

**PROJECT TEAM**

**APPLICANT:**

AT&T  
5001 Executive Parkway  
San Ramon, Ca 94583

**ARCHITECT/ENGINEER:**

Rodney Barnes  
Meridian Management LLC  
785 Oak Grove Road E2  
Suite 251  
Concord, CA 94518  
T 707.592.5924  
rodneym@meridian.management

**ZONING CONTACT**

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Vinculums Services  
575 Lennon Lane  
Suite 125  
Walnut Creek, CA 94598  
T 415.596.3474  
myergo@gmail.com

**LEASING CONTACT:**

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Walnut Creek, CA 94598  
T 415.596.3474  
myergo@gmail.com

**CONSTRUCTION MANAGER:**

Vinculums Services  
575 Lennon Lane  
Suite 125  
Walnut Creek, CA 94598



5001 EXECUTIVE PARKWAY, SAN RAMON, CA 94583

**DRAWING SIGN-OFF**



Signature \_\_\_\_\_ Date \_\_\_\_\_

SITE ACQUISITION: \_\_\_\_\_

PLANNING: \_\_\_\_\_

CONSTRUCTION: \_\_\_\_\_

MANAGEMENT: \_\_\_\_\_



Signature \_\_\_\_\_ Date \_\_\_\_\_

CONSTRUCTION: \_\_\_\_\_

REAL ESTATE: \_\_\_\_\_

RF ENGINEER: \_\_\_\_\_

EQUIPMENT ENGINEER: \_\_\_\_\_

MW ENG/TRANSPORT: \_\_\_\_\_

OWNER: \_\_\_\_\_

**GENERAL NOTES**

- THIS IS AN UNMANNED TELECOMMUNICATIONS FACILITY FOR THE AT&T WIRELESS NETWORK CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTENNA AND ASSOCIATED EQUIPMENT ON AN EXISTING METAL LIGHT POLE IN THE PUBLIC RIGHT-OF-WAY. 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 DRAINAGE, NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.
- CHANGES FROM THE APPROVED PLANS DURING THE COURSE OF CONSTRUCTION SHALL CAUSE CONSTRUCTION TO BE SUSPENDED UNTIL SUCH TIME AS THE PLANS CAN BE AMENDED BY THE DESIGNER AND SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL

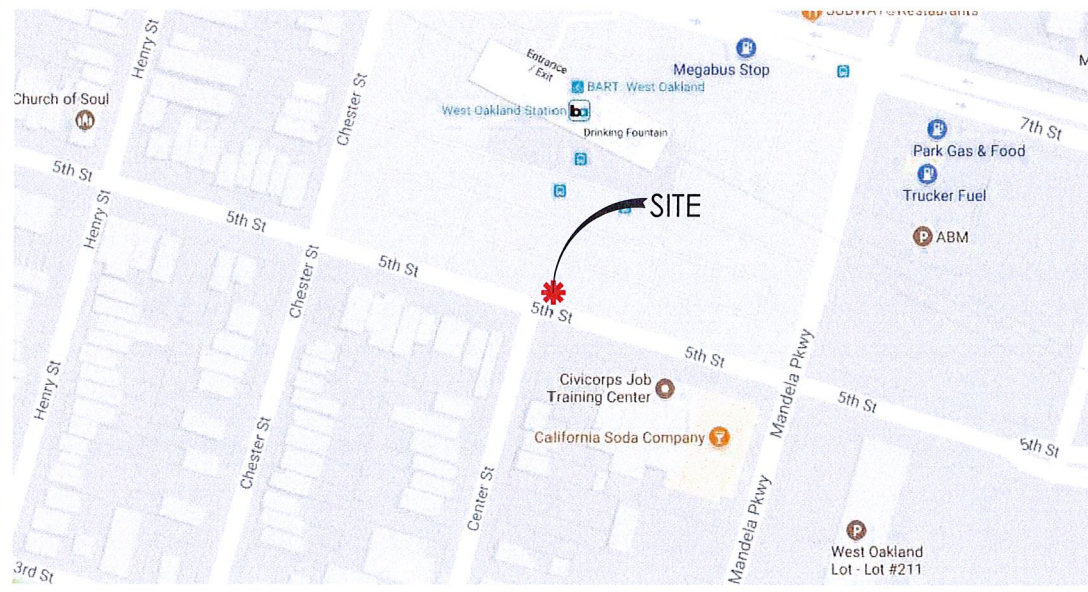
**CODE COMPLIANCE**

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:

