



# at&t

# CRAN\_RSFR\_PALO2\_054

(NEAR) 1661 PAGE MILL RD  
PALO ALTO, CA 94305

SITE ID: CRAN\_RSFR\_PALO2\_054  
 PACE CODE: MRSFR083374  
 FA CODE: 16140524  
 SITE TYPE: STEEL LIGHT POLE - MICRO CELL  
 POLE #: 167  
 COUNTY: SANTA CLARA



AT&T  
5005 EXECUTIVE PARKWAY  
SAN RAMON, CA  
94583



MODUS, LLC  
240 STOCKTON ST., 3RD FLOOR  
SAN FRANCISCO, CA  
94108

## PROJECT TEAM

**APPLICANT:**  
AT&T MOBILITY  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583  
CONTACT: SEAN RANDALL  
EMAIL: SR9530@ATT.COM

**PROJECT MANAGER:**  
MODUS, LLC  
1355 WINDWARD CONCOURSE, SUITE 410  
ALPHARETTA, GA 30005  
PHONE: (707) 225.2865  
EMAIL: JGIARRITTA@MODUSLLC.COM

**AT&T MOBILITY PROJECT MANAGER:**  
AT&T MOBILITY  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583  
CONTACT: SEAN RANDALL  
EMAIL: SR9530@ATT.COM

**A&E PROJECT MANAGER:**  
SPECTRUM SERVICES, LLC  
4850 W. OQUENDO RD  
LAS VEGAS, NEVADA 89118  
PHONE: (530) 305.6898  
EMAIL: TLAWRENCE@MODUSLLC.COM

**AT&T MOBILITY RF MANAGER:**  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583  
CONTACT: JERIC LIZARDO  
EMAIL: jg771@att.com

**CONSTRUCTION MANAGER:**  
MODUS, INC.  
1355 WINDWARD CONCOURSE, SUITE 410  
ALPHARETTA, GA 30005  
PHONE: (901) 484.4929  
EMAIL: ALE@MODUSLLC.COM

## PROJECT DESCRIPTION

AT&T PROPOSES TO MODIFY EXISTING WIRELESS COMMUNICATION SITE ON A PALO ALTO STREET LIGHT POLE IN THE PUBLIC RIGHT-OF-WAY.

- SCOPE:**
- INSTALL (2) NEW 2' PANEL ANTENNA ON TOP OF LIGHT POLE
  - INSTALL (1) NEW RADIO 4415, (1) RADIO 4435 AND (1) RADIO 4449 ON LIGHT POLE
  - INSTALL (4) NEW PSU AC08 ON STEEL LIGHT POLE
  - INSTALL (1) NEW POWER CONDUIT FROM P.O.C. TO EQUIPMENT
  - INSTALL (1) NEW FIBER CONDUIT FROM P.O.C. TO EQUIPMENT
  - REMOVE (E) FOUNDATION ADJACENT TO POLE.
  - EXISTING LIGHT POLE AND FOUNDATION TO REMAIN
  - REMOVE EXISTING EQUIPMENT CABINET
  - CABLING TO BE INSTALLED IN A TIGHT NEAT MANNER WITHOUT EXCESS CABLE LOOPS
  - ALL AT&T ADDED APPURTENANCES SHALL BE PAINTED TO MATCH POLE COLOR (NON-GLOSSY "SABLE" BY SHERWIN WILLIAMS, OR EQUIVALENT)

## DRAWING INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
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T-3	POLLUTION PREVENTION
T-4	PUBLIC WORKS CONDITIONS
T-5	PHOTO SIMULATIONS
C-1	SURVEY
A-1	SITE PLAN
A-2	ELEVATIONS
A-3	ELEVATIONS
D-1	DETAILS
D-2	DETAILS
E-1	ELECTRICAL GENERAL NOTES
E-2	ELECTRICAL DIAGRAMS
E-3	ELECTRICAL DETAILS
SA-1	STRUCTURAL ANALYSIS
EME-1	EME REPORT
EME-2	EME REPORT
TP-1	TREE PROTECTION PLAN
TP-2	TREE PROTECTION PLAN
TCP-1	TRAFFIC CONTROL PLAN

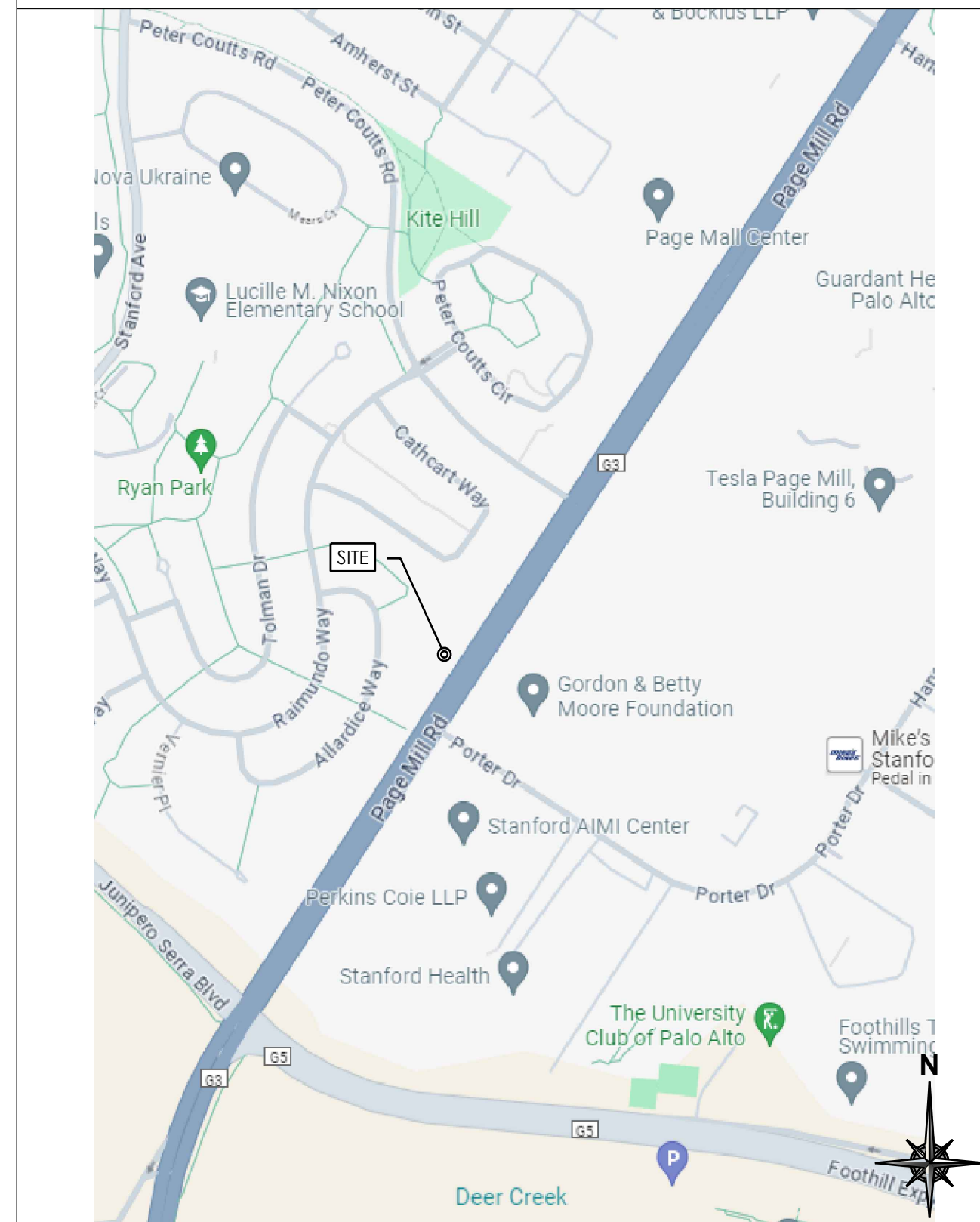
DRAWN BY: JLW  
 CHECKED BY: TDL  
 APPROVED BY: CW

REV	DATE	DESCRIPTION
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4	10/09/25	100% CD PLAN CHECK

## POLE PHOTO



## VICINITY MAP



## SITE INFORMATION

SITE ADDRESS: (NEAR) 1661 PAGE MILL RD  
PALO ALTO, CA 94305

OWNER: CITY OF PALO ALTO UTILITIES  
250 HAMILTON AVE  
PALO ALTO, CA 94301

APPLICANT: AT&T MOBILITY  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583

LATITUDE: 37.410145° N  
 LONGITUDE: 122.152965° W  
 COUNTY: SANTA CLARA  
 JURISDICTION: CITY OF PALO ALTO  
 ASSESSORS PARCEL NUMBER: PUBLIC RIGHT OF WAY  
NEAR 14222002

ZONING: PUBLIC ROW  
 ELEVATION: 132.648' AMSL  
 ADJACENT ZONING: R-1  
 PROPOSED USE: UNMANNED TELECOM FACILITY



### CALL 811 BEFORE YOU DIG IT'S THE LAW

THE UTILITIES SHOWN HEREIN ARE FOR THE CONTRACTORS CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER/SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL THE UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO THE (E) UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

## CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND 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 CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- 2022 CALIFORNIA BUILDING CODE (CBC), BASED ON THE 2021 IBC
- 2022 CALIFORNIA ELECTRICAL CODE (CEC), BASED ON THE 2020 NEC
- 2022 CALIFORNIA MECHANICAL CODE (CMC), BASED ON THE 2021 UMC
- 2022 CALIFORNIA PLUMBING CODE (CPC), BASED ON THE 2021 UPC
- 2022 CALIFORNIA GREEN BUILDINGS STANDARDS CODE (CALGREEN)
- 2022 CALIFORNIA FIRE CODES WITH ALL LOCAL AMENDMENTS, BASED ON THE 2021 IFC
- ANY LOCAL BUILDING CODE AMENDMENTS TO THE ABOVE
- NATIONAL ELECTRICAL CODE (NEC) (2023 EDITION)
- NATIONAL ELECTRICAL SAFETY CODE IEEE C2 2023 (NESC)
- CITY / COUNTY ORDINANCES

**ACCESSIBILITY REQUIREMENTS FOR PERSONS WITH DISABILITIES:**  
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ACCESSIBILITY IS NOT REQUIRED IN ACCORDANCE WITH CALIFORNIA ADMINISTRATIVE STATE CODE PART 2, TITLE 24, CHAPTER 11B, SECTION 1103B.



