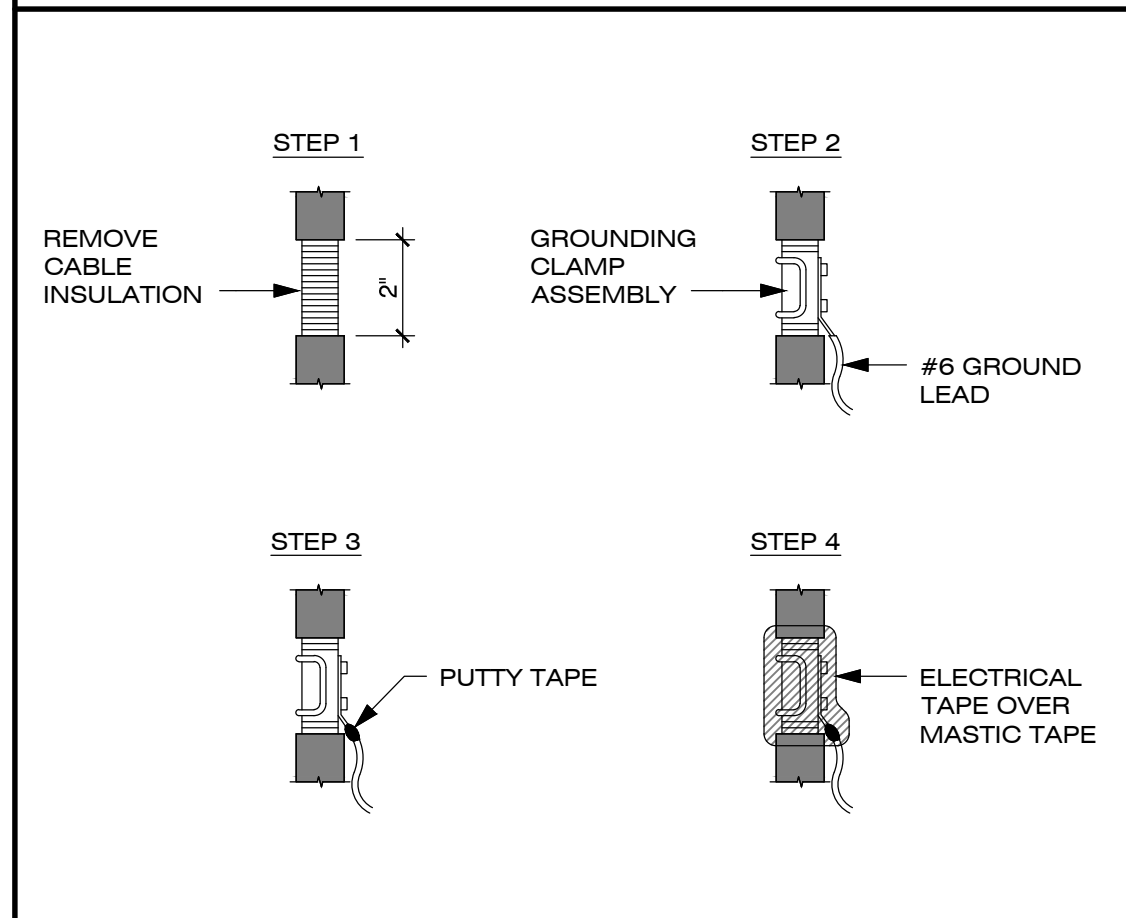


COAX WATERPROOFING - FUSION TAPE TYPE SCALE:N.T.S. 5

GROUND ROD DETAIL SCALE:N.T.S. 9

GROUND BUSS BAR DETAIL SCALE:N.T.S. 13

EQUIPMENT GROUNDING SCHEMATIC DTL. SCALE:N.T.S. 17



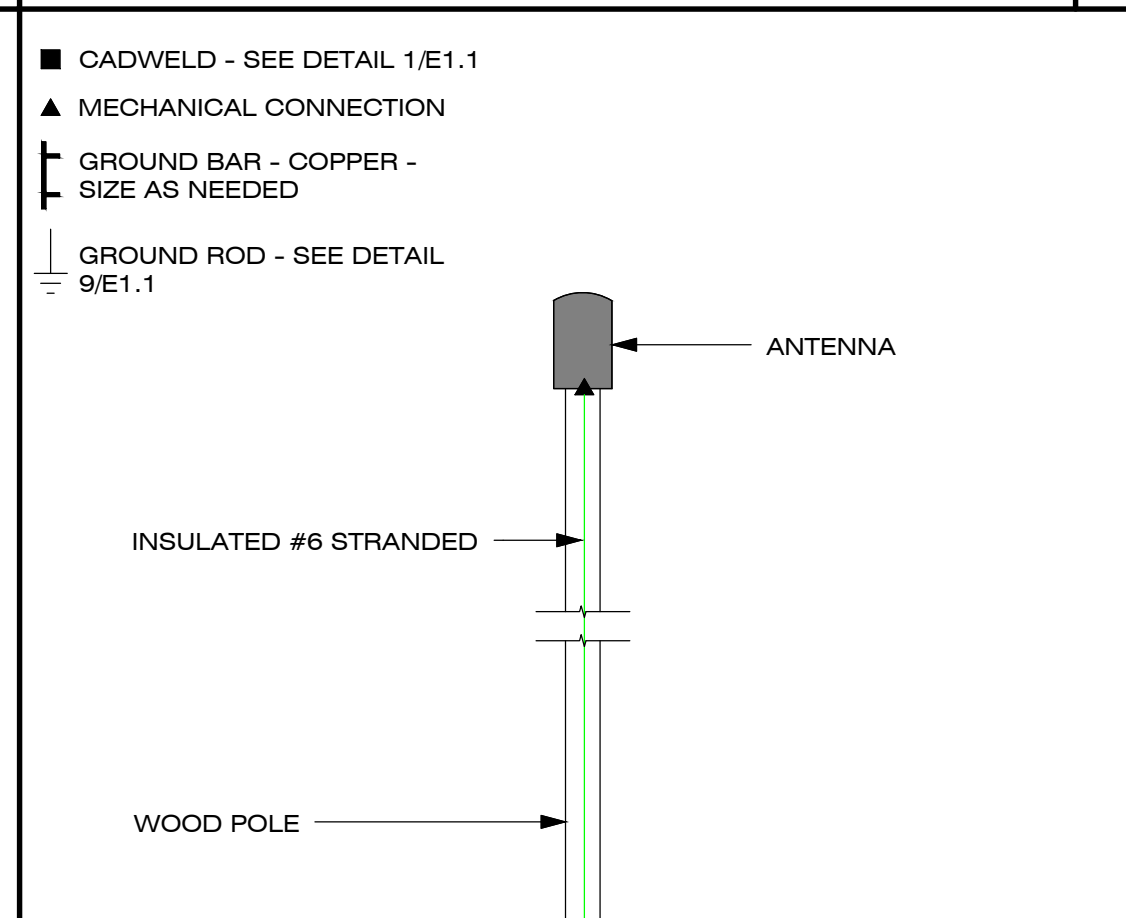
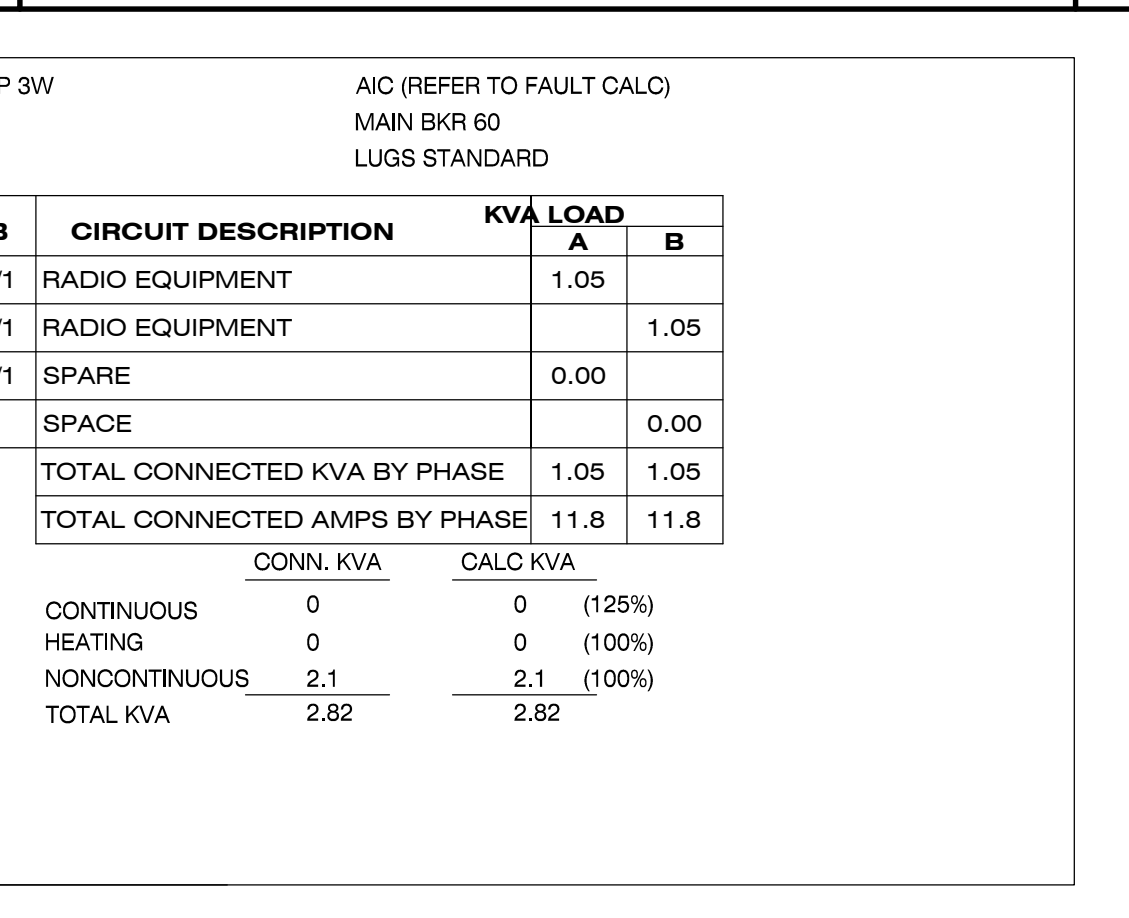
1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 CONDUIT (UNDERGROUND) AND IMC OR SCH 80 PVC CONDUIT ABOVE GROUND.
6. PROVIDE 2" OR 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1" SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER NSR LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
9. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
10. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
11. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POT-HOLING METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
12. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
13. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR MODIFYING.
14. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS.
15. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

PANEL A

FED FROM TRANSFORMER VOLTS 240/120V 2P 3W AIC (REFER TO FAULT CALC) MAIN BKR 60 LUGS STANDARD

NO.	CB	CIRCUIT DESCRIPTION	KVA LOAD		NO.	CB	CIRCUIT DESCRIPTION	KVA LOAD	
			A	B				A	B
1	60/1	MAIN	0.00		2	20/1	RADIO EQUIPMENT	1.05	
3	60/1	MAIN		0.00	4	20/1	RADIO EQUIPMENT		1.05
5	-	SPACE	0.00		6	20/1	SPARE	0.00	
7	-	SPACE		0.00	8	-	SPACE		0.00
TOTAL CONNECTED KVA BY PHASE			1.05	1.05	TOTAL CONNECTED AMPS BY PHASE			11.8	11.8
LIGHTING			0	0 (125%)	CONTINUOUS			0	0 (125%)
LARGEST MOTOR			0	0 (125%)	HEATING			0	0 (100%)
OTHER MOTORS			0	0 (125%)	NONCONTINUOUS			2.1	2.1 (100%)
RECEPTACLES			0	0	TOTAL KVA			2.82	2.82