- CALIFORNIA CODES
- 2016 CALIFORNIA BUILDING CODE
- 2016 CALIFORNIA MECHANICAL CODE
- 2016 CALIFORNIA PLUMBING CODE
- 2016 CALIFORNIA ELECTRIC CODE
- 2016 GREEN BUILDING CODE
- 2016 EDITION OF TITLE 24 ENERGY STANDARDS
- ANY LOCAL BUILDING CODE AMENDMENTS TO THE ABOVE
- CITY / COUNTY ORDINANCES
- CITY OF OAKLAND PUBLIC WORKS DEPARTMENT
- GENERAL ORDER 95 (JUNE 2009 EDITION)

**CRAN-RSFR-SFOK7-001**

PACE ID:  
ROW AT 1425 5TH ST, OAKLAND, CA 94607  
COUNTY: ALAMEDA  
SITE TYPE: WOODEN POLE  
FA:14307065 HUB:19 USID:192900



**PROJECT DESCRIPTION**

THIS IS AN UNMANNED TELECOMMUNICATIONS FACILITY FOR THE AT&T WIRELESS NETWORK CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTENNA AND ASSOCIATED EQUIPMENT ON AN EXISTING WOOD POLE IN THE PUBLIC RIGHT-OF-WAY.

**SCOPE OF WORK & SITE COMPLETION CHECKLIST:**

- ANTENNA & ASSOCIATED EQUIPMENT BOXES: INSTALL A NEW TELECOMMUNICATION ANTENNA, NEW 7' BAYONET EXTENSION, (2) EQUIPMENT BOXES, NEW FIBER BOX, AND NEW DISCONNECT/BREAKER BOX ON AN EXISTING WOOD POLE. ALL POLE-MOUNTED EQUIPMENT TO BE INSTALLED ON A GO95 COMPLIANT STANDOFF BRACKET.
- DURABLE PAINT: ANTENNAS, MOUNTING BRACKETS, CABLING, AND RADIO RELAY UNITS TO BE PAINTED SHERWIN WILLIAMS MESA BROWN
- CABLING: CABLING TO BE INSTALLED IN A TIDY MANNER WITHOUT EXCESS CABLE LOOPS
- LOGO REMOVAL: ALL EQUIPMENT LOGOS, OTHER THAN THOSE REQUIRED BY REGULATION (E.G. NODE IDENTIFICATION), SHALL BE PAINTED OVER OR REMOVED, RAISED/DEPRESSED TEXT ON RRUS OR OTHER EQUIPMENT, IF PRESENT, TO BE SANDED OFF OR SIMILARLY REMOVED AND/OR FILLED
- SIGNAGE: FCC MANDATED RF WARNING SIGNAGE SHALL FACE CLIMBING SPACE. OPTIONAL SIGNAGE SHALL FACE OUT TO STREET WHEN PLACED IN FRONT OF OR NEAR A WINDOW. SIGNAGE SHALL FACE TOWARD BUILDING IF THERE IS NO WINDOW.
- UTILITY LINES: PROPOSED UTILITY LINES BETWEEN EXISTING POINT OF CONNECTION TO BE IN CONDUIT ON POLE