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TITLE SHEET

T-1

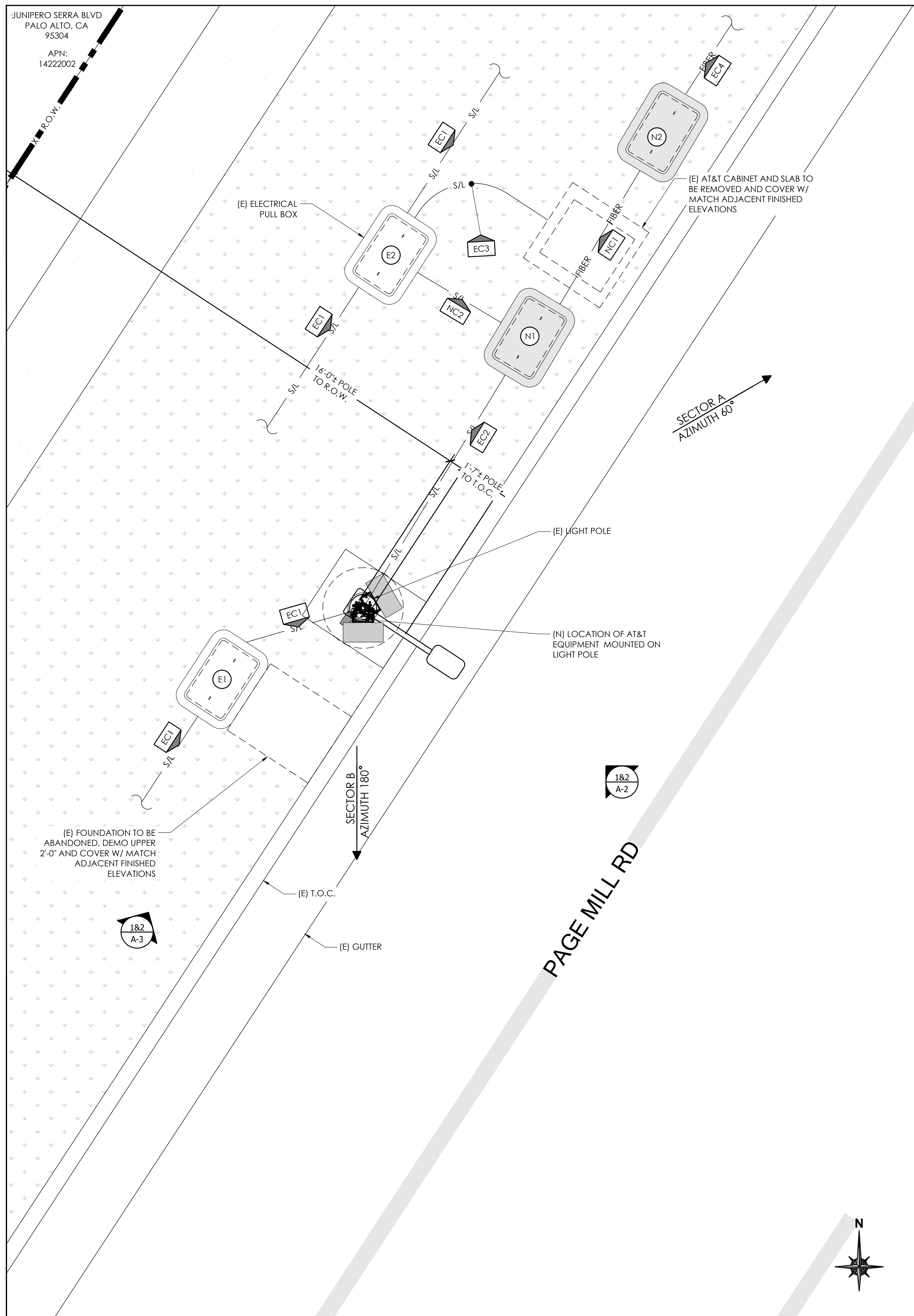








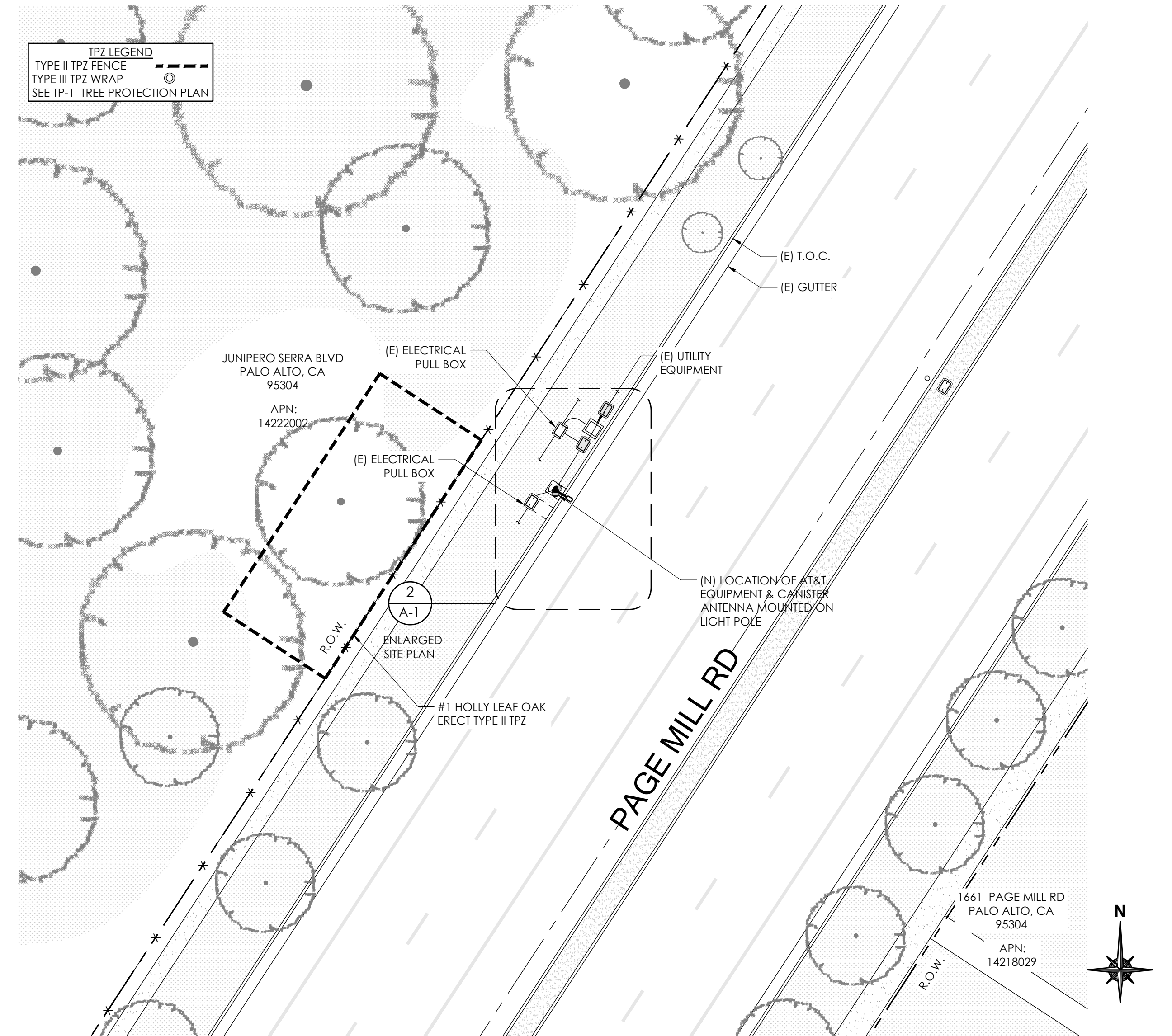




CONDUIT TABLE			
DESIGNATION	CONDUIT	EXISTING CONTENTS	NEW CONTENTS
EC1	EXISTING 1 1/2" DIA. PVC	(3) #8 STREET LIGHT CONDUCTORS & (1) #8 BARE EQUIPMENT GROUND	(3) #8 STREET LIGHT CONDUCTORS & (1) #8 BARE EQUIPMENT GROUND
EC2	EXISTING 2" DIA. PVC	1 1/2" 2 CELL MAXCELL WITH ONE CELL CONTAINING NEW (2) FO JUMPERS, (3) #10 THW POWER & (1) #8 GROUND. OTHER CELL TO REMAIN EMPTY, RESERVED FOR FUTURE USE.	1 1/2" 2 CELL MAXCELL WITH ONE CELL CONTAINING NEW (2) FO JUMPERS, (3) #10 THW POWER & (1) #8 GROUND. OTHER CELL TO REMAIN EMPTY, RESERVED FOR FUTURE USE.
EC3	EXISTING 1 1/2" DIA. PVC	(2) #8 STREET LIGHT CONDUCTORS & (1) #8 BARE EQUIPMENT GROUND	CONDUITS AND CONDUCTORS TO BE REMOVED
EC4	EXISTING 2" DIA. PVC	FIBER CABLES	FIBER CABLES
NC1	NEW 2" PDIA. PVC	FIBER CABLES	FIBER CABLES
NC2	NEW 2" PDIA. PVC	N/A	(3) #8 STREET LIGHT CONDUCTORS & (1) #8 BARE EQUIPMENT GROUND

LEGEND	
	FIBER
	ELECTRICAL
	STREET LIGHT

PULL BOX TABLE	
DESIGNATION	DESCRIPTION
E1	EXISTING CPA U STREET LIGHT PULL BOX
E2	EXISTING CPA U STREET LIGHT PULL BOX
N1	NEW STREET LIGHT BOX TO OVERSET EXISTING UNDERGROUND STREET LIGHT CONDUIT
N2	NEW FIBER BOX TO OVERSET EXISTING UNDERGROUND FIBER CONDUIT



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SITE PLAN

A-1

ENLARGED SITE PLAN

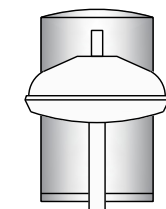
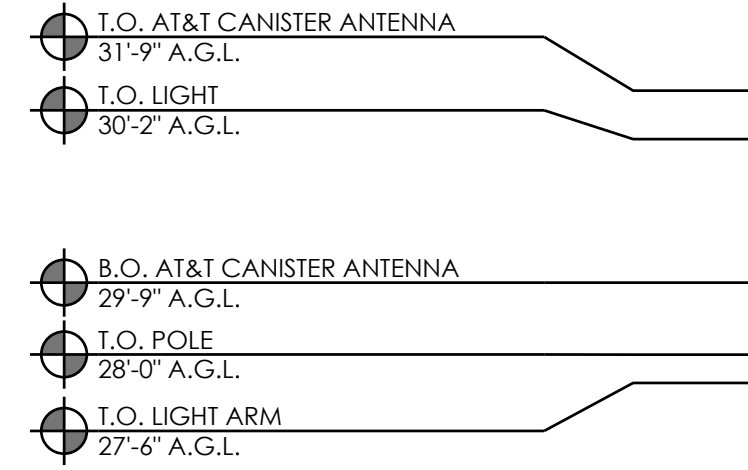
24"x36" SCALE: 1/2" = 1'-0"  
11"x17" SCALE: 1/4" = 1'-0"  
SCALE 1/2"=1'-0"

2 SITE PLAN

24"x36" SCALE: 1/16" = 1'-0"  
11"x17" SCALE: 1/32" = 1'-0"  
SCALE 1/16"=1'-0"

1

- NOTES:
1. ALL NEW ANTENNAS, BRACKETS, AND OTHER EQUIPMENT WILL BE PAINTED TO MATCH LIGHT POLE.
  2. ALL EXISTING SIGNAGE TO BE RELOCATED SHALL BE FASTENED USING STEEL BANDING PER SHEET T-2.
  3. INSPECT EXISTING POLE FOR DENTS AND REPLACE POLE AS DIRECTED BY THE CITY
  4. REPAINT NEW STREET LIGHT POLE PER CITY SPEC
  5. INSTALL NEW POLE NUMBERS AFTER POLE PAINTING



(E) LIGHT POLE



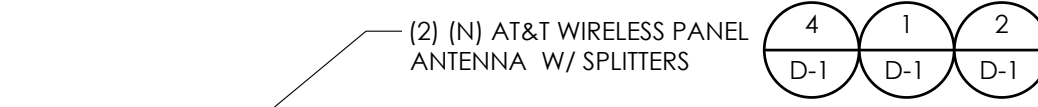
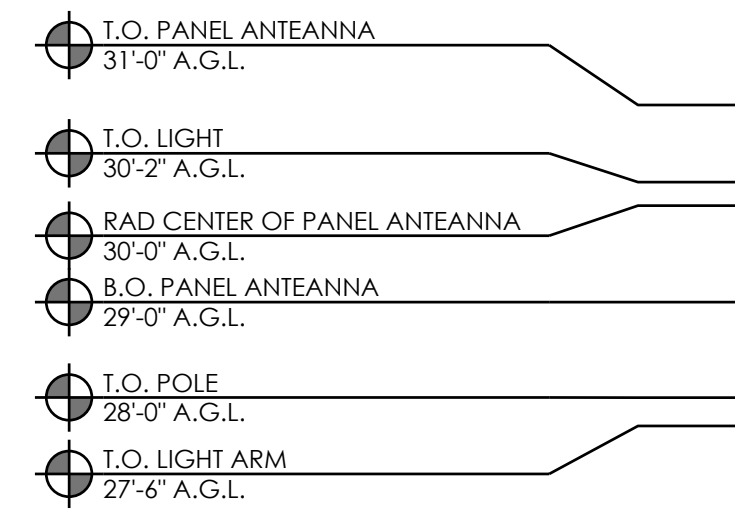
EXISTING ELEVATION

SCALE  
1/2"=1'-0"

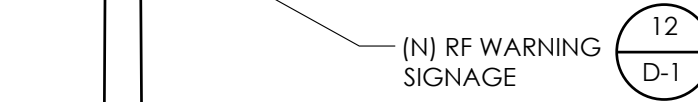
2

PROPOSED ELEVATION

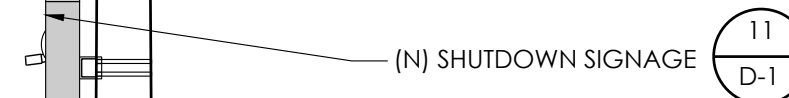
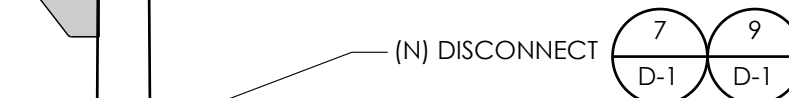
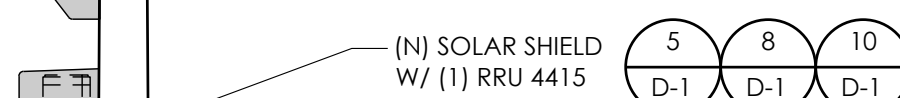
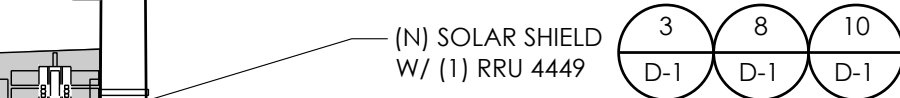
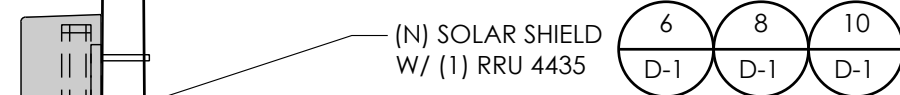
EQUIPMENT TO BE REMOVED VOLUME		NEW EQUIPMENT VOLUME	
ANTENNA	0.7025 CUFT	ANTENNAS	3.09 CUFT
GROUND CABINET	22.135 CUFT	SHROUD	8.65 CUFT
TOTAL	22.8375 CUFT	DISCONNECT	4.65 CUFT
TOTAL AFTER REMOVAL	0.0 CUFT	TOTAL	16.39 CUFT



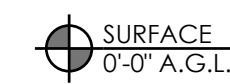
(E) 8' ARM



(E) LIGHT POLE



(E) FOUNDATION



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CHECKED BY: TDL  
APPROVED BY: CW

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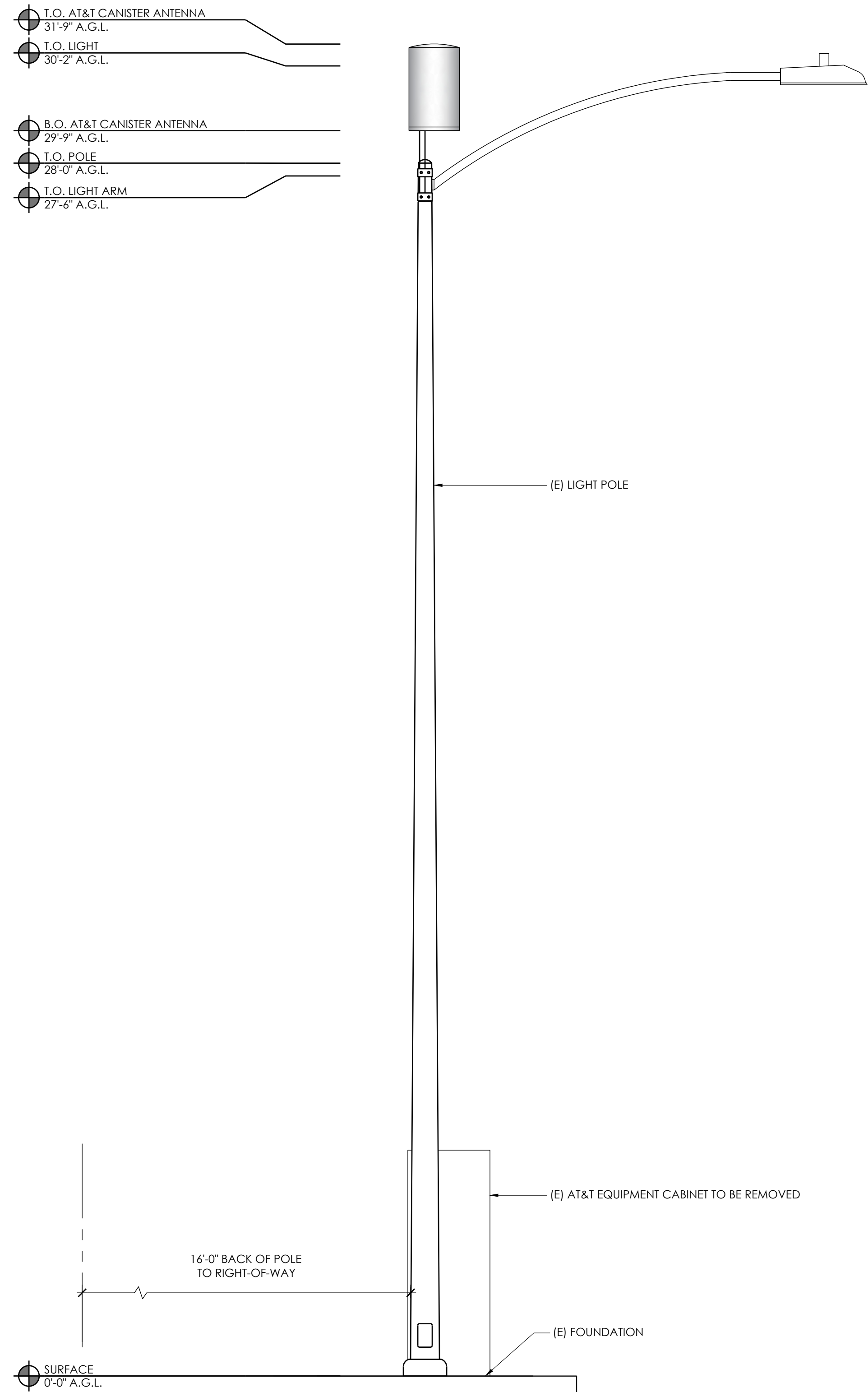
1661 PAGE MILL RD  
PALO ALTO, CA 94305

EXISTING & PROPOSED  
ELEVATIONS

A-2

SCALE  
1/2"=1'-0"

1



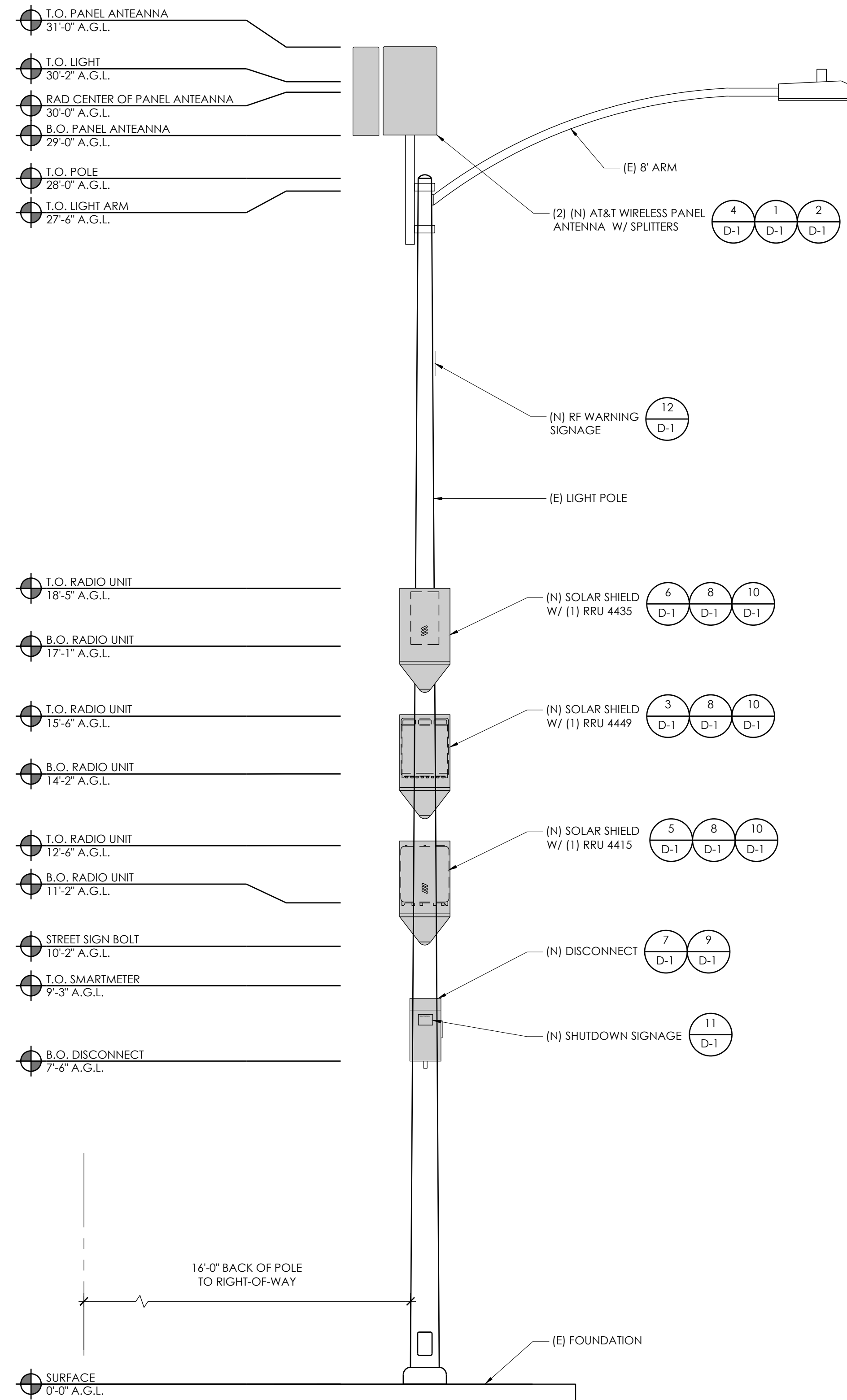
EXISTING ELEVATION

SCALE  
1/2"=1'-0"