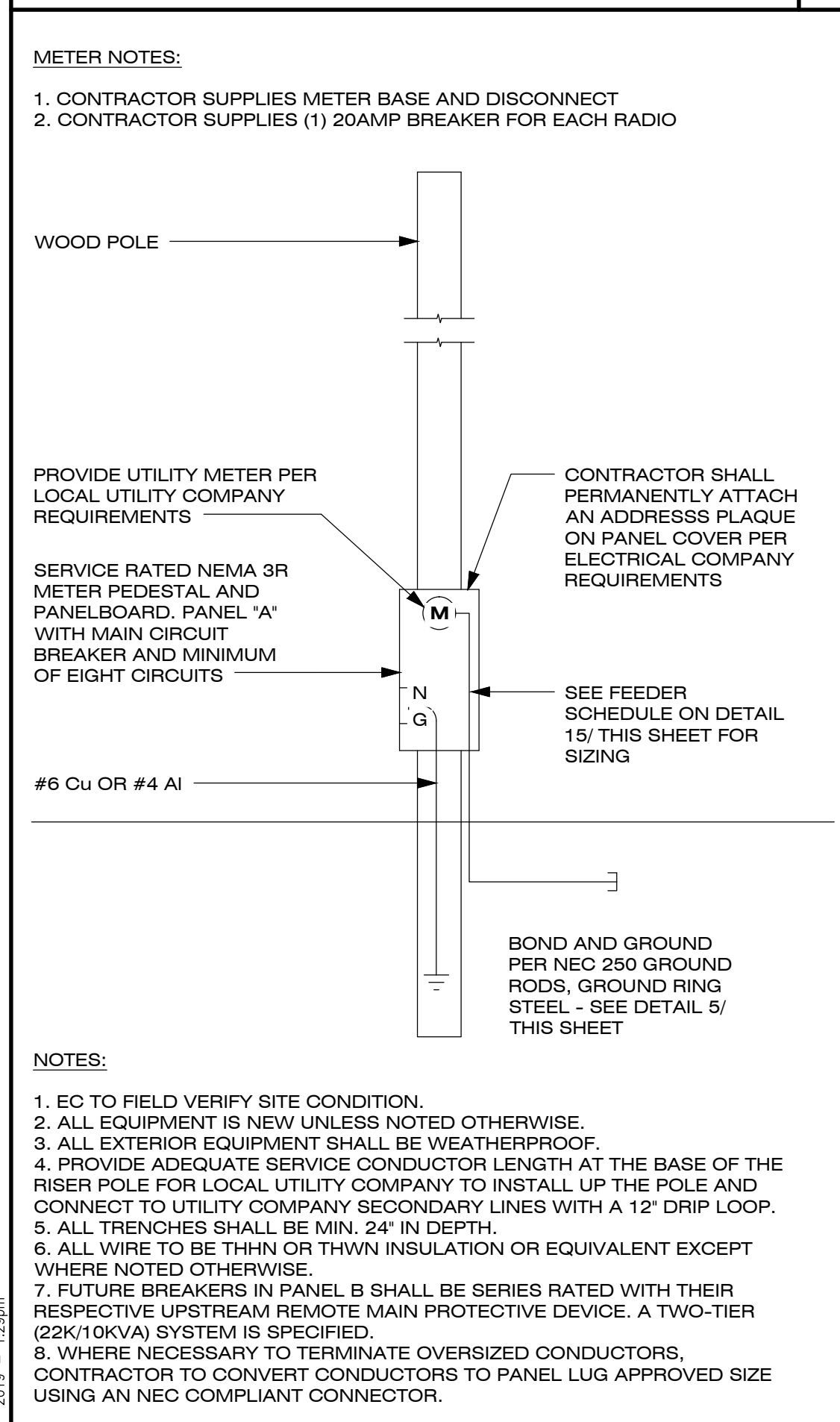
PER NEC 210.4(B) PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.



COAXIAL CABLE GROUNDING SCALE:N.T.S. 2

ELECTRICAL NOTES SCALE:NONE 6

ELECTRICAL PANEL SCHEDULES SCALE: NTS 14



METER NOTES:

1. CONTRACTOR SUPPLIES METER BASE AND DISCONNECT
2. CONTRACTOR SUPPLIES (1) 20AMP BREAKER FOR EACH RADIO

PART 2 - EXECUTION

2.1 EXECUTION

A. Provide (1) main ground from the antenna mounting bracket at the top of the pole, to the main ground bus bar (TMGB) (location defined below). Main vertical ground shall consist of a #2 solid bare copper cable. Said ground shall be protected by a PVC U-Guard to the top of the pole and stapled every 24" with corrosion resistant (dipped galvanized) staples.

B. #2 solid bare copper cable is highly susceptible to theft and may be a bit excessive to run to top of pole. #2 tin coated is recommended by Ops. As it's cheaper and less likely to be stolen. Buss Bars may also be tin coated to make them less susceptible to theft.

C. Provide (1) main ground from the main ground bus bar (TMGB) (location defined below) to a ground rod at the pole base. Main ground vertical shall consist of a #2 solid bare copper cable. Said ground shall be protected by a PVC U-Guard to the bottom of the pole and stapled every 24" with corrosion resistant (dipped galvanized) staples. Ground rod shall be 8' in depth minimum and copper clad.

D. Ground rod shall be placed per NEC code with regards to depth and distance from wood pole.

E. Ground rod shall be buried a minimum of 30" below grade.

F. #2 ground shall be attached directly to the ground rod via Cad Weld.

G. Main ground vertical shall be attached directly to a ground bus bar (TMGB) mounted to the face of the utility pole. Method of contact shall be 2 hole slotted lug (Brown) to the main ground bus (TMGB) on the left or top slot depending on the orientation of the TMGB.

H. Main ground vertical to the Antenna mounting bracket shall be attached directly to the Antenna Bracket via a self-tapping bolt or screw. A washer must be added to the thru bolt or screw to avoid damage to the lug while maintaining a secure bond.

I. TMGB shall be mounted above the Charles' cabinet below the RRH standoff, directly to the wood pole structure.

J. All pole mounted devices, including but not limited to: (antenna mounts and antennas, mounting brackets, cabinets) shall be connected to the TMGB with a #6 copper stranded cable UV coated and green in color.

K. All pole mounted devices, including but not limited to: (antenna mounts and antennas, mounting brackets, cabinets) shall be connected to the TMGB using compression type, 2 hole connector lugs.

1. Connector lugs must attach to the bus bar with two holes facing up and out with the bolt heads are on the back side of the bus bar.
2. Stacking of connector lugs is prohibited.
3. Placement of connector lugs on front and rear face of grounding bar is permitted.
4. Any modifications to the connector lugs is prohibited, including but not limited to grinding, cutting or bending.
5. Connector lugs must be placed with even spacing and must not come in contact with another connector lug.
6. Slotted side of the connector lug should be placed on the slotted side of the bus bar.
7. All connector lugs shall have two (2) compressions per lug.
8. All connector lugs must have NO-OX applied to any sides which contact another metal to retard oxidation including and especially the conductor in the compression end.
9. All connector lugs must be properly sealed from weather with heat shrink.
10. All connector lugs must be attached using 3/8" hardware x 2 per each lug and in the following manner:
 - a. Flat Washer on the backside of the lug
 - b. Bolt thru the lug hole facing outward.
 - c. Flat Washer on the front side of the lug.
 - d. Lock Washer on the front side of the flat washer
 - e. Nut on the bolt, turned to "three threads showing at maximum torque"
 - f. All nuts on connector bolts must be tightened so that the lock washers are completely compressed.

M. No mechanical connections are acceptable except in the event of mechanical fittings being an integral part of the product from the factory. ie: Charles cabinet #6 ground lugs on each side of the cabinet.

N. Excess welds on CadWelds must be ground off to a safe taper.

O. All cad welds must be coated with Zinc-Flt or like product to prevent oxidation.

P. All exposed metallic surfaces must be sprayed with a protective coating such as Zinc-It.

Q. All fittings exposed to environment must be sealed with shrink wrap.

1. Exposed "shiners" conductors are prohibited if in excess of 1/16th of an inch.

PART 3 - TESTING AND DOCUMENTATION

3.1 TESTING

A. 5 Ohms to ground is required for acceptance. If 5 Ohms cannot be met with above requirements, additional ground rods will be added to the field until 5 Ohms is achieved.