**SITE INFORMATION**

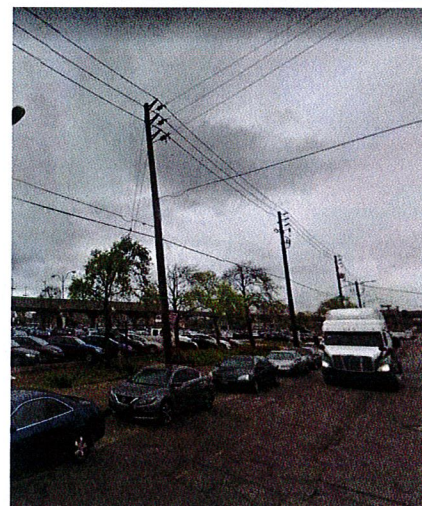
OWNER: PG&E  
APPLICANT: AT&T  
5001 EXECUTIVE PARKWAY  
SAN RAMON, CA 94583  
LATITUDE: 37.8041800 (NAD 83)  
LONGITUDE: -122.2952400 (NAD 83)  
GROUND ELEVATION: 5' AMSL  
ADJACENT APN#: (IFO) 4-75-9  
ZONING JURISDICTION: CITY OF OAKLAND  
CURRENT ZONING: PUBLIC ROW  
PROPOSED USE: UNMANNED TELECOMMUNICATIONS FACILITY

**DO NOT SCALE DRAWINGS**

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS & FIELD CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME



**SITE IMAGE**



**DRIVING DIRECTIONS**

FROM AT&T WIRELESS OFFICE AT 5001 EXECUTIVE PARKWAY, SAN RAMON, CA

- Head east on Bishop Dr
- Turn right onto Sunset Dr
- Use the right 2 lanes to turn right onto Ballinger Canyon Rd
- Use the right 2 lanes to merge onto I-680 N via the slip road to Sacramento
- Merge onto I-680 N
- Use the right 2 lanes to take exit 46A for State Route 24 towards Oakland/Lafayette
- Continue onto CA-24 W
- Keep left at the fork to stay on CA-24 W
- Continue onto I-980 W
- Use the right lane to take exit 1C for 12th St
- Use the right lane to merge onto Brush St
- Continue straight to stay on Brush St
- Turn right onto 7th St
- Turn left onto Union St
- Turn right onto 5th St

**INDEX**

T.1	TITLE SHEET
T.2	GENERAL NOTES, LEGEND, ABBREVIATIONS
A.1	OVERALL SITE PLAN
A.2	POLE PLAN, EQUIPMENT ENLARGEMENTS
A.3	ELEVATIONS
A.4	ELEVATIONS
A.5	EQUIPMENT DETAILS
A.6	EQUIPMENT DETAILS



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www.meridian.management

Project Architect: \_\_\_\_\_



575 LENNON LANE  
SUITE 125  
WALNUT CREEK, CA 94598  
T 925.482.8500

Site Agent: \_\_\_\_\_

90% Zoning Drawings

Drawing Phase: \_\_\_\_\_

CRAN-RSFR-SFOK7-001  
PACE ID:  
ROW AT 1425 5TH ST  
OAKLAND, CA 94607  
COUNTY: ALAMEDA

Site Name: \_\_\_\_\_

Professional Seal: \_\_\_\_\_

It is a violation of law for any person, unless they are acting under the direction of a licensed Professional Architect/Engineer, to alter this document.