2

PROPOSED ELEVATION

EQUIPMENT TO BE REMOVED VOLUME		NEW EQUIPMENT VOLUME	
ANTENNA	0.7025 CUFT	ANTENNAS	3.09 CUFT
GROUND CABINET	22.135 CUFT	SHROUD	8.65 CUFT
TOTAL	22.8375 CUFT	DISCONNECT	4.65 CUFT
TOTAL AFTER REMOVAL	0.0 CUFT	TOTAL	16.39 CUFT



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CHECKED BY: TDJ  
APPROVED BY: CW

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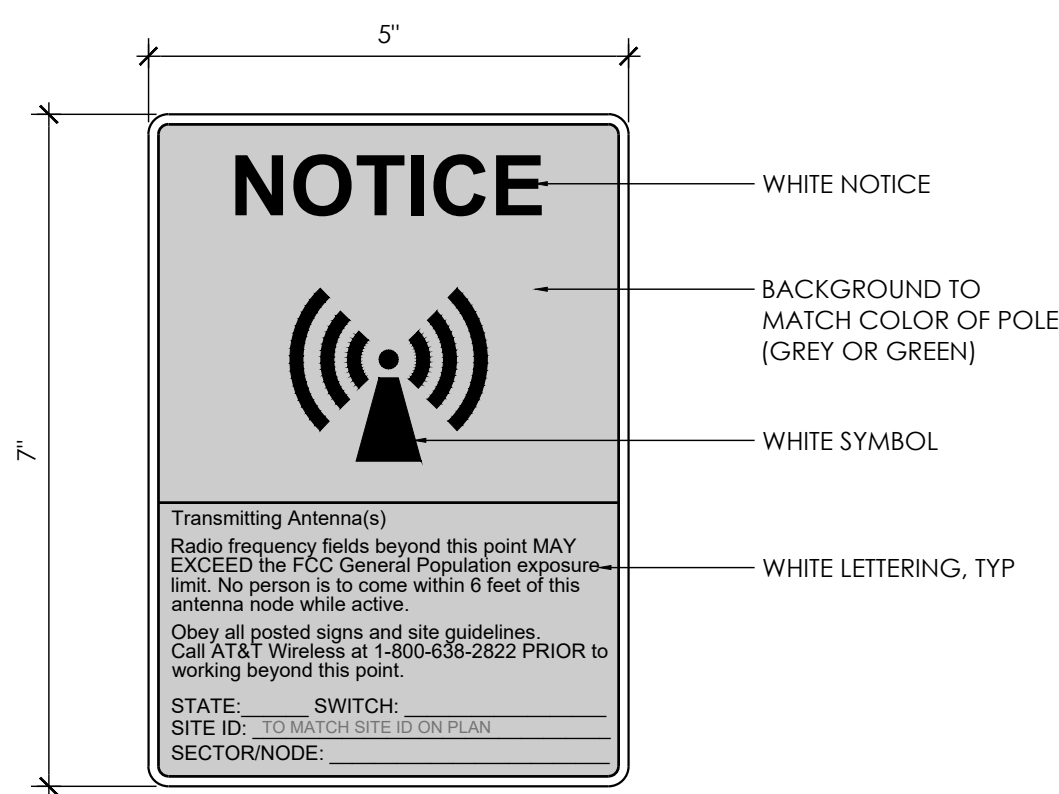
1661 PAGE MILL RD  
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EXISTING & PROPOSED  
ELEVATIONS

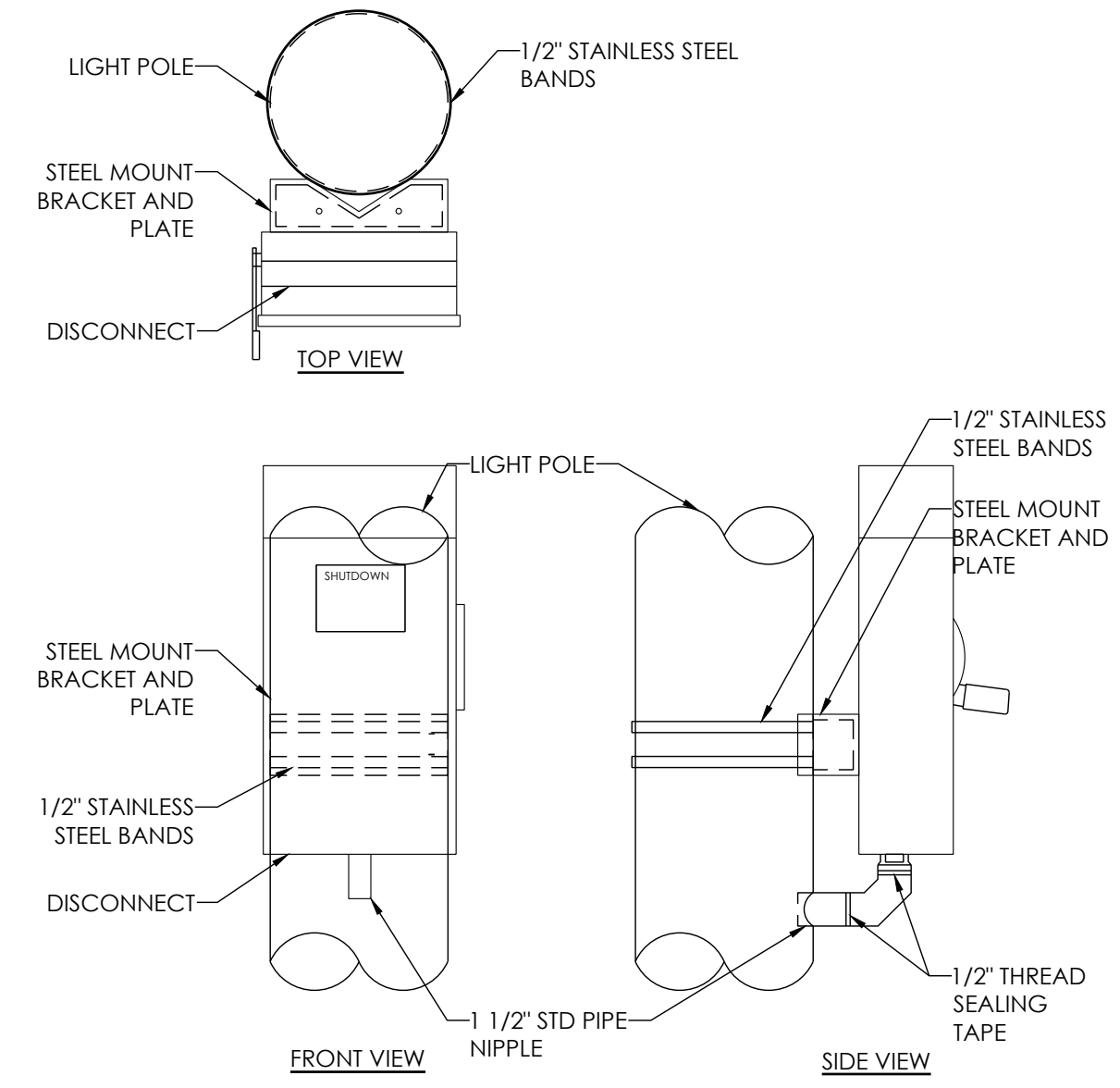
A-3

SCALE  
1/2"=1'-0"

1



- NOTES:**
1. OUTDOOR RATED SELF ADHESIVE VINYL DECAL WITH UV PROTECTION.
  2. POST SIGN 3'-0" BELOW PROPOSED ANTENNA.
  3. CONTRACTOR TO CONFIRM SPECIFIC SIGN REQUIREMENTS WITH AT&T WIRELESS. THE CITY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION AND AUTHORITIES HAVING JURISDICTION PRIOR TO FABRICATION.
  4. DECAL SHALL FACE OUT THE STREET AND WHEN FEASIBLE AWAY FROM THE STREET, IF NO BUILDING WINDOW IS PRESENT WITHIN 25 FEET FACING THE EXISTING POLE.

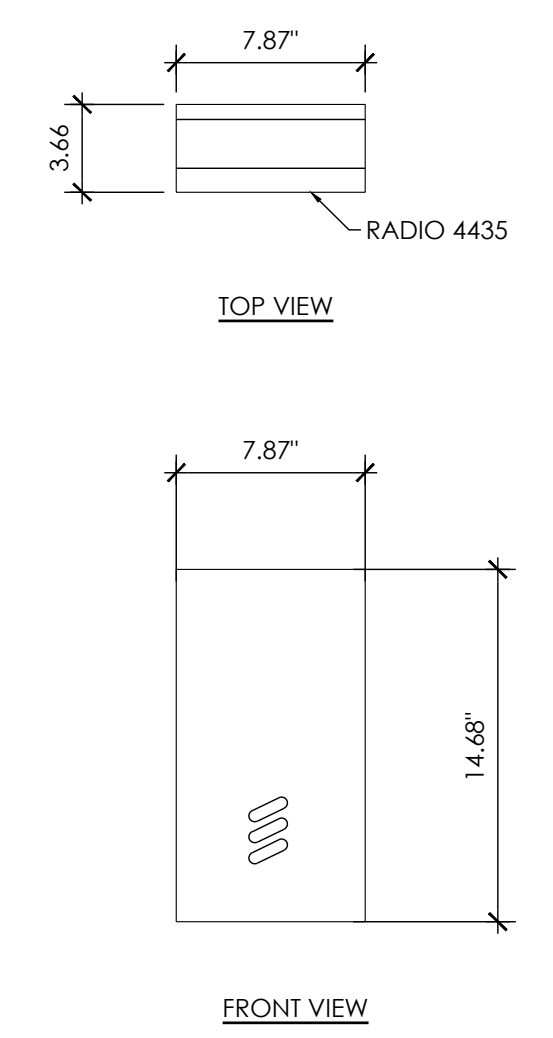


**ERICSSON RADIO 4435 (OR APPROVED EQUIVALENT)**

COLOR: GRAY

DIMENSIONS: 14.68" TALL x 7.87" WIDE x 3.64" DEEP

WEIGHT: 14.33 lbs

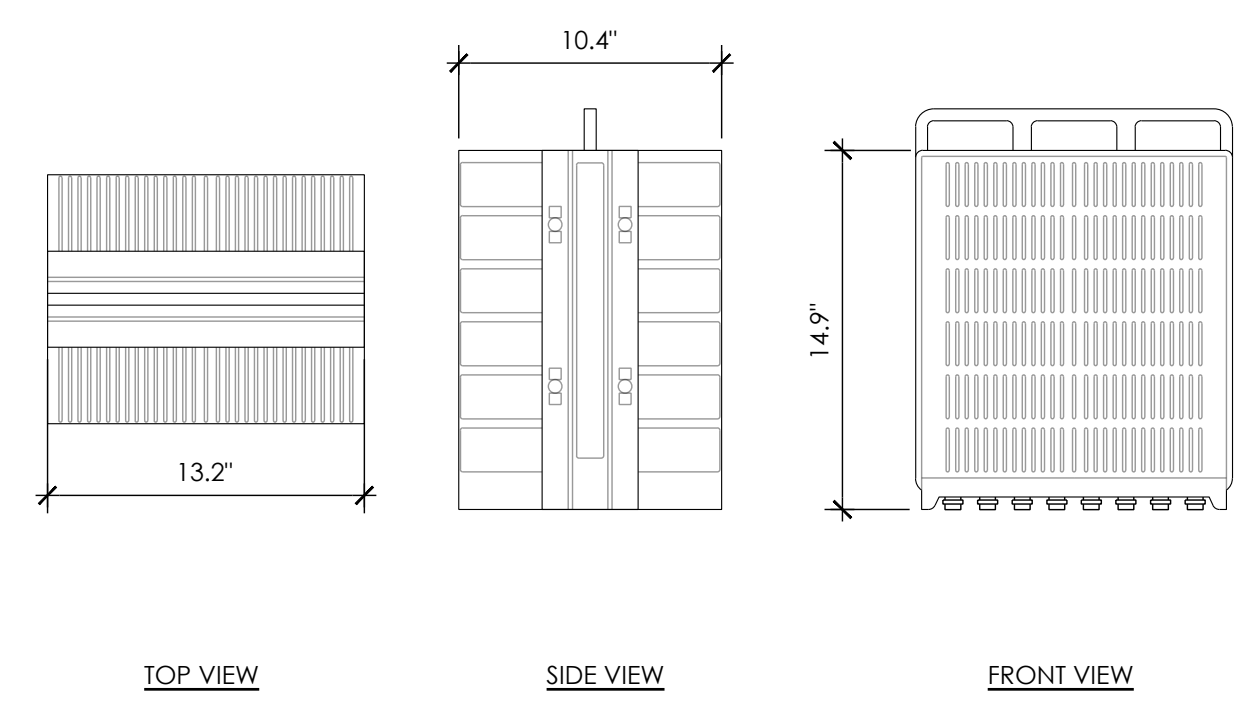


**ERICSSON RRUS 4449 REMOTE RADIO UNIT**

COLOR: GRAY

DIMENSIONS: 14.9" TALL x 13.2" WIDE x 10.4" DEEP

TOTAL WEIGHT: 74 LBS.



DRAWN BY: JLV  
 CHECKED BY: TDL  
 APPROVED BY: CW

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NOTICE SIGNAGE SCALE NTS 12

DISCONNECT MOUNT SCALE NTS 9

RRUS 4435 SCALE NTS 6

RRUS 4449 SCALE NTS 3

**SHUTDOWN DISCONNECT**

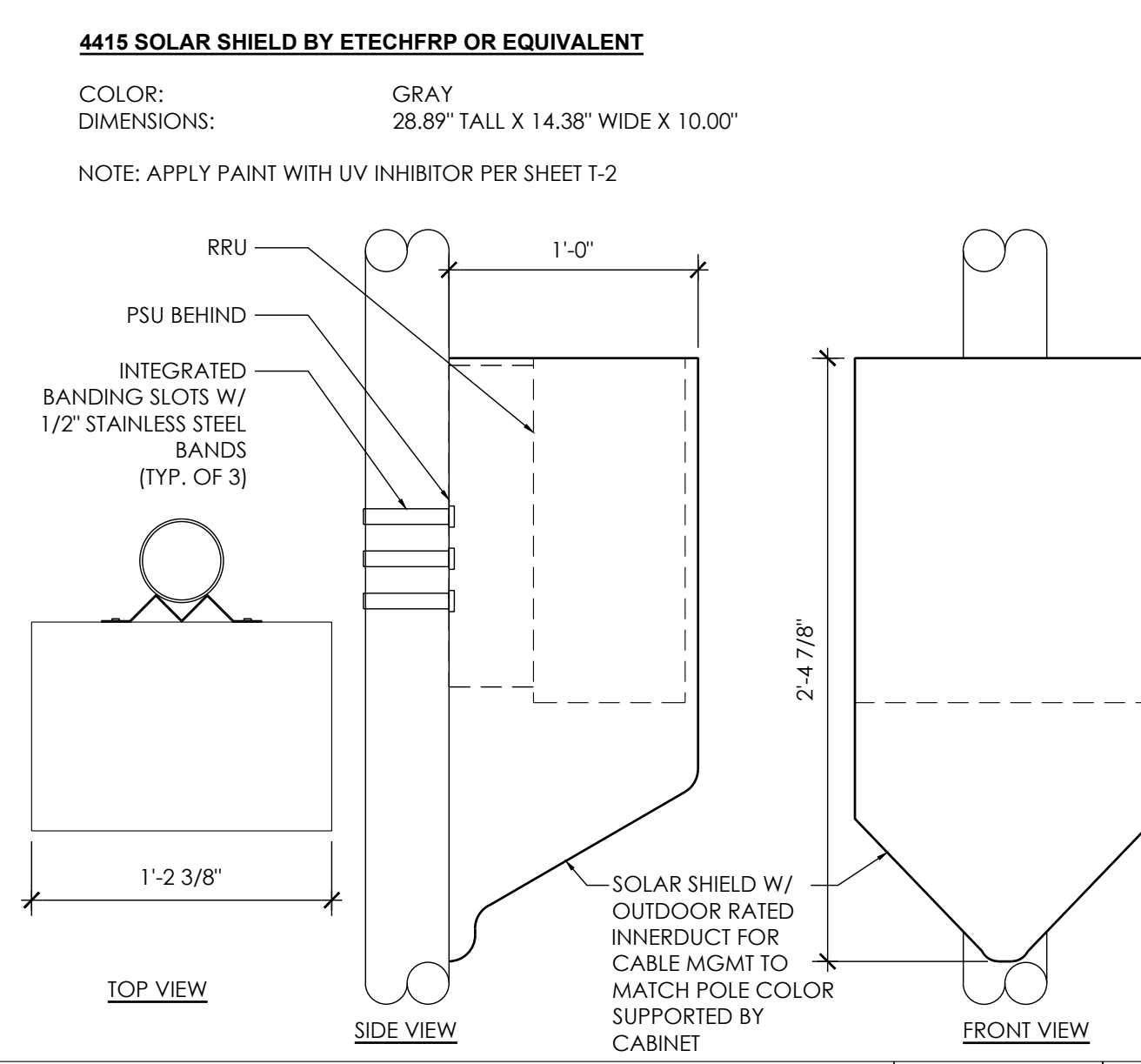
Normal Shut-Down Protocols:

1. Call AT&T NOC 800-638-2822 24HRS prior to schedule a power shut-off provide the following information:
  - 1.1. Site number identified no site numbering sticker
  - 1.2. Your name and reason for power shut-off
  - 1.3. Provide duration of outage
2. Pull disconnect hand to "OFF" position
3. Power shut-off verification with approved PG&E standards
4. Notify AT&T NOC upon completion of work
5. Restore power by placing power disconnect handle in the "ON" position
6. Reinstall lock on power handle

Emergency Shut-Down Protocols:

1. Call AT&T NOC 800-638-2822 prior to power shut off and provide the following information:
  - 1.1. Site number identified no site numbering sticker
  - 1.2. Your name and reason for power shut-off
  - 1.3. Provide duration of outage
2. Pull disconnect hand to "OFF" position
3. Power shut-off verification with approved PG&E standards
4. Notify AT&T NOC upon completion of work
5. Restore power by placing power disconnect handle in the "ON" position
6. Reinstall lock on power handle

SHUT-DOWN PROTOCOL ON 3' X 4' PLAQUE

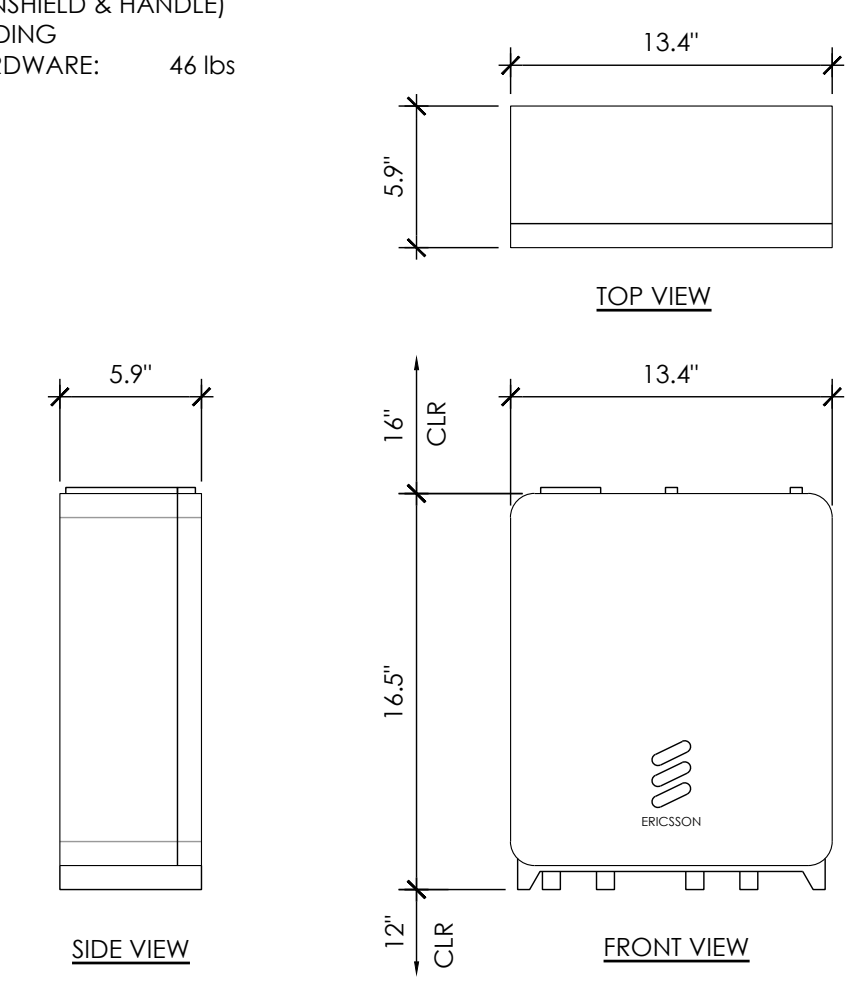


**ERICSSON RRUS 4415 B25 (OR APPROVED EQUIVALENT)**

COLOR: GRAY

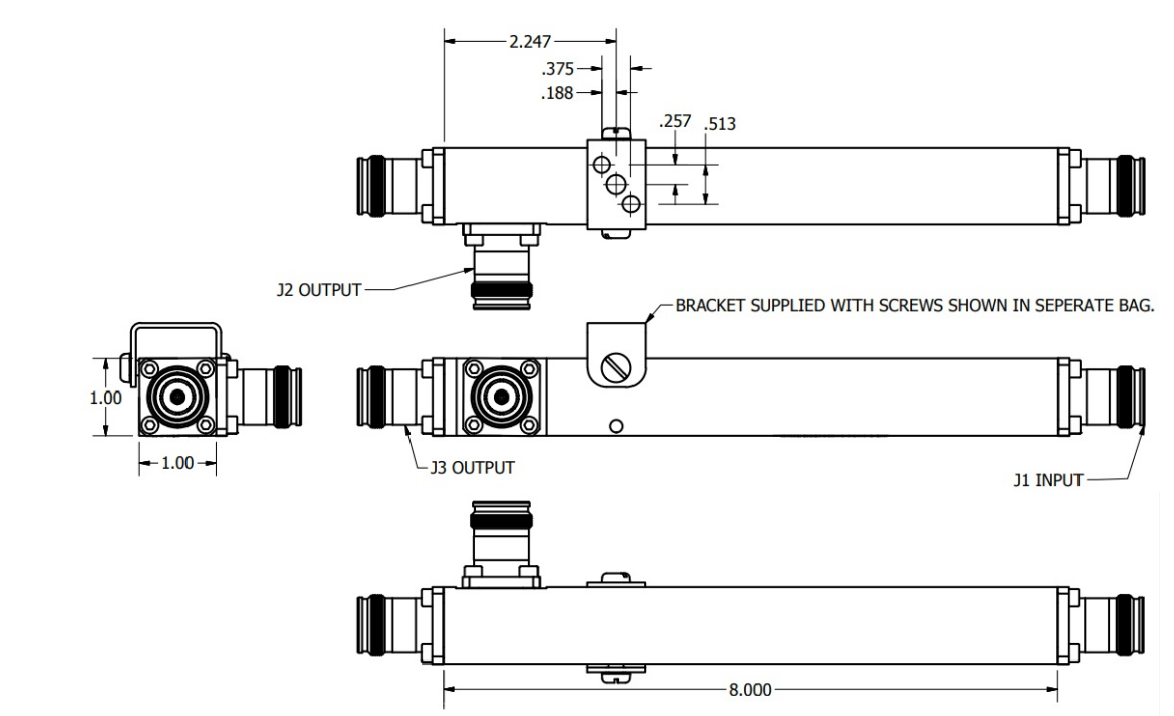
DIMENSIONS: 16.5" TALL x 13.4" WIDE x 5.9" DEEP (INCLUDING SUNSHIELD & HANDLE)

WEIGHT, EXCLUDING MOUNTING HARDWARE: 46 lbs



**Wide-Band High Power Splitters**

Part Number	PET-HPS2W-243
	2-Way
Weight	1.5 lbs

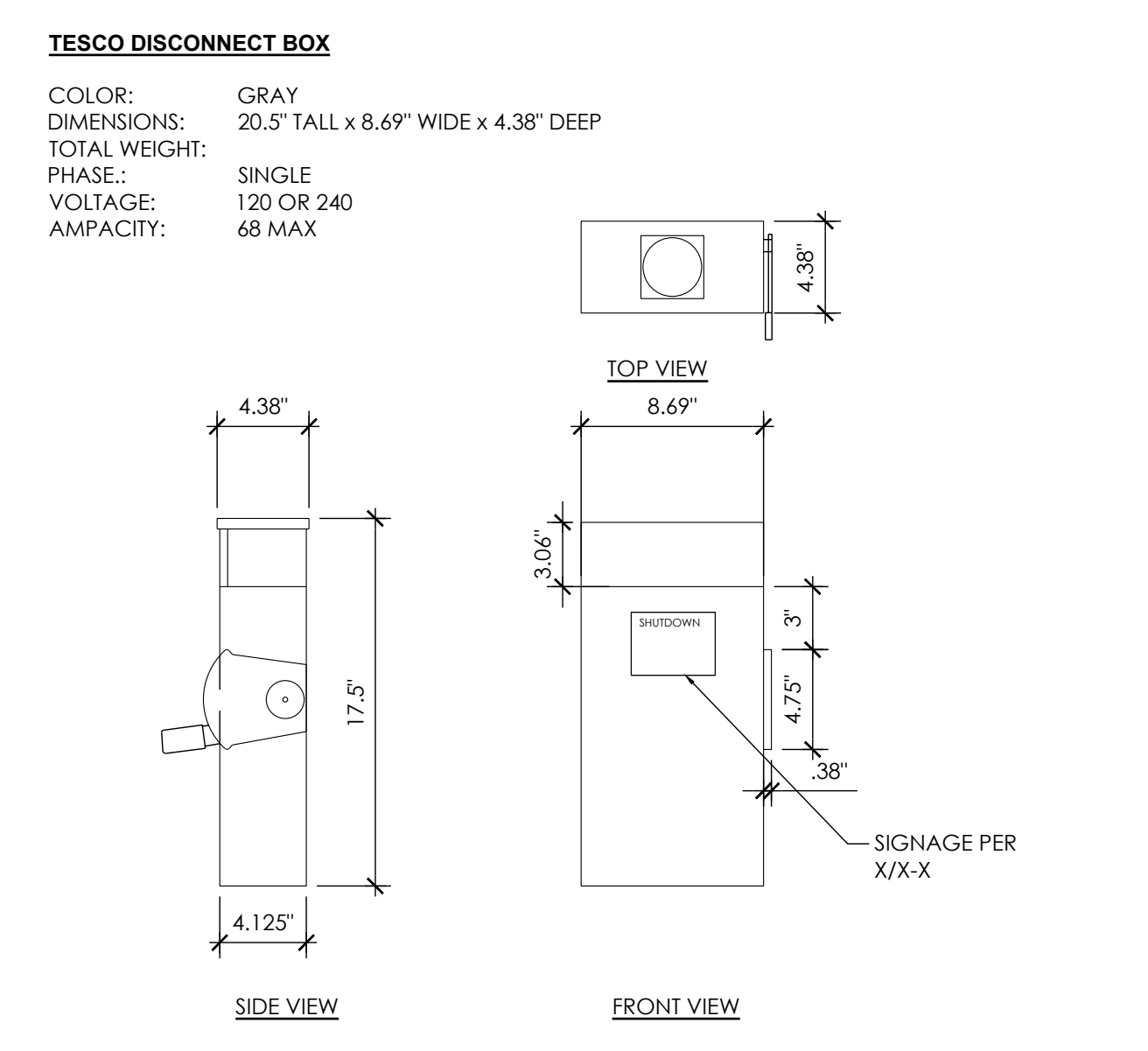
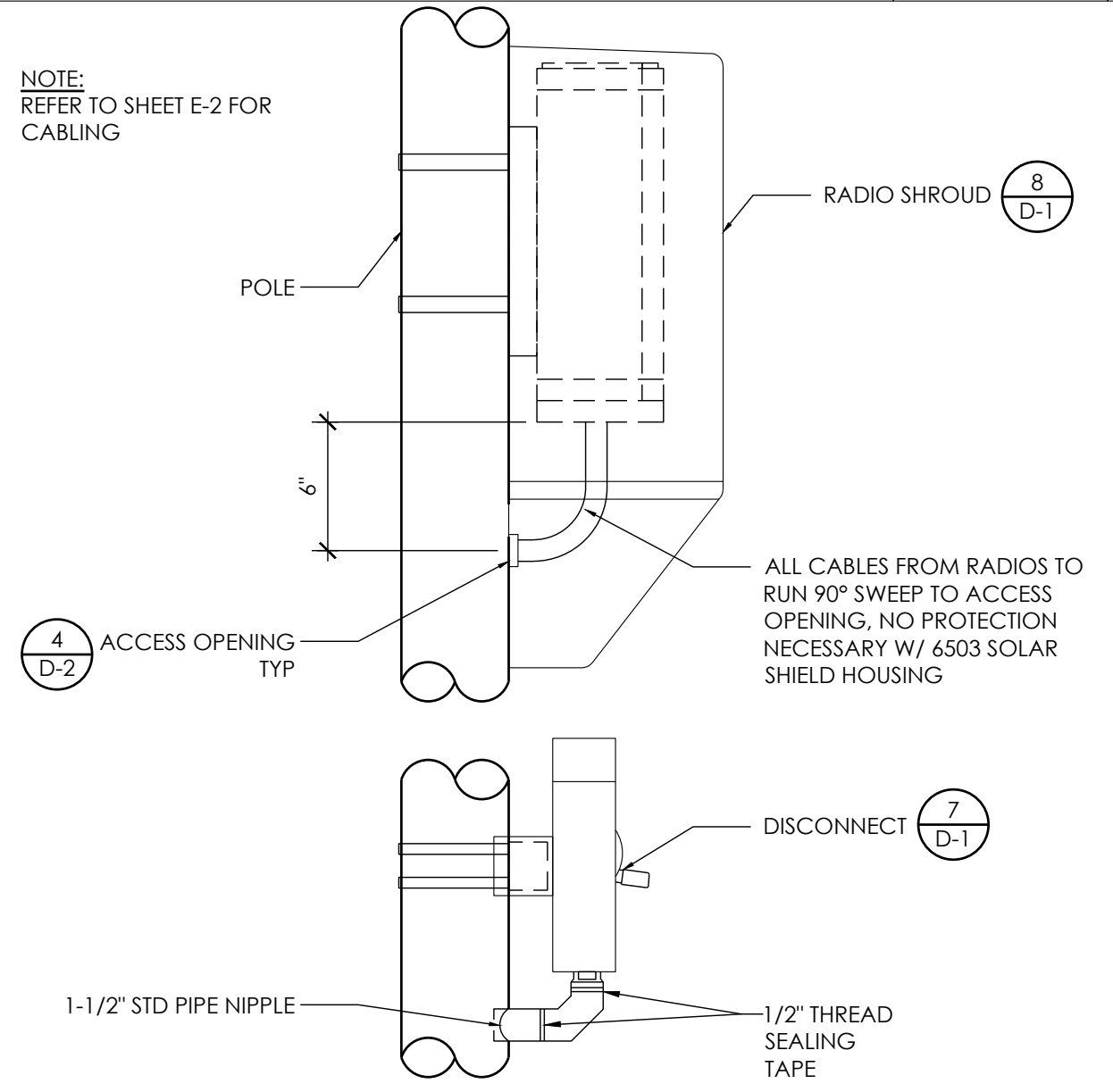