3.2 DOCUMENTATION

A. Photos of the tests are required as well as test results in formal document format. Submit result of test to CC Construction Manager prior to final walkthrough. Submit all photos and tests with closeout package per Section 017700 - Closeout Procedures and Required Documents.

POWER FEEDER SCHEDULE

LENGTH	SIZE (AWG/KCMIL)	GROUND SIZE	CONDUIT SIZE
320'	2	6	2"
380'	1	4	2"
470'	1/0	2	2"
550'	2/0	2	2"
680'	3/0	2	2"
800'	4/0	1	2"
920'	250	1/0	2 - 1/4"
1050'	300	2/0	2-1/2"

FEEDER SCHEDULE SCALE: NTS 15

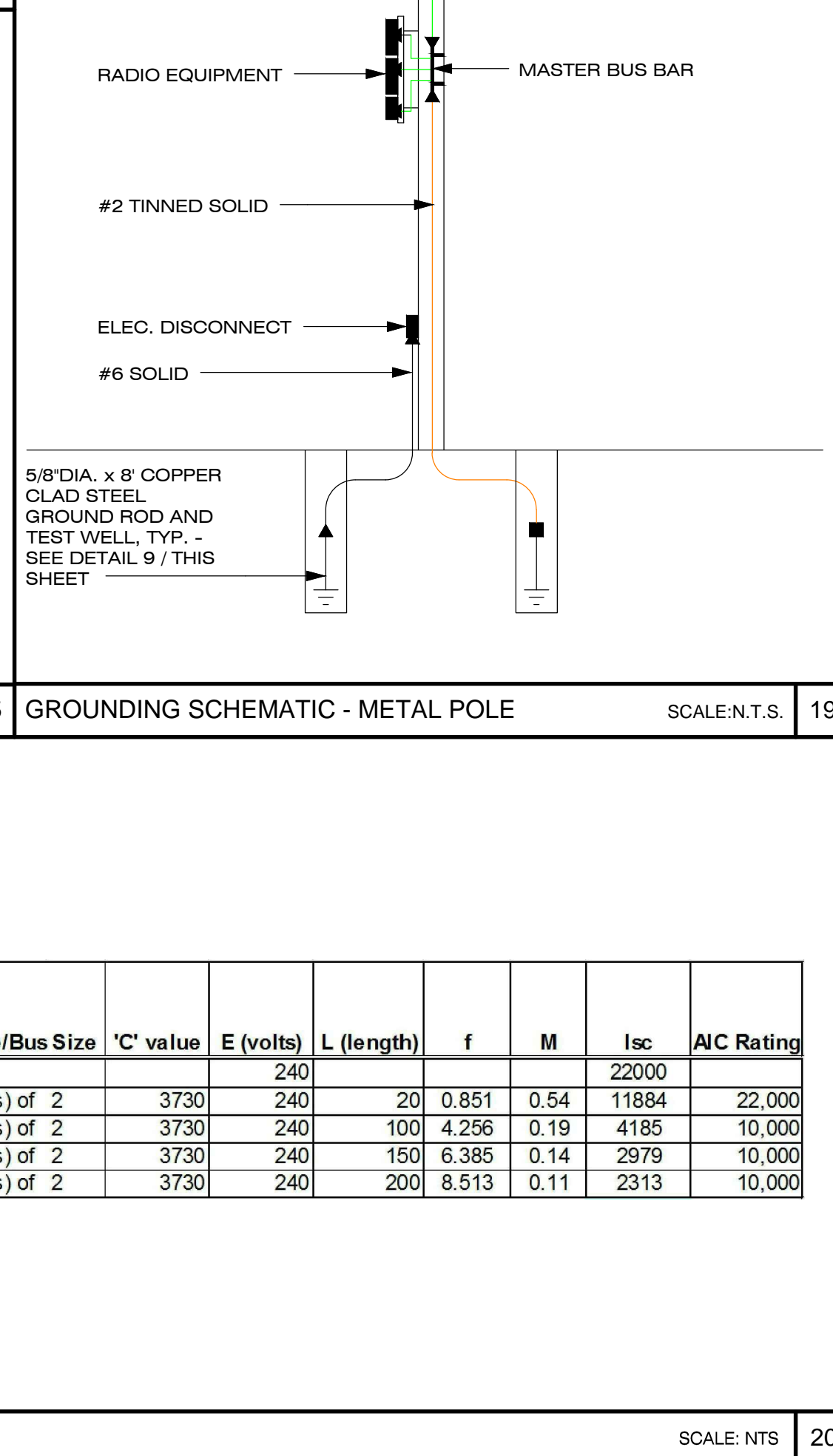
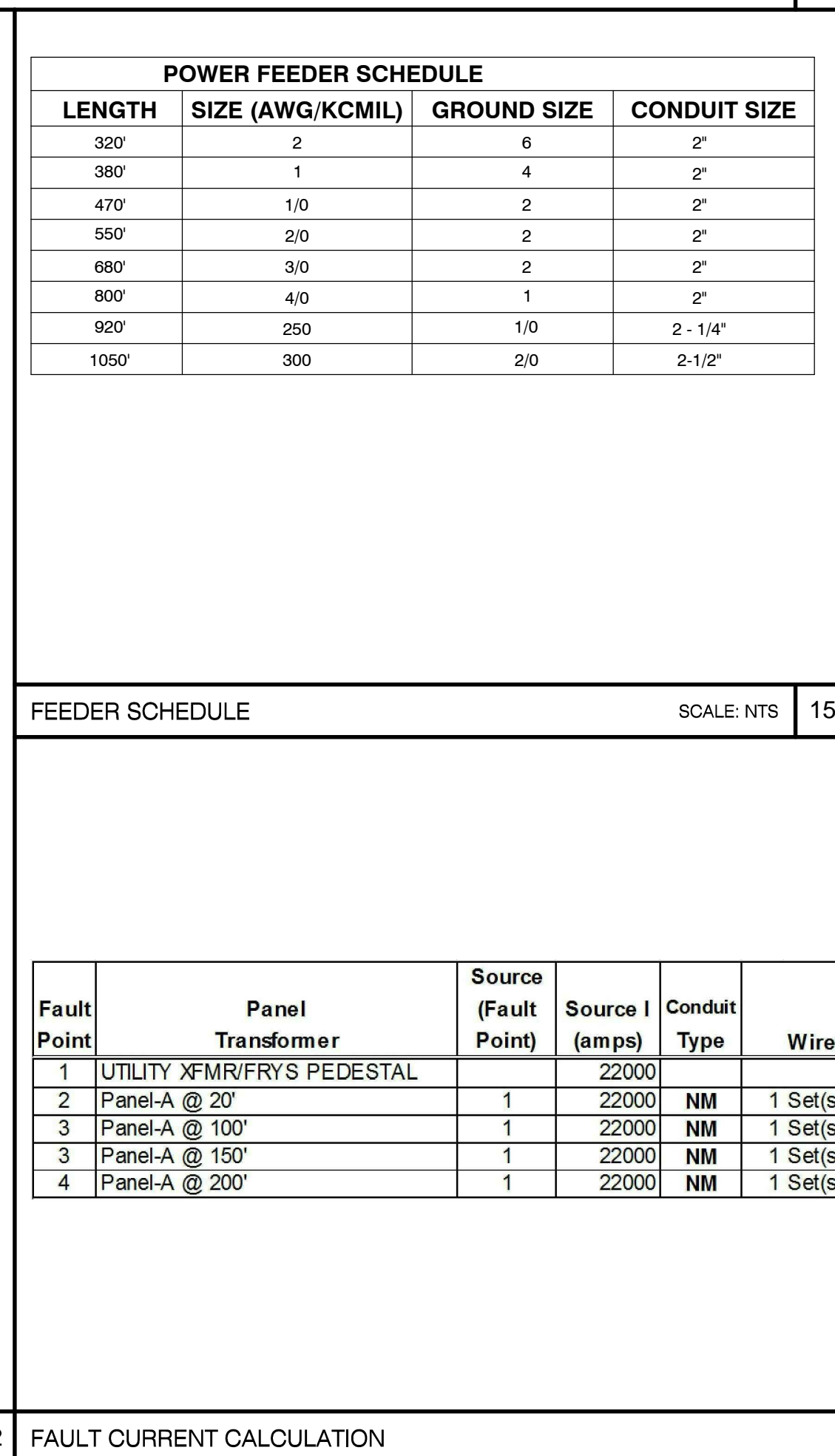
FAULT CURRENT CALCULATION

Fault Point	Panel Transformer	Source (Fault Point)	Source I (amps)	Conduit Type	Wire/Bus Size	'C' value	E (volts)	L (length)	f	M	Isc	AIC Rating
1	UTILITY XFMR/FRY'S PEDESTAL	1	22000				240				22000	
2	Panel-A @ 20'	1	22000	NM	1 Set(s) of 2	3730	240	20	0.851	0.54	11884	22,000
3	Panel-A @ 100'	1	22000	NM	1 Set(s) of 2	3730	240	100	4.256	0.19	4185	10,000
3	Panel-A @ 150'	1	22000	NM	1 Set(s) of 2	3730	240	150	6.385	0.14	2979	10,000
4	Panel-A @ 200'	1	22000	NM	1 Set(s) of 2	3730	240	200	8.513	0.11	2313	10,000

ONE-LINE DIAGRAM SCALE:N.T.S. 4

GROUNDING SPECIFICATIONS SCALE: NTS 12

FAULT CURRENT CALCULATION SCALE: NTS 20

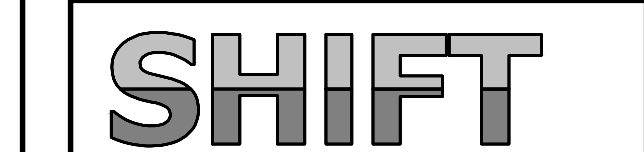


GROUNDING SCHEMATIC - METAL POLE SCALE:N.T.S. 19



CROWN CASTLE
CROWN CASTLE 695 RIVER
OAKS PARKWAY SAN JOSE,
CA 95134

RECORD DRAWINGS ISSUE DATE: 02.26.19



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RELEASE

DATE	SUBMITTAL
02.26.19	1ST SUBMITTAL
03.19.19	2ND SUBMITTAL
11.14.19	RESUBMITTAL

REVISIONS

NO.	DATE	COMMENT

PROJECT NAME
SAN FRANCISCO BAY EXPANSION - 58 SITES

NODE NUMBER
SFB004m1

NODE ADDRESS
ACROSS 304 MISSION AVE
SAN RAFAEL, CA

HUB AREA
SF40XC103

SHIFT JOB NUMBER
150601

IN HOUSE
DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
D1.2

PAGE
6 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

AirHarmony-4400 Datasheet

High Capacity Outdoor LTE-Advanced eNodeB

AirHarmony 4400 is part of Airspan's carrier-class LTE Advanced small cell eNodeB family. AirHarmony 4400 is a Macro-class product that supports 3GPP's Long Term Evolution (LTE) eNodeB specifications, providing high-speed data, mobility, voice over LTE, and broadcast/multicast services in order to meet the demands of the LTE Mobile Carriers.

AirHarmony 4400 is a compact, easy to install Macro-class eNodeB, allowing an operator to deploy LTE broadband services using existing infrastructure or Street Furniture. AirHarmony 4400 has two 20W (43dBm) transmit channels and four receive channels. AirHarmony 4400 supports single or dual carrier up to 2x 20MHz.

Release 10 LTE-Advanced

AirHarmony 4400 supports 3GPP LTE Broadband access technologies; Airspan's 3GPP LTE implementation is compliant with the 3GPP standards and has interoperable S1 and X2 interfaces and supports commercial GCF tested UE devices, including Smartphones, Dongles and Tablet computers.

The Power of HETNETS

As operators struggle to cope with growing customer demand for higher throughput, they are discovering that layering small base stations into a macro cell coverage area, enables a significant increase in network capacity by filling in coverage gaps and addressing actual traffic distribution where demand is highest. AirHarmony 4400 is ideal for these networks, delivering high data rates where needed most, whether at the macro cell edge or closer to the user base, maximizing coverage and customer satisfaction.

Broadband Access

AirHarmony-4400 supports 3GPP LTE Broadband access technologies; Airspan's 3GPP LTE implementation is compliant with the 3GPP standards and has interoperable S1 and X2 interfaces and supports commercial GCF tested UE devices, including Smartphones, Dongles and Tablet computers.

Integrated Backhaul

AirHarmony also supports tight integration with iBridge or iRelay, Airspan's small cell backhaul product. AirHarmony plus iRelay creates a single install process for LTE Access and Backhaul, and enables "Just add Power" plug and play deployment method saving deployment CAPEX and OPEX.