SHUT-DOWN SIGN SCALE NTS 11

RADIO SHROUD SCALE NTS 8

RRUS 4415 SCALE NTS 5

SPLITTER SCALE NTS 2

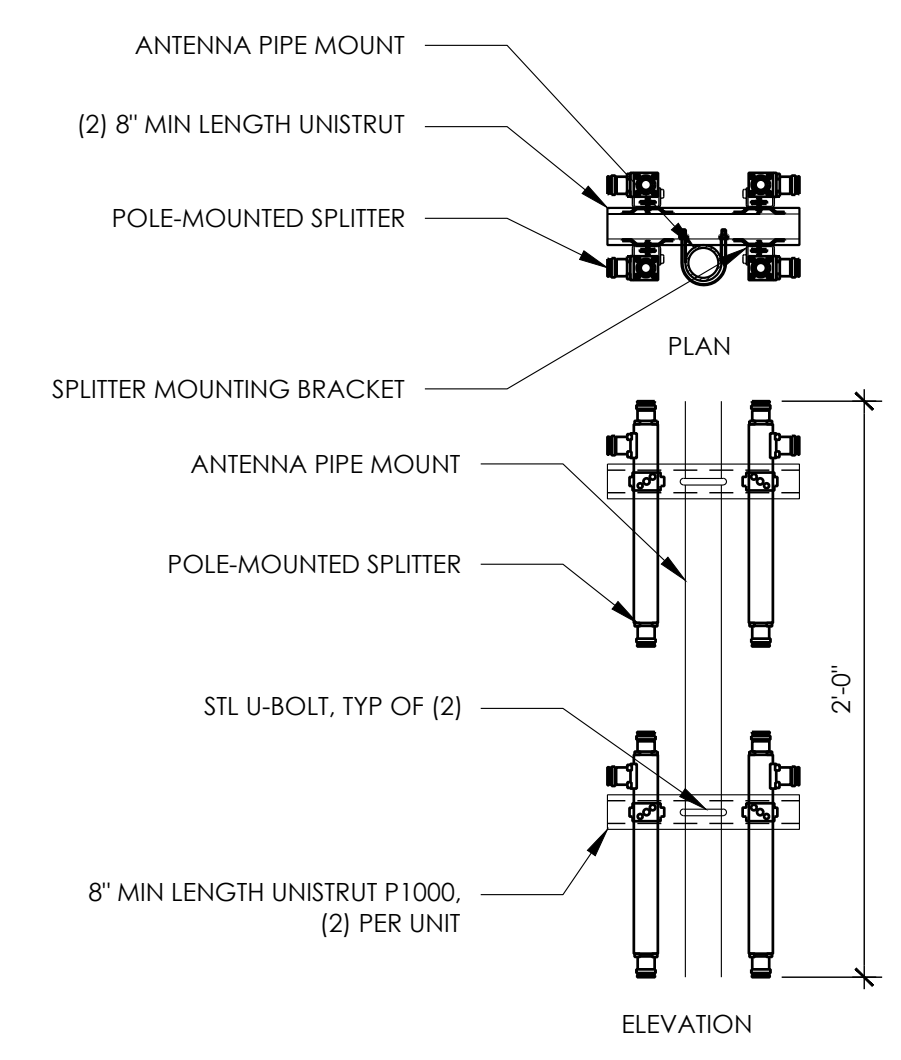
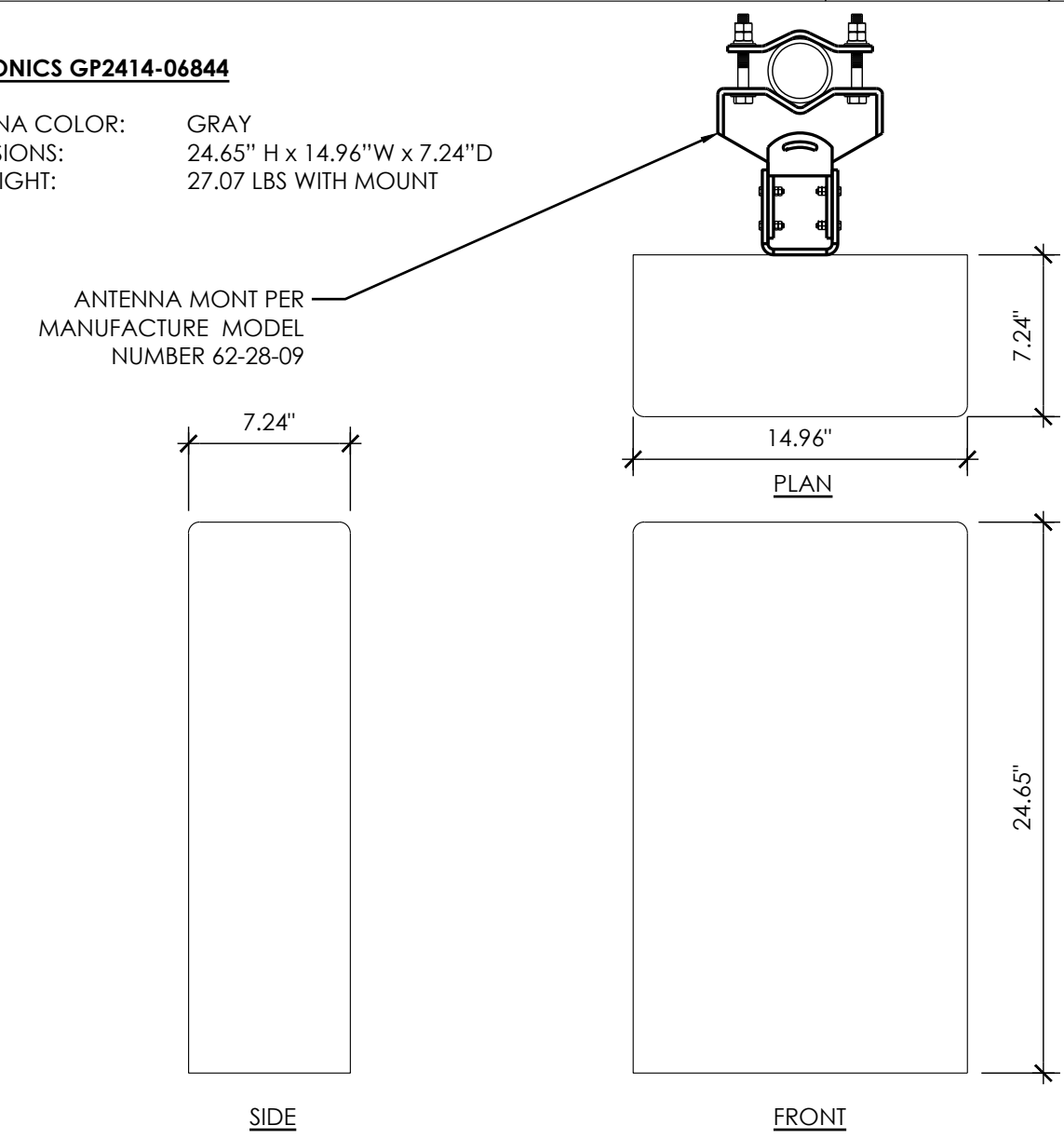


**GALTRONICS GP2414-06844**

ANTENNA COLOR: GRAY

DIMENSIONS: 24.65" H x 14.96" W x 7.24" D

NET WEIGHT: 27.07 LBS WITH MOUNT



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DETAILS

D-1

CABLE CONDUIT SCALE NTS 10

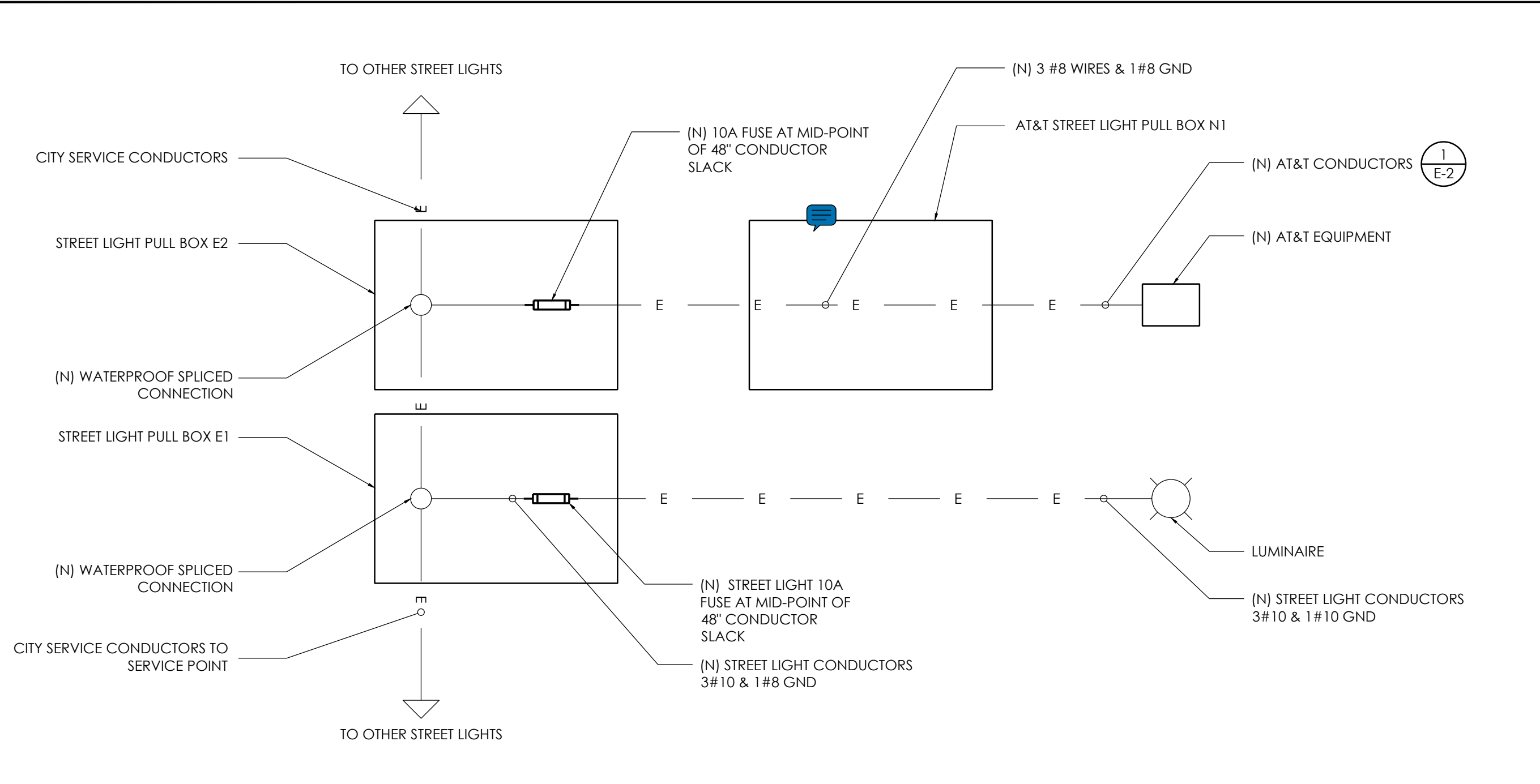
DISCONNECT SWITCH SCALE NTS 7

ANTENNA SCALE NTS 4

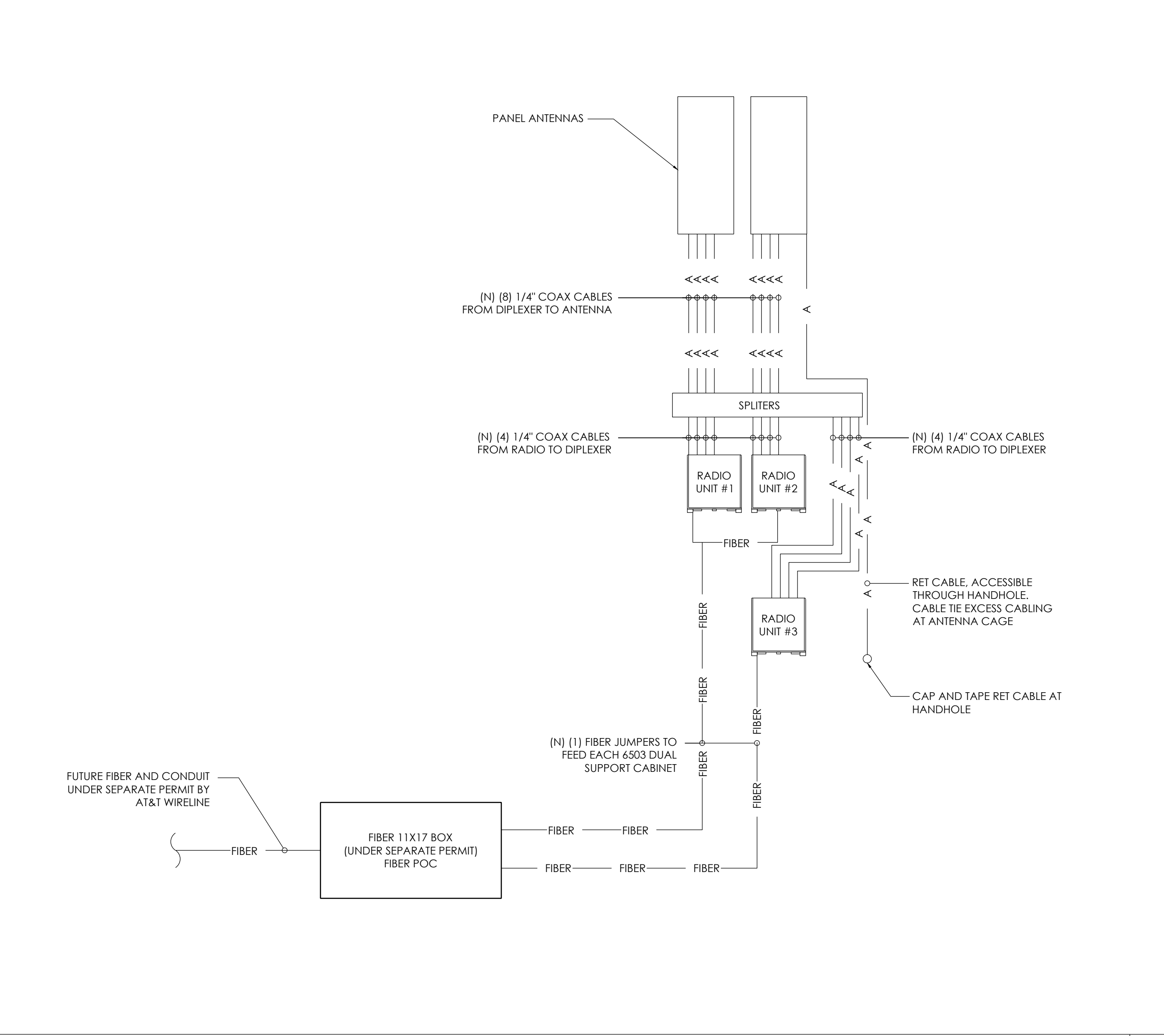
SPLITTER MOUNT SCALE NTS 1







**STREET LIGHT SINGLE LINE DIAGRAM** 3

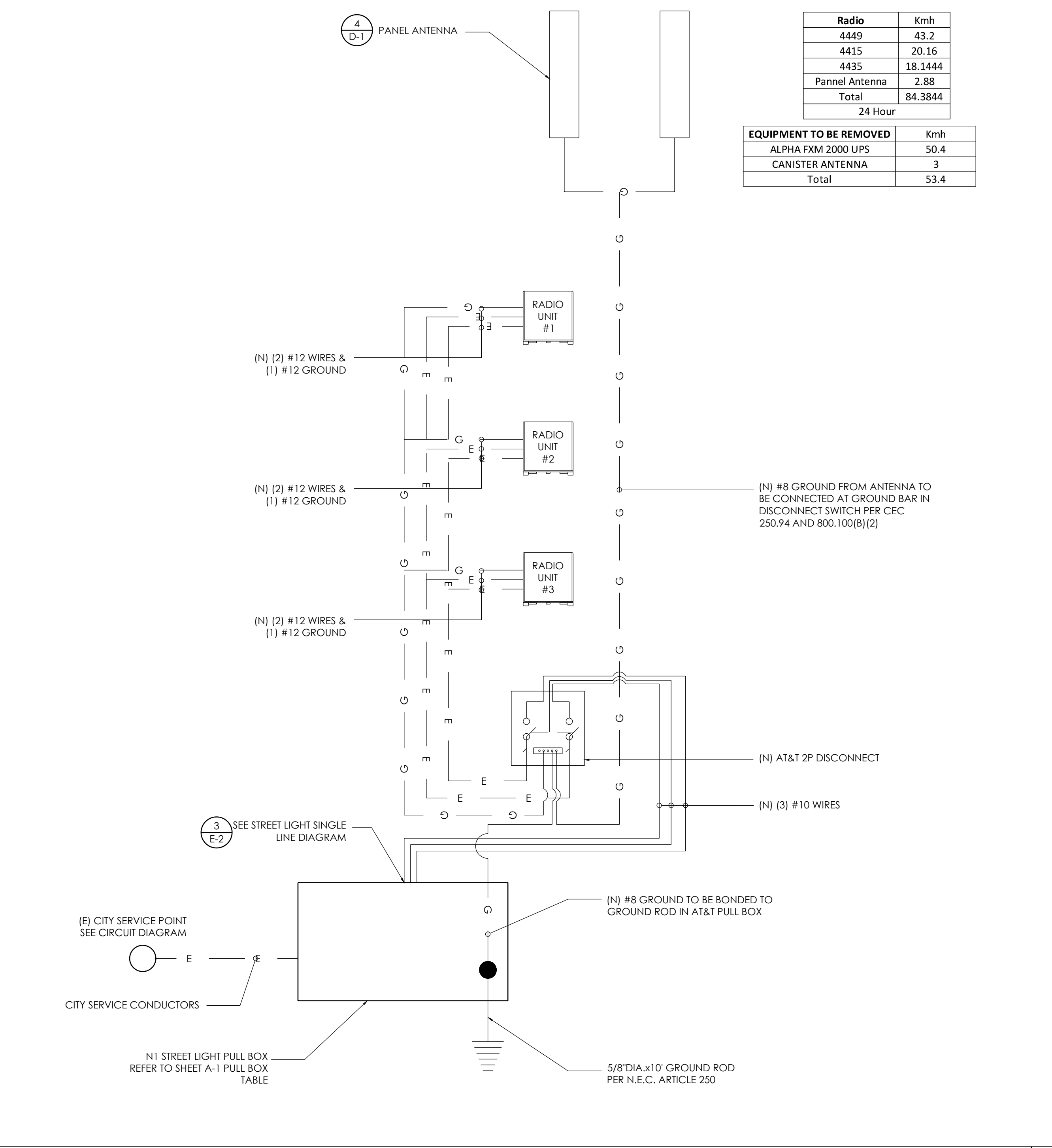


**FIBER/COAX DIAGRAM** 2

- NOTES:**
- GROUND ROD:** UL LISTED COPPER CLAD STEEL, MINIMUM 5/8" DIAMETER x 10'-0" LONG. ALL GROUND RODS MAY BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND CONDUCTOR.
  - CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH STRANDED GREEN INSULATED COPPER CONDUCTORS SIZED AS SHOWN. BOND TO GROUND ROD AS SHOWN IN THE GROUNDING SCHEMATIC.
  - EXTERIOR UNIT BONDS:** METALLIC OBJECTS SHALL BE BONDED TO THE EXTERIOR GROUND ROD.
  - PROVIDE ALL ELECTRICAL WORK & MATERIALS AS SHOWN ON THE DWGS, AS CALLED FOR HEREIN, & AS IS NECESSARY TO FURNISH A COMPLETE INSTALLATION.
  - OUTDOOR EQUIPMENT SHALL BE RATED NEMA 3R AND/OR UL LISTED FOR WET ENVIRONMENT.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING THE GROUNDING SYSTEM AND ENSURING A 5 OHM OR LESS GROUNDING PATH. ADDITIONAL GROUND RODS AND/OR CHEMICAL ROD SYSTEM SHALL BE USED TO ACHIEVE THIS REQUIREMENT IF THE GIVEN DESIGN CANNOT BE MADE TO ACHIEVE THIS REQUIREMENT.