Page 1 of 8

AirHarmony-4400 Datasheet

Physical

Dimensions

Variant	Dimensions* (H x W x D)
Main Unit w/o filters	509 x 262 x 210 mm / 20.0 x 10.3 x 8.3 inch
Main Unit with external filters	509 x 262 x 305 mm / 20.0 x 10.3 x 12.0 inch
Cavity Filter Set (4 filters in 2 sets of 2 filters each)	229 x 120 x 39.0 / 9.01 x 4.72 x 1.53 inch (2 units)

Weight

Variant	Weight
Main Unit w/o filters / duplexers	19 Kg / 41.89 Lbs.
Main Unit with filter set	24 Kg / 52.9 Lbs.
Universal mounting bracket	3 Kg / 6.6 Lbs.
Quadruple Filter Set (B41)	6 Kg / 13.2 Lbs.

Operational Tolerances

Type	Details	Standard Compliance
Operating temperature	-40°C to 55°C / -40°F to 131°F	ETSI 300 019 1-4
Operating humidity	5% - 100% non-condensing	ETSI 300 019 1-4
Storage temperature	-40°C to 70°C / -40°F to 158°F	N/A
Storage humidity	5% - 100% non-condensing	ETSI 300 019 1-4
Rain and dust ingress protection	IP66	N/A
Operational altitude	70-106 kPa as well as: From -60m to 1800m @ 40°C From 1800m to 4000m @ 30°C	ETSI 300 019 1-4
Solar radiation	1120 W/m ²	ETSI 300 019 1-4

Dimensions excludes connectors height and protruding screws

Page 2 of 8

LT-CFTT2424

2.3 Routing Cable into the Unit

Twenty-four adapter ports are provided inside the enclosure. These ports open to the top and bottom and are numbered (1 through 24).

Grommets on the bottom of the enclosure allow fiber routing (Figure 4).

An optional conduit kit is available that provides protection for fibers as they enter the enclosure (97-000012-A, sold separately). For kit mounting instructions, see the documentation that ships with the kit.

2.3.1 Feed Cable

- Insert the connectorized feed cable into the CFTT-2424 through the center grommet.
- Use local practice for securing cable. Three strain relief brackets are provided.
- Connect the fibers to the adapter ports that face the top of the CFTT-2424.

2.3.2 Drop Cable

- Insert the first 12 connectorized drop cables into the CFTT-2424 through the left-most grommet. Use the right-most grommet to route fibers to ports 13-24.
- Use local practice for securing cable. Three strain relief brackets are provided.
- Connect the fibers to the adapter ports that face the bottom of the CFTT-2424. Check the numbering to ensure that the fibers are connected to the correct ports.

3. TECHNICAL ASSISTANCE AND REPAIR SERVICE

For questions on product repair or if technical assistance is required, contact Charles Technical Support.

847-806-8500
techserv@charlesindustries.com (email)
http://www.charlesindustries.com/techserv.htm

4. WARRANTY & CUSTOMER SERVICE

Charles Industries, Ltd. offers a one-year warranty on the housing and a one-year warranty on the optical components. The Charles warranty is limited to the operation of the hardware as described in this documentation and does not cover equipment which may be integrated by a third party. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract. For questions on warranty or other customer service assistance, contact your Charles Customer Service Representative.

847-806-6300
mktiserv@charlesindustries.com (email)
http://www.charlesindustries.com/mktiserv_sales_support.htm

5. SPECIFICATIONS

Physical	
Weight	Approx. 6.0 lbs. as shipped
Available Colors	CFTT-2424L.CUXP9: Onyx Black CFTT-2424L.CUXPQ: Gray CFTT-2424L.CUXP7: Beige
Kits and Replacement Parts	
Fiber Conduit Adapter Kit	97-000012-A

Page 2 of 2

Charles Industries

LT-CFTT2424
1st Printing, April 3, 2018

CFTT-2424 Series Fiber Enclosure

General Description and Installation

1. GENERAL INTRODUCTION

1.1 Document Purpose

This document provides installation instructions for the Charles Industries' CFTT-2424 series fiber enclosures. Figure 1 shows the front view of the CFTT-2424.

1.2 Product Purpose

The CFTT-2424 provides a means of managing fiber optics service cable. The enclosure houses 24 fiber adapter ports. Feed and drop fibers enter the enclosure and are connected to these ports. The CFTT-2424 is designed for mounting on a pole or wall.

2. INSTALLATION

2.1 Warnings and Precautions

- Follow all national safety codes, OSHA requirements, and local environmental, workplace and company codes, safety procedures and practices.
- Only authorized trained personnel shall install the unit.

2.2 Mounting the CFTT-2424 on a Pole

The CFTT-2424 ships with the enclosure attached to the pole mounting bracket. To mount the unit, first remove the enclosure from the bracket by removing the hardware from the four attachment points as shown in Figure 2. Save this hardware.

The bracket has two mounting options.

- Option 1: use the two holes in the center of the bracket to mount a pair of lag bolts into the pole.
- Option 2: use the four obround slots at the sides of the bracket to mount to the pole using straps.

See Figure 3 for locations of mounting holes and slots. Use local practice for mounting the bracket to the pole. All hardware for mounting to the pole is customer supplied.

Once the bracket is securely on the pole, re-attach the enclosure onto the PEM studs using the hardware removed previously.

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Page 1 of 2

RADIO SPEC.

SCALE: N.T.S. 10

DISCONNECT MUST BE APPROVED BY PG&E

DISCONNECT

SCALE: N.T.S. 12

FIBER ENCLOSURE SPEC.

METER MUST BE APPROVED BY PG&E

METER SPEC.

SCALE: N.T.S. 16

Amphenol ANTENNA SOLUTIONS

(2x) 696-960 / (4x) 1695-2700 / (2x) 3550-3700 / (1x) 5150-5925 MHz

2C4U3MT360X06Fxs0

MULTI BAND | OMNI | CANISTER ANTENNA | X-POL | FIXED TILT | 610 MM (24.0 IN)

Features

- Omni configuration with 18 connectors
- Ideal for Small Cell / DAS applications
- This antenna meets the requirements of the U.NII
- Available for order with a grey, brown or black radome

Connector Description

The antenna has 18 connectors located at the bottom.