**LEGEND**

FO	FIBER
E	ELECTRICAL
LINE	LINE
L1	LINE 1
LOAD	LINE 1
L2 OR N	L2 OR NEUTRAL
G	GROUND
A	COAX
[Symbol]	FUSE
[Symbol]	GROUND ROD



Radio	Kmh
4449	43.2
4415	20.16
4435	18.1444
Pannel Antenna	2.88
Total	84.3844
24 Hour	

EQUIPMENT TO BE REMOVED	Kmh
ALPHA FXM 2000 UPS	50.4
CANISTER ANTENNA	3
Total	53.4

AT&T  
5005 EXECUTIVE PARKWAY  
SAN RAMON, CA  
94583

MODUS, LLC  
240 STOCKTON ST., 3RD FLOOR  
SAN FRANCISCO, CA  
94108

DRAWN BY: JLW  
CHECKED BY: TDL  
APPROVED BY: CW

REV	DATE	DESCRIPTION
	08/16/24	90% CD
0	09/12/24	100% CD
1	07/07/25	100% CD PLAN CHECK
2	08/28/25	100% CD PLAN CHECK
3	09/30/25	100% CD PLAN CHECK
4	10/09/25	100% CD PLAN CHECK

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1661 PAGE MILL RD  
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ELECTRICAL SINGLE-LINE AND GROUNDING DIAGRAM

E-2



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ELECTRICAL DETAILS

E-3

NOT USED

12

NOT USED

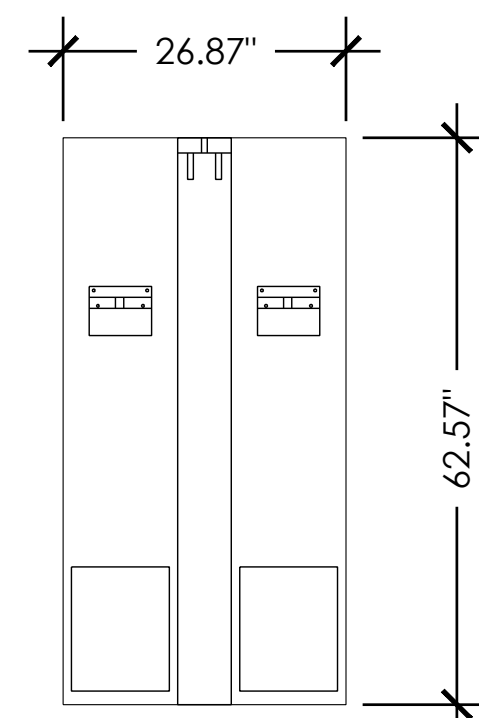
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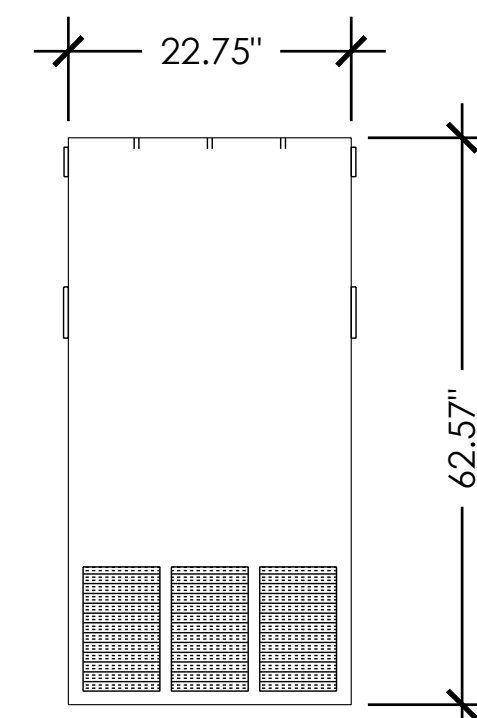
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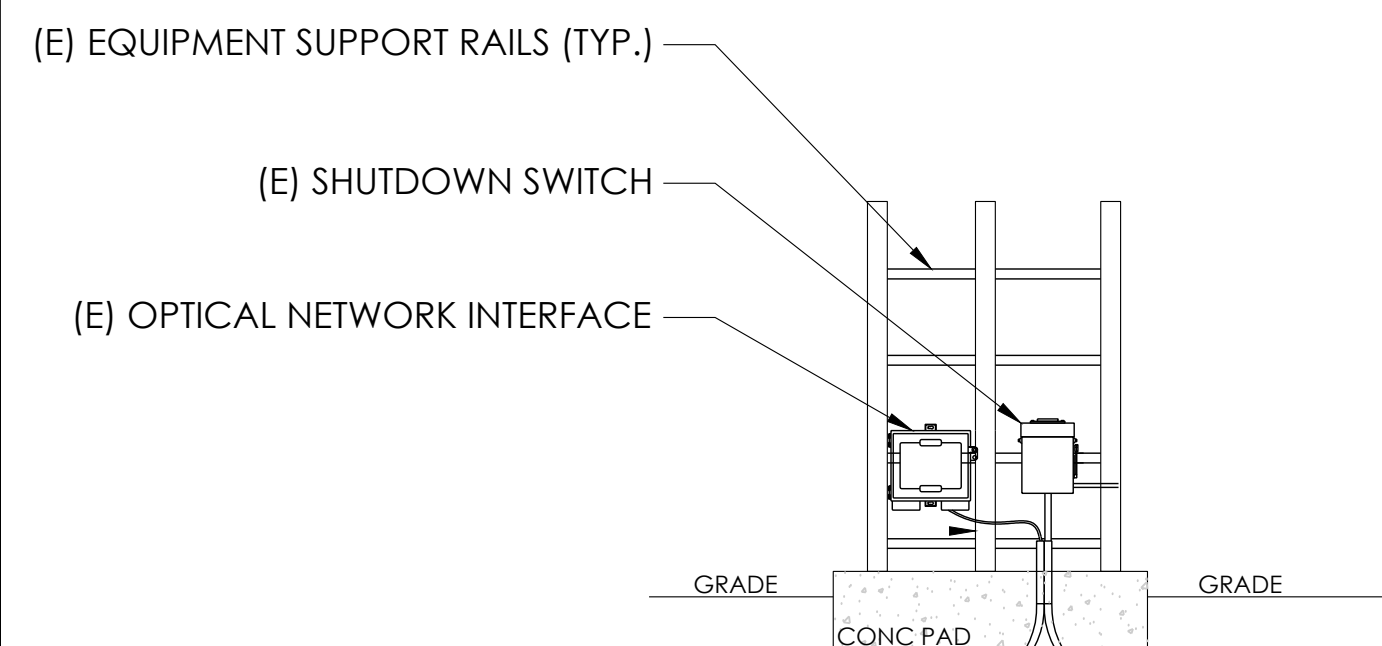
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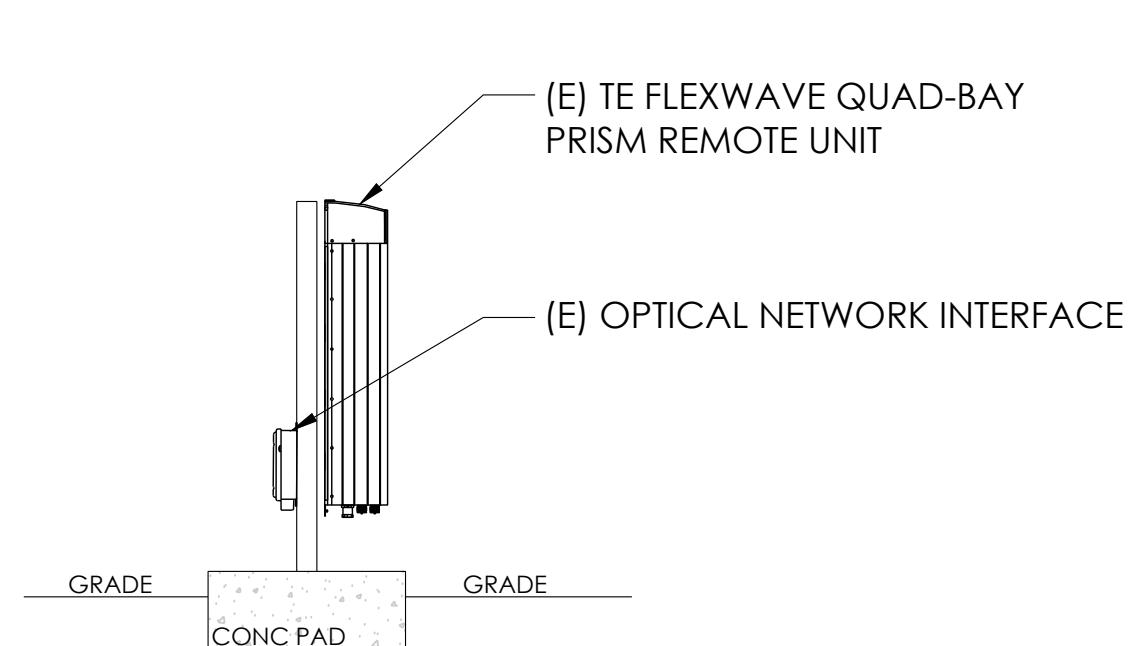
PRISM GROUND MOUNDED SHROUD  
FRONT VIEW



PRISM GROUND MOUNDED SHROUD  
SIDEVIEW



PRISM GROUND MOUNDED SHROUD  
FRONT VIEW  
(CABINET SHELL OFF)



PRISM GROUND MOUNDED SHROUD  
SIDE VIEW  
(CABINET SHELL OFF)

ELECTRICAL LOAD CALCS

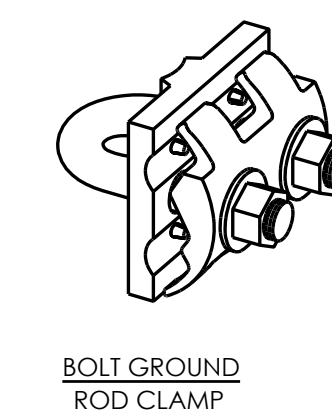
5

NOT USED

2

Conduit Fill Calculation				
Conduit Inside Diameter (I.D.):	1.5			
<b>Conduit Fill Calculator</b>				
	Size	Wire Diameter	Quantity	Fill Percentage
Fiber**:	#12	0.13	4	3.00%
ATT Power:	#10	0.164	2	2.39%
ATT Ground:	#8	0.216	1	2.07%
Streetlight Power**:	#8	0.216	2	4.15%
Streetlight Ground:	#8	0.216	2	4.15%
<b>Total:</b>				<b>15.76%</b>

**Total calculated fill is less than 40%, therefore OK**  
\*\*WORST CASE SIZE OR QUANTITY SHOWN CONSERVATIVELY. SEE PLANS FOR ACTUAL SIZE / QUANTITY REQUIRED



2 HOLE LUG



GROUND CLAMP



SPLIT-BOLT CONNECTORS

EXISTING CABINET AND EQUIPMENT TO BE REMOVED

7

CONDUIT FILL CALCULATIONS

4

MECHANICAL CONNECTION

1



240 Stockton Street, 3rd Floor  
San Francisco, CA 94108  
www.modusllc.com

July 24, 2024

Carrier: ATT WIRELESS  
Client Site Number: CRAN\_RSFR\_PALO2\_054

**PROJECT DESCRIPTION:**  
The carrier proposes the following scope of work:

- Add new pole and foundation
- Add (2) 5G antenna(s) to the pole
- Add radio(s) to the pole
- Add entry ports as required in the pole

**ANALYSIS:**  
The purpose of this analysis is to determine if the pole and foundation is structurally adequate to support the proposed loading. The pole has been analyzed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (6th Edition 2013).

**RESULTS:**  
Based on our review of the structure with the proposed loading, we have determined the following:

Pole OK \*  
Foundation OK \*

\* See Recommendations Section



240 Stockton Street, 3rd Floor  
San Francisco, CA 94108  
www.modusllc.com

ASSUMPTIONS:

- The pole is plumb, undamaged, and not deteriorated in any way that would compromise 100% of design capacity
- Cohesive Soil Shear Strength of 1500 psf
- Pole material is Aluminum with yield strength Fy = 35 ksi

REFERENCES:

- Construction Drawings prepared by Modus LLC
- Photos and Notes from Site Visit

RECOMMENDATIONS:

The proposed pole and proposed foundation can safely support the proposed scope of work.

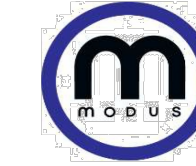
All assumptions listed above to be verified prior to the installation of the equipment as listed in the project description.

Sincerely,

Chris Wener, P.E.