Low Band #1	R1	696-960 MHz	(2x) 4.3-10 Female
Low Band #2	R2	696-960 MHz	(2x) 4.3-10 Female
Mid Band #1	Y1	1695-2700 MHz	(2x) 4.3-10 Female
Mid Band #2	Y2	1695-2700 MHz	(2x) 4.3-10 Female
Mid Band #3	Y3	1695-2700 MHz	(2x) 4.3-10 Female
Mid Band #4	Y4	1695-2700 MHz	(2x) 4.3-10 Female
High Band #1	P1	3550-3700 MHz	(2x) 4.3-10 Female
High Band #2	P2	3550-3700 MHz	(2x) 4.3-10 Female
High Band #3	O1	5150-5925 MHz	(2x) 4.3-10 Female

Electrical Characteristics

Frequency Bands (MHz)	R1 R2	Y1 Y2 Y3 Y4	P1 P2	O1					
(2x) 696-960	(4x) 1695-2700	(2x) 3550-3700	5150-5925						
696-806	806-960	1695-1880	1850-1990	1920-2200	2300-2700				
Polarization	(2x) ±45°	(4x) ±45°	(2x) ±45°	±45°					
Horizontal Beamwidth	360°	360°	360°	360°	360°				
Vertical Beamwidth	96.9° ± 26.7° / 72° ± 21.7°	38.3° ± 7.8° / 33.8° ± 8.2°	33.4° ± 6.2° / 29.0° ± 5.1°	40.2° ± 4.6° / 21.3° ± 5.9°	360°				
Gain (dBi)	BASTA	4.2 ± 0.9	3.9 ± 0.7	6.1 ± 0.7	6.2 ± 0.7	6.1 ± 0.9	6.8 ± 1.1	5.3 ± 0.6	4.8 ± 1.0
Max	5.1	4.6	6.8	6.9	7.0	7.9	5.9	5.8	
Electrical Downtilt (°)	(x) 0	(y) 2, 4, 6							
Impedance	50Ω	50Ω	50Ω	50Ω	50Ω				
VSWR	≤ 1.5:1	≤ 1.5:1	≤ 1.5:1	≤ 1.5:1	≤ 1.5:1				
Upper Sidelobe Suppression	N/A	N/A	N/A	N/A	N/A				
Isolation	Intraband	25 dB	25 dB	25 dB	25 dB				
Interband	28 dB	28 dB	28 dB	28 dB	28 dB				
IM3 (2x20W carrier)	< -153 dBc	< -153 dBc	< -153 dBc	N/A	N/A				
Input Power	(4x) 500 W	(8x) 300 W	(4x) 100 W	(2x) 50 W					
U.NII Compliant	---	---	---	---	Yes				
Diplexed	No	No	No	No	No				
Number of Sectors and/or Pattern Shape	---	Omni	---	---	---				
Lightning Protection	---	Direct Ground	---	---	---				
Mechanical Characteristics									
Antenna Dimensions (Height x Diameter)	610 x 371 mm / 24.0 x 14.6 in								
Weight without Mounting Bracket Kit	11.3 kg / 25 lbs								
Antenna Volume	0.07 m ³ / 2.3 ft ³								
Survival Wind Speed	241 km/hr / 150 mph								
Wind Area	0.22 m ² / 2.4 ft ²								
Wind Load (160 km/hr or 100 mph)	191 N / 43 lbf								

Quoted performance parameters are provided to offer typical, peak or range values only and may vary as a result of normal testing, manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to the product. Improvements to products may be made without notice.

REV100918NA www.amphenol-antennas.com 1 of 5

ANTENNA SPEC.

SCALE: N.T.S. 20

CROWN CASTLE

CROWN CASTLE 695 RIVER
OAKS PARKWAY SAN JOSE,
CA 95134

RECORD DRAWINGS ISSUE DATE: 02.26.19

SHIFT

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DATE	SUBMITTAL
02.26.19	1ST SUBMITTAL
03.19.19	2ND SUBMITTAL
11.14.19	RESUBMITTAL

REVISIONS

NO.	DATE	COMMENT

PROJECT NAME

SAN FRANCISCO BAY EXPANSION - 58 SITES

NODE NUMBER

SFB004m1

NODE ADDRESS

ACROSS 304 MISSION AVE
SAN RAFAEL, CA

HUB AREA

SF40XC103

SHIFT JOB NUMBER **IN HOUSE**

150601 DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

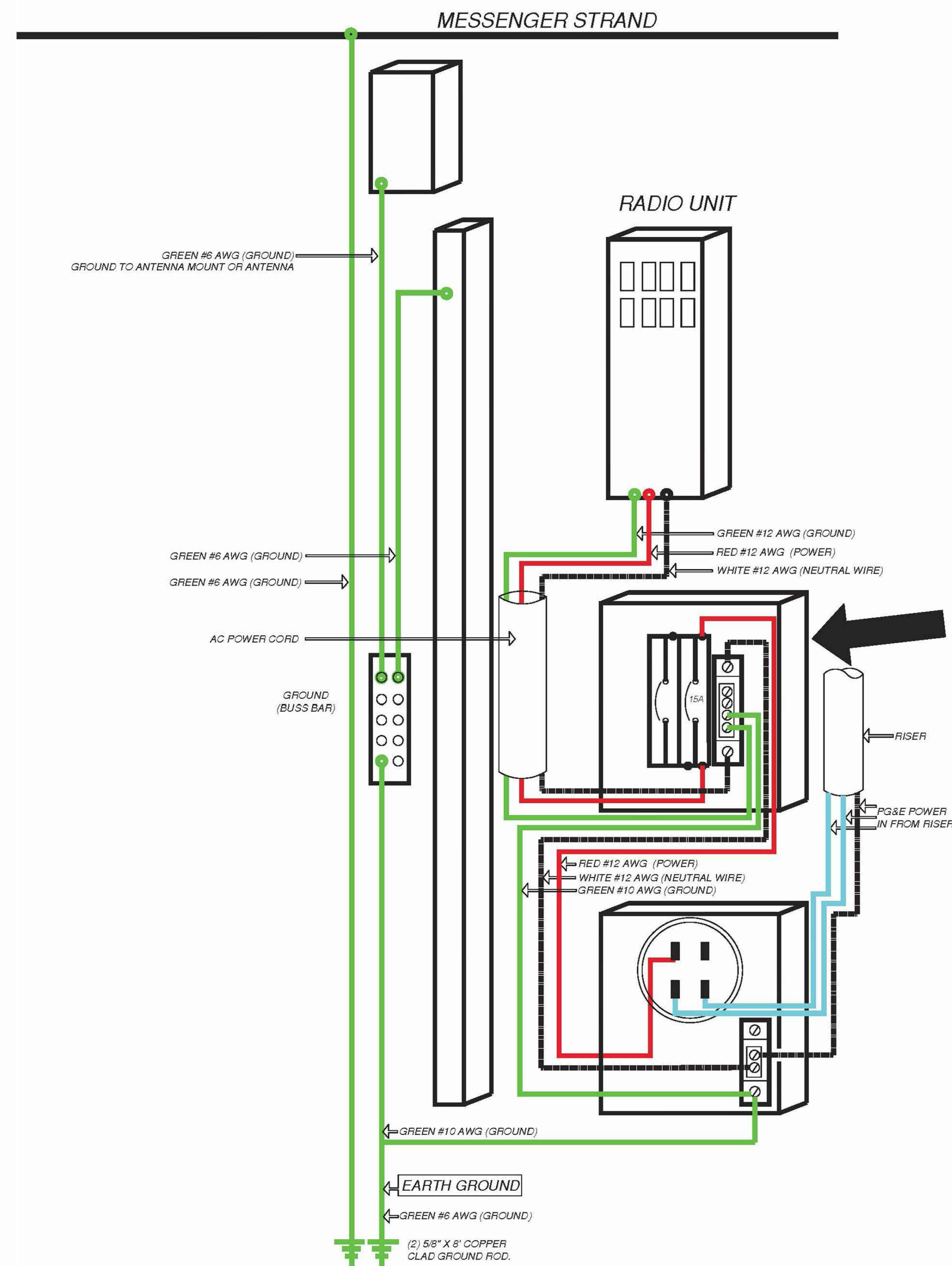
SHEET NUMBER **PAGE**

D1.3 7 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

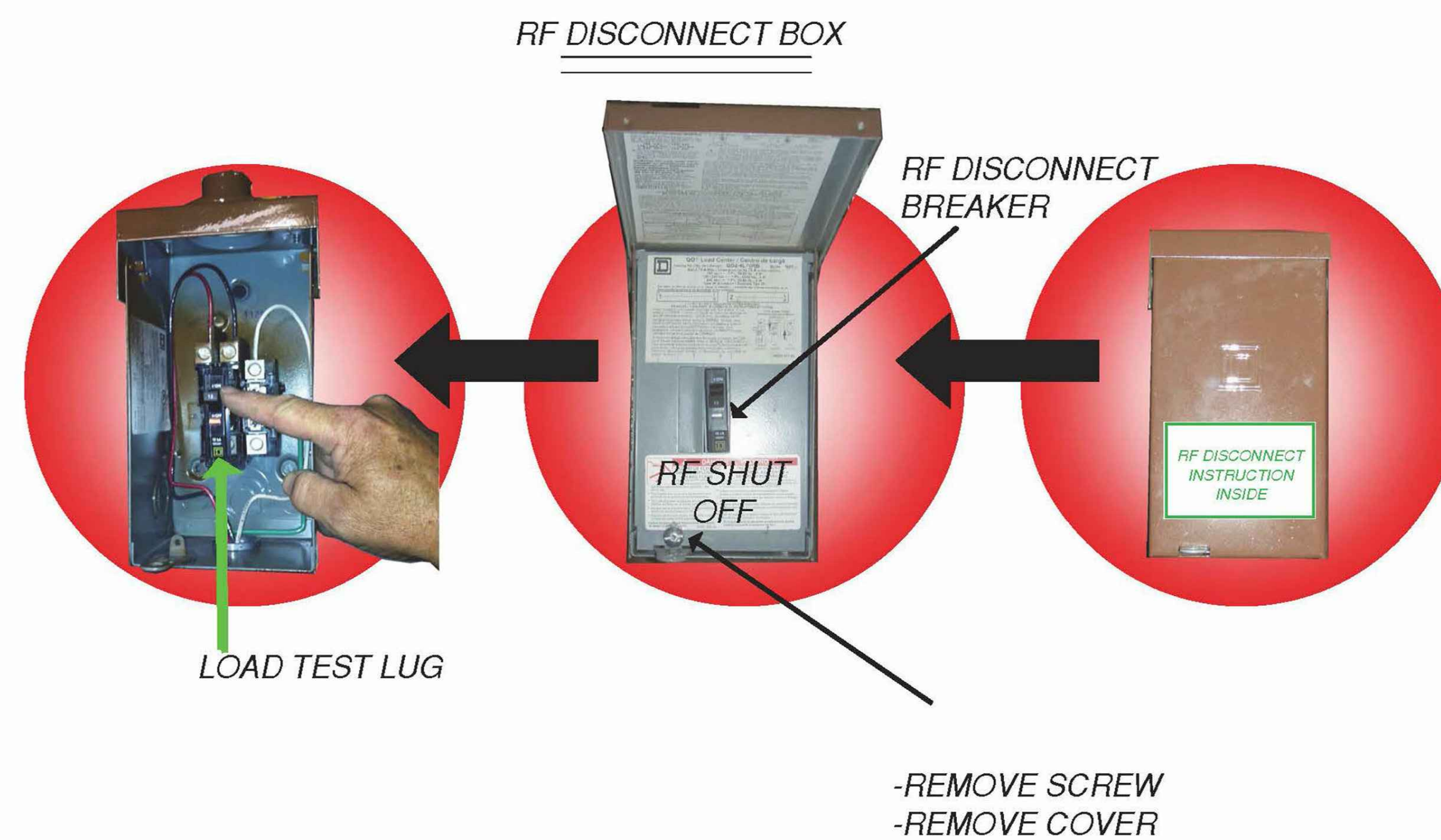
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Nov 14, 2019 1:23pm

PG&E SHUTDOWN PROCEDURE



Instructions for De-Energizing the Site:

1. Call Crown Castle Network operations center 1888-632-0931
2. Identify RF DISCONNECT BOX
3. Open RF DISCONNECT BOX
4. Open cover for RF Disconnect Breaker
5. Turn RF Disconnect Breaker to the off position to de-energize node
6. To confirm that the site has been de-energized, PG&E crew/technician can remove the single screw on the bottom right cover of the RF Disconnect Breaker and remove the cover to expose the source and load terminals on the switch and then check for no potential between the load terminal and ground to verify that no RF signal can be generated.
7. Notify Crown Castle Network operations center that work is complete



COLOR KEY	
RED (POWER)	—
GREEN (GROUND)	—
BLUE (PG&E POWER)	—
BLACK / DASHED (NEUTRAL)	- - -

- A) ANTENNA AND MOUNTING BRACKET
- B) NODE EQUIPMENT
- C) RF DISCONNECT BOX
- D) POLE MOUNTING CHANNEL
- E) B-LINE 114TB METER SOCKET



CROWN CASTLE
CROWN CASTLE 695 RIVER
OAKS PARKWAY SAN JOSE,
CA 95134

RECORD DRAWINGS ISSUE DATE: 02.26.19

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03.19.19	2ND SUBMITTAL
11.14.19	RESUBMITTAL

REVISIONS		
NO.	DATE	COMMENT

PROJECT NAME
SAN FRANCISCO BAY EXPANSION - 58 SITES

NODE NUMBER
SFB004m1

NODE ADDRESS
ACROSS 304 MISSION AVE
SAN RAFAEL, CA

HUB AREA
SF40XC103

SHIFT JOB NUMBER 150601 IN HOUSE
DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
PGE EQUIPMENT
SHUT-DOWN
PROCEDURE

SHEET NUMBER D1.4 PAGE 8 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"