07.24.24



CRAN\_RSFR\_PALO2\_054

29-07-2024  
VM

Design Criteria

Design Standard:	2013 AASHTO LTS-6
Wind Speed:	85 mph AASHTO LTS-6 section 3.8.2
Wind Exposure:	C ASCE7-16 Section 26.7
Cohesive Soil Shear Strength:	1500 psf CalTrans 2017 Standard Plans User Guide

Wind Load on Highway Signs and Light Standards

Pole Top Antenna Shroud  
Example Calc

AASHTO LTS-6 Section 3	
Wind Importance Factor I <sub>w</sub> :	1.00 AASHTO LTS-6 tables 3.8.3-1 and 3.8.3-2 based on a Design Life of 50 years

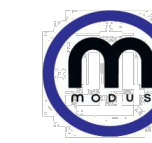
Basic Wind Speed V <sub>3-sec</sub> :	85 mph AASHTO LTS-6 section 3.8.2
Exposure Category:	C ASCE7-16 Section 26.7

α: 9.5 z<sub>g</sub>: 900 ft K<sub>zms</sub>: 0.87

AASHTO LTS-6 section C3.8.4

Centroid Highest Appurtenance z AGI: 28.00 ft

Exposure Coefficient K <sub>z</sub> = 2.01(z/z <sub>g</sub> ) <sup>2.6</sup> :	0.97	AASHTO LTS-6 equation C3.8.4-1
Gust Factor:	1.14	AASHTO LTS-6 section 3.8.5
Design Wind Pressure P <sub>w</sub> = .00256K <sub>z</sub> G V <sup>2</sup> /I <sub>w</sub> :	20.41 psf	AASHTO LTS-6 equation 3.8.3-1
Wind Drag Coefficient C <sub>d</sub> :	0.45	AASHTO LTS-6 table 3.8.6-1
Projected Area A:	7.00 ft <sup>2</sup>	
Effective Projected Area EPA = C <sub>d</sub> A:	3.15 ft <sup>2</sup>	
W = P <sub>w</sub> EPA:	64 #s	
	ASD	

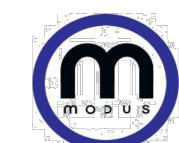


CRAN\_RSFR\_PALO2\_054

29-07-2024  
VM

Service Light Pole Loading (Transverse Wind Load)  
Includes Pole Masking as Applicable

Item	Existing or Proposed	Centroid AGL ft	Projected Area sq ft	Shape	Drag Coefficient C <sub>d</sub>	EPA + sq ft	EPA - sq ft	W ASD #s	M Wind ASD ft-#s
Design Wind Pressure P <sub>w</sub> = 20.41 psf									
Pole (Round)	P	13.33	16.33	R	0.81	13.17	0.00	269	3586
Luminaire Arm	P	28.69	0.59	R	1.10	0.64	0.00	13	377
Luminaire	P	30.00	N/A	R	N/A	0.30	0.00	6	184
Antenna	P	28.00	21.00	R	0.45	9.45	0.00	193	5401
SOLAR SHIELD W/RRU 4435	P	17.75	2.88	R	1.19	3.43	-1.09	48	849
SOLAR SHIELD W/RRU 4449	P	14.84	2.88	R	1.19	3.43	-1.12	47	700
SOLAR SHIELD W/RRU 4415	P	11.84	2.88	R	1.19	3.43	-1.16	46	550
Disconnect	P	8.00	0.42	R	1.17	0.49	-1.20	-15	-117
Base Transverse Wind Reactions Total (ASD):									Shear Moment 608 11529
AASHTO LTS-6 3.93 Transverse x .2 (Load Case 1):									122 2306



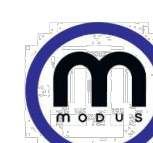
CRAN\_RSFR\_PALO2\_054

29-07-2024  
VM

Service Light Pole Loading (Normal Wind Load)

Item	Existing or Proposed	Centroid AGL ft	Projected Area sq ft	Shape	Drag Coefficient C <sub>d</sub>	EPA sq ft	W ASD #s	M Wind ASD ft-#s	Centroid Horizontal ft	Torque ASD ft-#s
Design Wind Pressure P <sub>w</sub> = 20.41 psf										
Pole (Round)	P	13.33	16.33	R	0.81	13.17	269	3586	0	0
Luminaire Arm	P	28.69	1.96	R	1.10	2.16	44	1265	3.79	167
Luminaire	P	30.00	N/A	R	N/A	0.60	12	367	9.0	110
Antenna	P	28.00	21.00	R	0.45	9.45	193	5401	0	0
SOLAR SHIELD W/RRU 4435	P	17.75	2.88	S	1.19	3.43	70	1244	0	0
SOLAR SHIELD W/RRU 4449	P	14.84	2.88	S	1.19	3.43	70	1040	0	0
SOLAR SHIELD W/RRU 4415	P	11.84	2.88	S	1.19	3.43	70	829	0	0
Disconnect	P	8.00	0.42	S	1.17	0.49	10	79	0	0
Base Normal Wind Reactions Total (ASD):										Shear Moment 738 13812 Torque 278

Notes: This calculation accounts for pole, luminaire arm(s), luminaire(s), and Carrier proposed equipment only  
See next sheet for additional calculation for site specific signage, banners, etc, if applicable



CRAN\_RSFR\_PALO2\_054

29-07-2024  
VM

Service Light Pole Sign Moment & Pole Masking (Normal Wind Load)

Item	Existing or Proposed	Centroid AGL ft	Projected Area sq ft	Shape	Drag Coefficient C <sub>d</sub>	EPA + sq ft	EPA - sq ft	W ASD #s	M W ASD ft-#s
Design Wind Pressure P <sub>w</sub> = 20.41 psf									
Sign 1	E	24.00	0.49	F	1.13	0.19	0.00	4	95
Base Normal Signage and Masking Wind Reactions Total (ASD):								Shear 4	Moment 95

Notes: Pole masking accounts for pole surface area masked by Signs or Equipment



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240 STOCKTON ST., 3RD FLOOR  
SAN FRANCISCO, CA  
94108

DRAWN BY: JLV

CHECKED BY: TDL

APPROVED BY: CW

REV	DATE	DESCRIPTION
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CRAN\_RSFR\_PALO2\_054

1661 PAGE MILL RD  
PALO ALTO, CA 94305

STRUCTURAL ANALYSIS

SA-1



**Radio Frequency Emissions Compliance Report For AT&T Mobility**  
 Site Name: CRAN\_RSFR\_PALO2\_054 Site Structure Type: Utility Pole  
 Address: (NEAR) 1661 PAGE MILL RD Latitude: 37.410145  
 PALO ALTO, CA 95304 Longitude: -122.152965  
 Report Date: September 09, 2024 Project: Modification

**Compliance Statement**  
 Based on information provided by AT&T Mobility and predictive modeling, the CRAN\_RSFR\_PALO2\_054 installation proposed by AT&T Mobility will be compliant with Radiofrequency Radiation Exposure Limits of 47 C.F.R. §§ 1.1307(b)(3) and 1.1310. RF alerting signage and restricting access to the antenna to authorized personnel that have completed RF safety training is required for Occupational environment compliance. The proposed operation will not expose members of the General Public to hazardous levels of RF energy at ground level or in adjacent buildings.

**Certification**  
 I, Tim Alexander, am the reviewer and approver of this report and am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation, specifically in accordance with FCC's OET Bulletin 65. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.



**General Summary**  
 The compliance framework is derived from the Federal Communications Commission (FCC) Rules and Regulations for preventing human exposure in excess of the applicable Maximum Permissible Exposure ("MPE") limits. At any location at this site, the power density resulting from each transmitter may be expressed as a percentage of the frequency-specific limits and added to determine if 100% of the exposure limit has been exceeded. The FCC Rules define two tiers of permissible exposure differentiated by the situation in which the exposure takes place and/or the status of the individuals who are subject to exposure. General Population / Uncontrolled exposure limits apply to those situations in which persons may not be aware of the presence of electromagnetic energy, where exposure is not employment-related, or where persons cannot exercise control over their exposure. Occupational / Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment, have been made fully aware of the potential for exposure, and can exercise control over their exposure. Based on the criteria for these classifications, the FCC General Population limit is considered to be a level that is safe for continuous exposure time. The FCC General Population limit is 5 times more restrictive than the Occupational limits.

Table 1: FCC Limits

Frequency (MHz)	Limits for General Population/Uncontrolled Exposure		Limits for Occupational/Controlled Exposure	
	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
30-300	0.2	30	1	6
300-1500	f/1500	30	f/300	6
1500-100,000	1.0	30	5.0	6

In situations where the predicted MPE exceeds the General Population threshold in an accessible area as a result of emissions from multiple transmitters, FCC licensees that contribute greater than 5% of the aggregate MPE share responsibility for mitigation.

Based on the computational guidelines set forth in FCC OET Bulletin 65, Waterford Consultants, LLC has developed software to predict the overall Maximum Permissible Exposure possible at any location given the spatial orientation and operating parameters of multiple RF sources. The power density in the Far Field of an RF source is specified by OET-65 Equation 5 as follows:

$$S = \frac{EIRP}{4\pi R^2} \text{ (mW/cm}^2\text{)}$$

Where EIRP is the Effective Radiated Power relative to an isotropic antenna and R is the distance between the antenna and point of study. Additionally, consideration is given to the manufacturers' horizontal and vertical antenna patterns as well as radiation reflection. At any location, the predicted power density in the Far Field is the spatial average of points within a 0 to 6-foot vertical profile that a person would occupy. Near field power density is based on OET-65 Equation 20 stated as

$$S = \left( \frac{180}{\theta_{BW}} \right) \frac{100 \cdot P_{in}}{\pi \cdot R \cdot h} \text{ (mW/cm}^2\text{)}$$

Where P<sub>in</sub> is the power input to the antenna, θ<sub>BW</sub> is the horizontal pattern beamwidth and h is the aperture length.

Some antennas employ beamforming technology where RF energy allocated to each customer device is dynamically directed toward their location. In the analysis presented herein, predicted exposure levels are based on all beams at full utilization (i.e. full power) simultaneously focused in any direction. As this condition is unlikely to occur, the actual power density levels at ground and at adjacent structures are expected to be less than the levels reported below. These theoretical results represent maximum-case predictions as all RF emitters are assumed to be operating at 100% duty cycle.

For any area in excess of 100% General Population MPE, access controls with appropriate RF alerting signage must be put in place and maintained to restrict access to authorized personnel. Signage must be posted to be visible upon approach from any direction to provide notification of potential conditions within these areas. Subject to other site security requirements, occupational personnel should be trained in RF safety and equipped with personal protective equipment (e.g. RF personal monitor) designed for safe work in the vicinity of RF emitters. Controls such as physical barriers to entry imposed by locked doors, hatches and ladders or other access control mechanisms may be supplemented by alarms that alert the individual and notify site management of a breach in access control. Waterford Consultants, LLC recommends that any work activity in these designated areas or in front of any transmitting antennas be coordinated with all wireless tenants.

**Analysis**  
 AT&T Mobility proposes the following installation at this location:

- INSTALL (2) NEW 2' PANEL ANTENNA ON TOP OF LIGHT POLE
- INSTALL (1) NEW RADIO 4415, (1) RADIO 4435 AND (1) RADIO 4449 ON LIGHT POLE

The antennas will be mounted on a 30'-2" Utility Pole with centerlines 30'-0" above ground level. Proposed antenna operating parameters are listed in Appendix A. Other appurtenances such as GPS antennas, RRUs and hybrid cable below the antennas are not sources of RF emissions. No other antennas are known to be operating in the vicinity of this site.

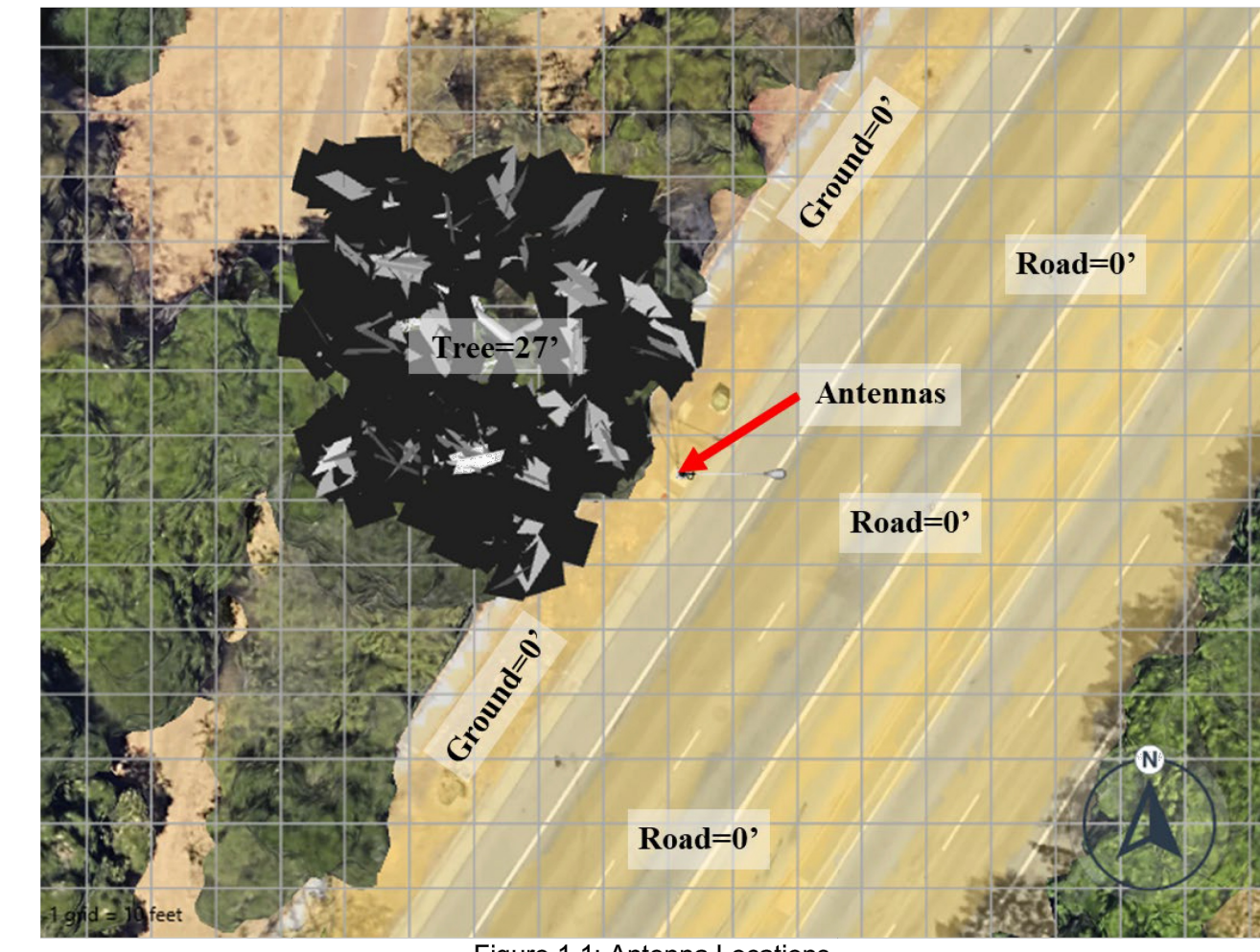
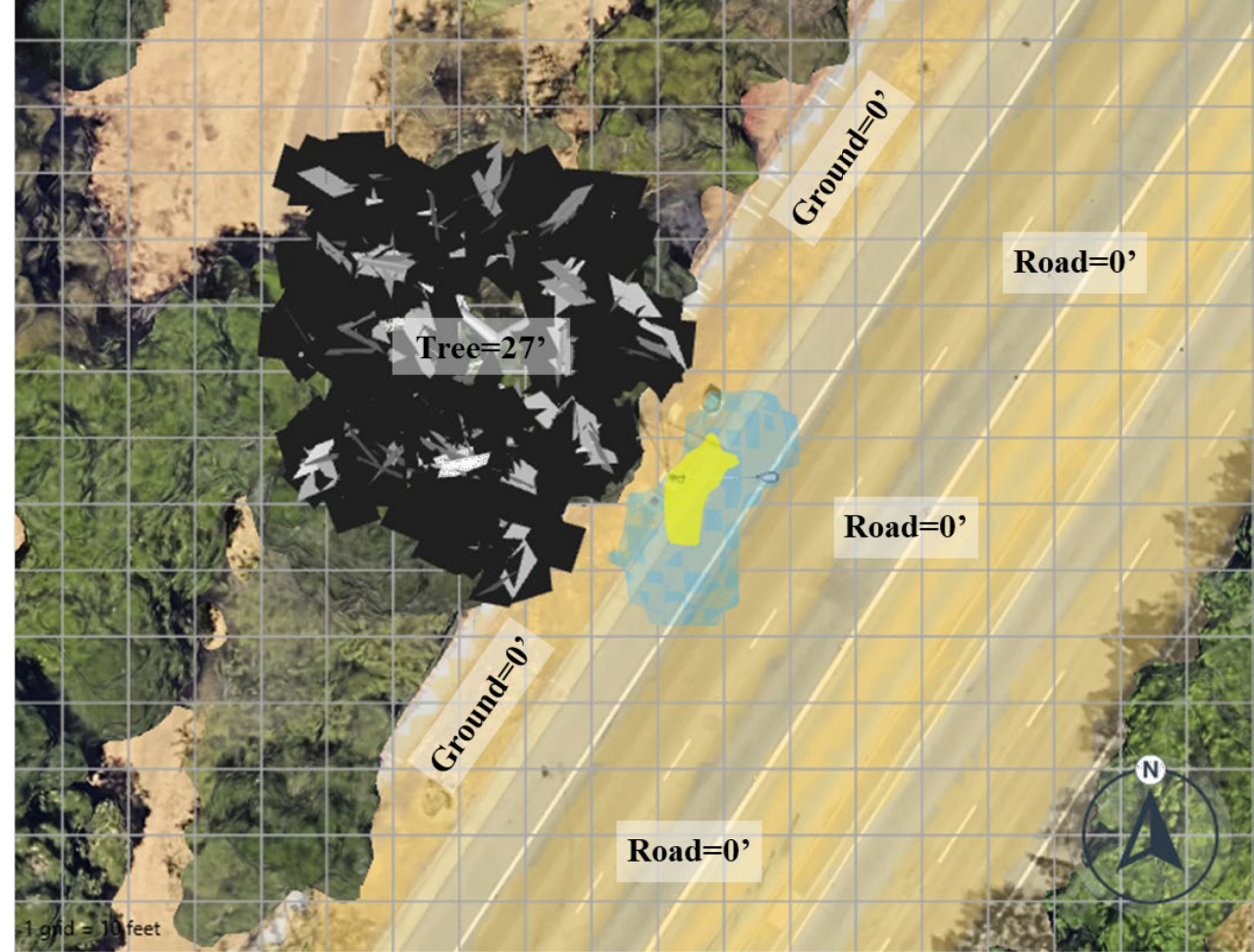


Figure 1.1: Antenna Locations

Power density decreases significantly with distance from any antenna. The panel-type antennas to be employed at this site are highly directional by design and the orientation in azimuth and mounting elevation, as documented, serves to reduce the potential to exceed MPE limits at any location other than directly in front of the antennas. For accessible areas at ground level, the maximum predicted power density level resulting from all AT&T Mobility operations is 1.46% of the FCC General Population limits. Incident at adjacent Structure

depicted in Figures, the maximum predicted power density level resulting from all AT&T Mobility operations is 0% of the FCC General Population limits (Figure 1.2). The proposed operation will not expose members of the General Public to hazardous levels of RF energy at ground level or in adjacent buildings

On the pole in front of the antennas, predicted MPE levels will exceed the FCC General Population limits within 37 feet in front of the antennas and within 7 feet below the antennas. The maximum predicted power density level resulting from all AT&T Mobility operations directly in front of the antennas is 5212.86% of the FCC General Population limits (1042.572% of the FCC Occupational limits). Waterford Consultants, LLC recommends posting RF alerting signage (ACP Caution) on the pole visible upon approach that informs personnel accessing this area of basic precautions to be followed when working around antennas. This recommendation is depicted in Figure 2. Any work activity in front of transmitting antennas should be coordinated with AT&T Mobility. The following plots show the cumulative spatial average predicted power density levels in the reference plane indicated as a percentage of the General Public Limits. Please note that 100% of the General Public Limits corresponds to 20% of the Occupational Limits.



Legend

Study Zone	Elev. (ft)	Type	Exposure Profile	Max MPE	Att	Carriers
Antenna Level	10.0 - 50.0	3D Area	3D Sula9 GP 2.5 res	5212.86%	0.00	AT&T
100% - 500%						
500% - 1000%						
1000% - 5000%						
5000% +						
Exposure Profile Name	Model	Exposure Area	Standard	Resolution	RCF	
3D Sula9 GP 2.5 res	Sula 9	Spatial Average (6 ft)	FCC General Population	2.5 ft3	1.0	

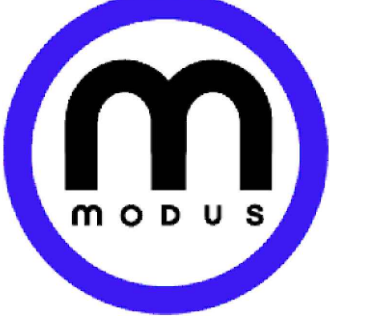
AT&T

Grid Size: 10.00 feet Floor = Elevation +6' | Mid-Level = Elevation +/- 3'

Figure 1.1: Antenna Level



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 5005 EXECUTIVE PARKWAY  
 SAN RAMON, CA  
 94583



MODUS, LLC  
 240 STOCKTON ST., 3RD FLOOR  
 SAN FRANCISCO, CA  
 94108

DRAWN BY: JLV  
 CHECKED BY: TDL  
 APPROVED BY: CW

REV	DATE	DESCRIPTION
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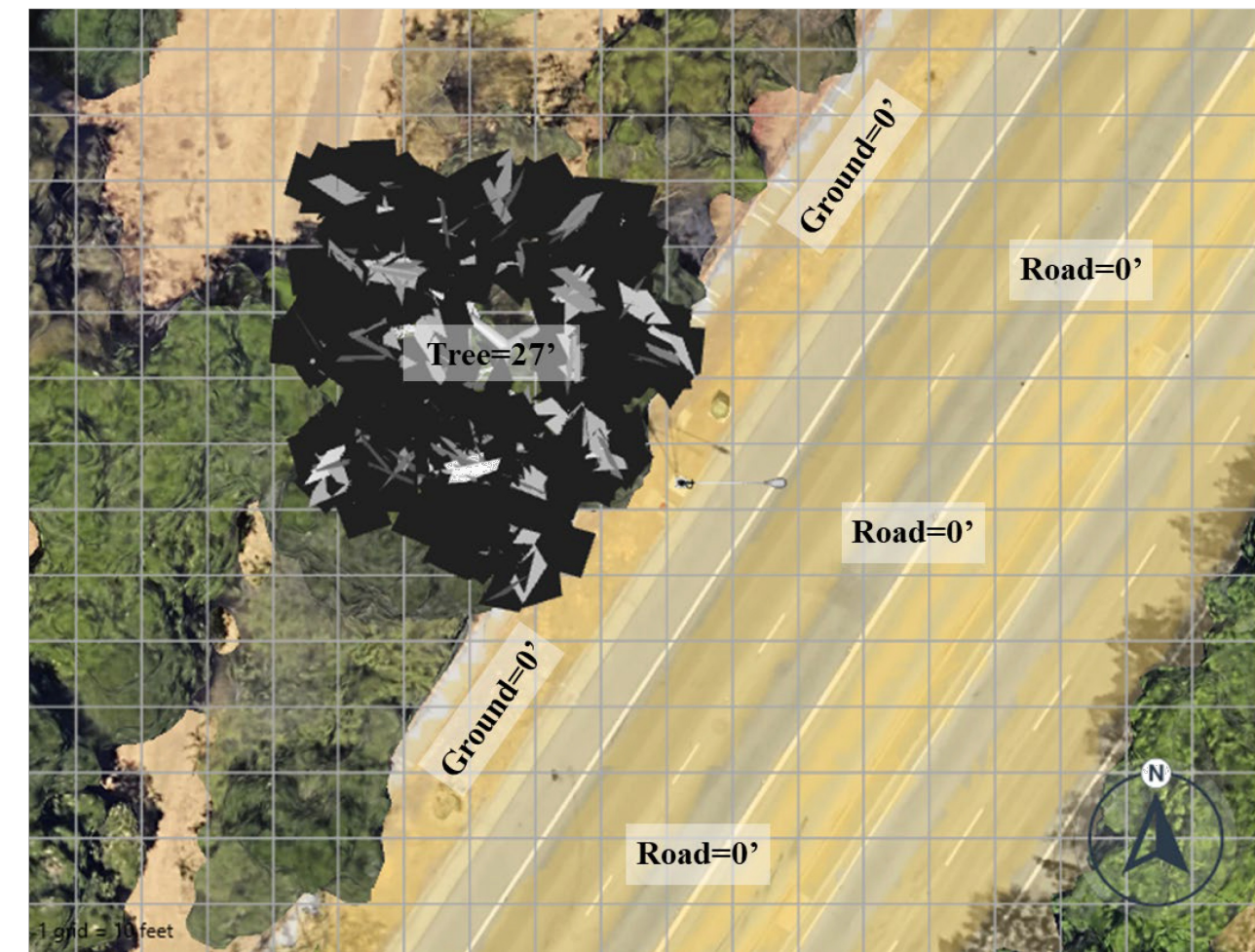


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EME REPORT

EME-1



**Legend**

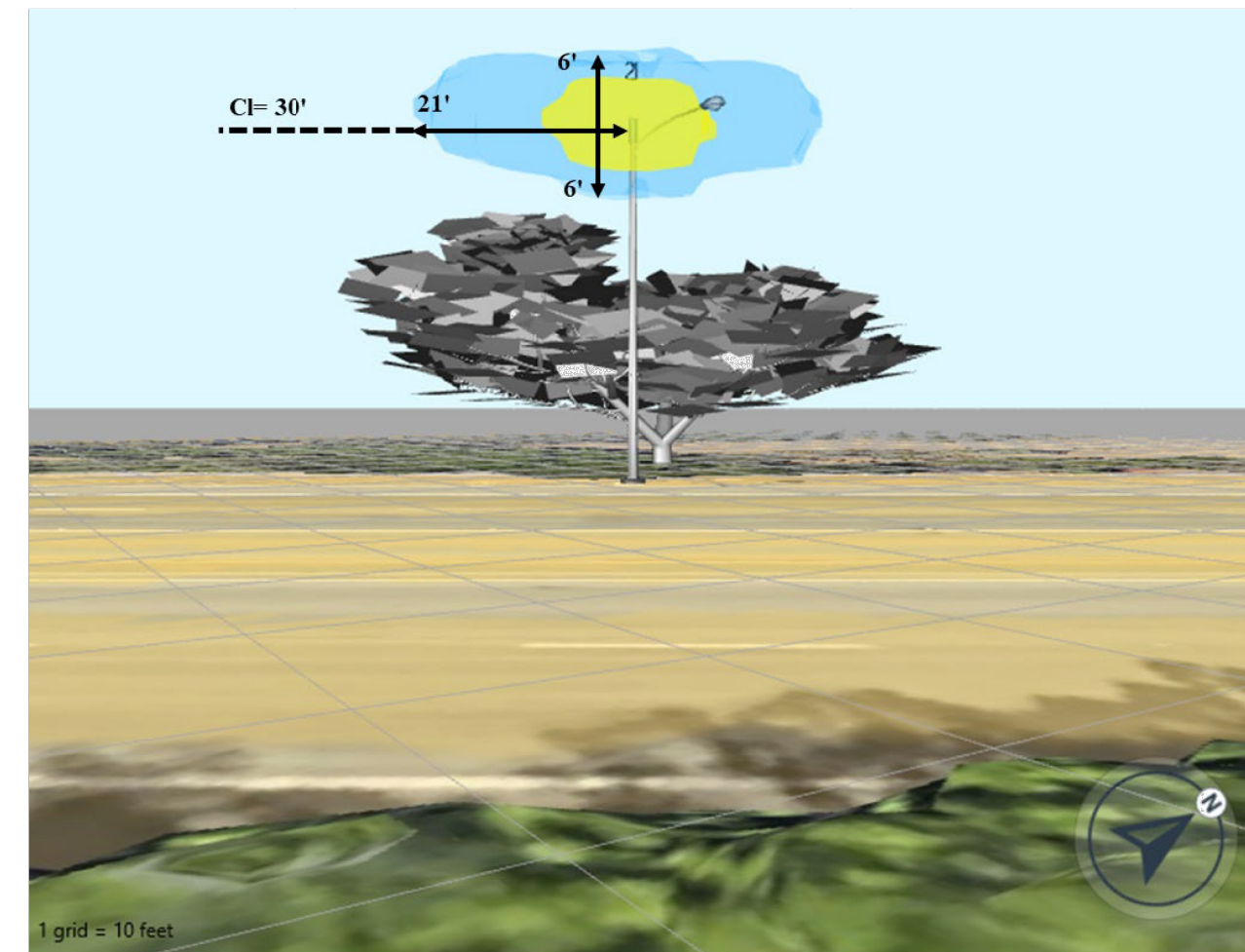
Study Zone	Elev. (ft)	Type	Exposure Profile	Max MPE	Att	Carriers
Ground	0.1	Floor	2D Sula9 GP 0.5 res	1.46%	0.00	AT&T
5%	100%	100%	300%	300%	300%	300%
Exposure Profile Name	Model	Exposure Area	Standard	Resolution	RCF	
2D Sula9 GP 0.5 res	Sula 9	Spatial Average (6 ft)	FCC General Population	0.5 ft3	1.0	

● AT&T

Grid Size: 10.00 feet

Floor = Elevation +6' | Mid-Level = Elevation +/- 3'

Figure 1.2: All Level



**Legend**

Study Zone	Elev. (ft)	Type	Exposure Profile	Max MPE	Att	Carriers
Antenna Level	10.0 - 50.0	3D Area	3D Sula9 GP 2.5 res	5212.86%	0.00	AT&T
100%	300%	300%	300%	300%	300%	300%
Exposure Profile Name	Model	Exposure Area	Standard	Resolution	RCF	
3D Sula9 GP 2.5 res	Sula 9	Spatial Average (6 ft)	FCC General Population	2.5 ft3	1.0	

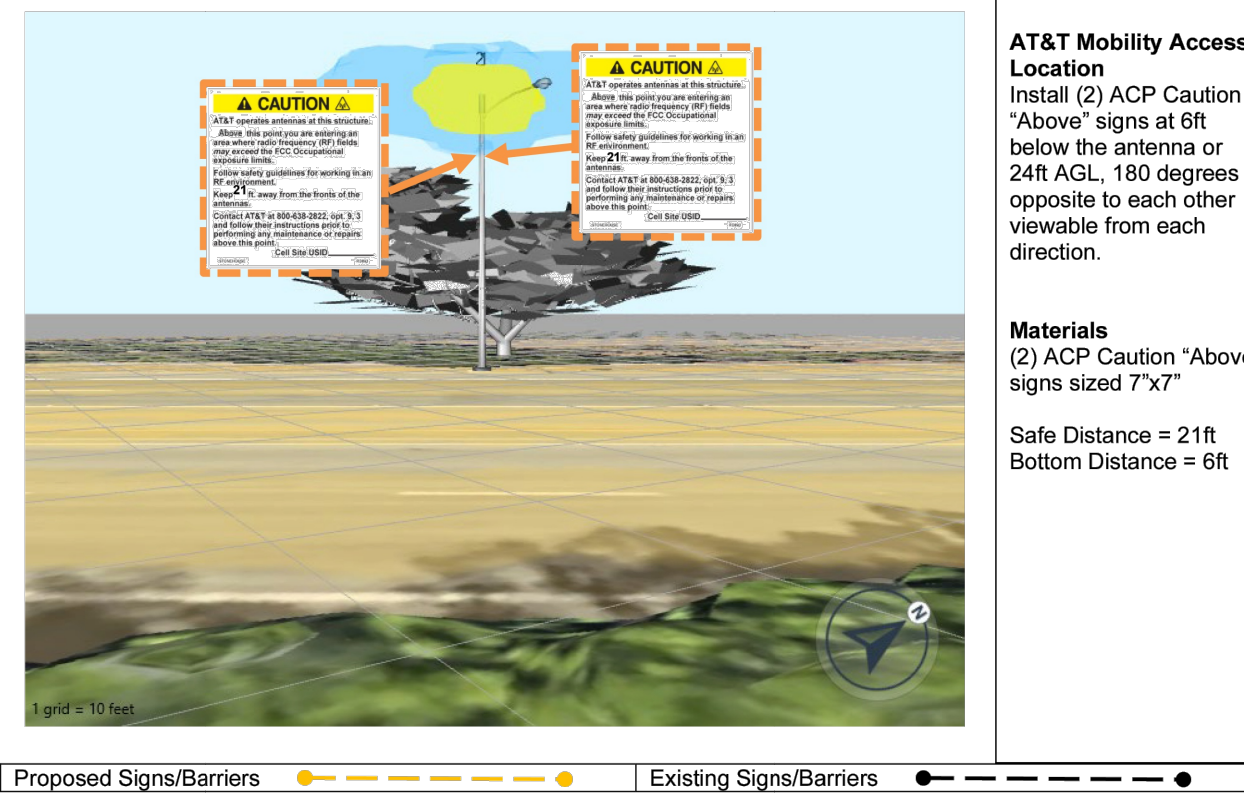
● AT&T

Grid Size: 10.00 feet

Floor = Elevation +6' | Mid-Level = Elevation +/- 3'

Figure 1.3: Elevation Level

Compliance Requirement Diagram (Access Location)



Proposed Signs/Barriers ● Existing Signs/Barriers ●

Figure 2: Mitigation Recommendations

Appendix A: Operating Parameters Considered in this Analysis

Ant #	Carrier	Manufacturer	Antenna Model	Type	EDT (deg)	Frequency (MHz)	Band	Az (deg)	MDT (deg)	HBW (deg)	Length (ft)	Gain (dBS)	Power in (W)	TPO (W)	Paths	Attenuation (dB)	Line Loss (dB)	Other Loss (dB)	ERP (W)	EIRP (W)	Antenna Centerline Ground Level (ft)	Bottom of Antenna Ground Level (ft)
1	AT&T Mobility	GALTRONICS	GP2414-06844	Panel	0	700	B12	60	0	73	2	6.25	80	20	4	0	0	0	337.36	553.46	30	29
1	AT&T Mobility	GALTRONICS	GP2414-06844	Panel	0	1900	B25	60	0	76	2	10.05	80	20	4	0	0	0	809.26	1327.67	30	29
1	AT&T Mobility	GALTRONICS	GP2414-06844	Panel	0	3700	B77D	60	0	58	2	11.05	40	10	4	0	0	0	509.40	835.72	30	29
2	AT&T Mobility	GALTRONICS	GP2414-06844	Panel	0	700	B12	180	0	73	2	6.25	80	20	4	0	0	0	337.36	553.46	30	29
2	AT&T Mobility	GALTRONICS	GP2414-06844	Panel	0	1900	B25	180	0	76	2	10.05	80	20	4	0	0	0	809.26	1327.67	30	29
2	AT&T Mobility	GALTRONICS	GP2414-06844	Panel	0	3700	B77D	180	0	58	2	11.05	40	10	4	0	0	0	509.40	835.72	30	29



AT&T  
5005 EXECUTIVE PARKWAY  
SAN RAMON, CA  
94583



MODUS, LLC  
240 STOCKTON ST., 3RD FLOOR  
SAN FRANCISCO, CA  
94108

DRAWN BY: JLV

CHECKED BY: TDJ

APPROVED BY: CW

REV	DATE	DESCRIPTION
	08/16/24	90% CD
0	09/12/24	100% CD
1	07/07/25	100% CD PLAN CHECK
2	08/28/25	100% CD PLAN CHECK
3	09/30/25	100% CD PLAN CHECK
4	10/09/25	100% CD PLAN CHECK



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

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