Rev.	Date	Description
01	09/27/17	Zoning Dwg 90%

Project No.: \_\_\_\_\_

Date: 09/27/17 Job No.: \_\_\_\_\_

Scale: AS SHOWN CAD File: \_\_\_\_\_

Designed By: JG Checked: RB

**TITLE SHEET**

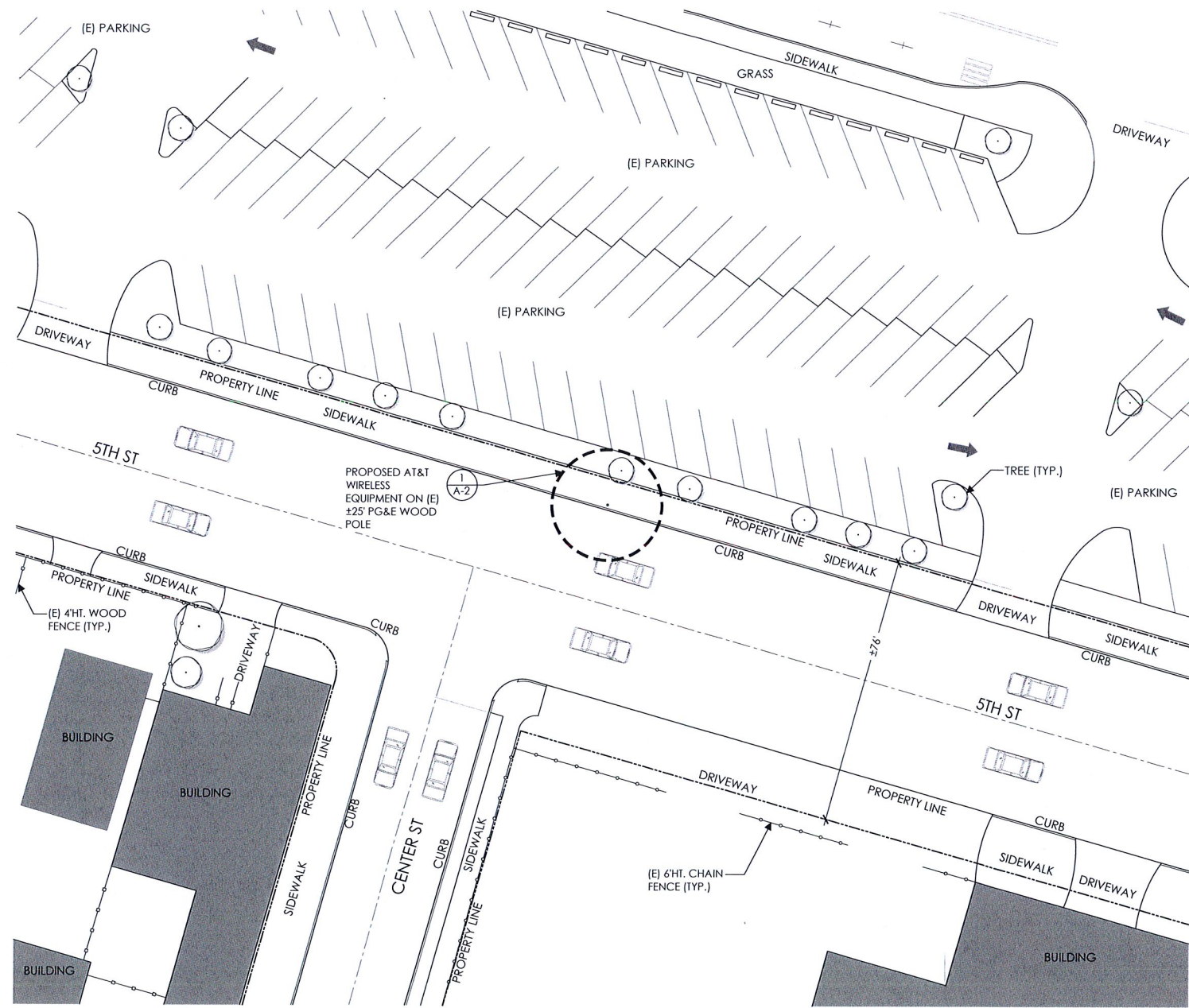
Sheet Title: \_\_\_\_\_

**T.1**

Sheet No.: \_\_\_\_\_

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**NOTE:**  
 THIS SITE PLAN WAS GENERATED WITHOUT THE USE OF A SURVEY. PROPERTY LINES, RIGHT-OF-WAYS, POWER & TELCO UTILITY POINT CONNECTIONS/ROUTES AND EASEMENTS SHOWN ON THESE PLANS ARE ESTIMATED. ALL ITEMS AND DIMENSIONS SHOULD BE VERIFIED IN THE FIELD.

**UNDERGROUND UTILITIES NOTE:**  
 THE LOCATIONS AND EXISTENCE OF ANY UNDERGROUND PIPES, STRUCTURES, OR CONDUITS SHOWN ON THIS PLAN WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THERE MAY BE EXISTING UTILITIES OTHER THAN THOSE SHOWN ON THIS PLAN. THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT SHOWN ON THIS PLAN.



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Designed By: JG Checked: RB

OVERALL SITE PLAN

Sheet Title:

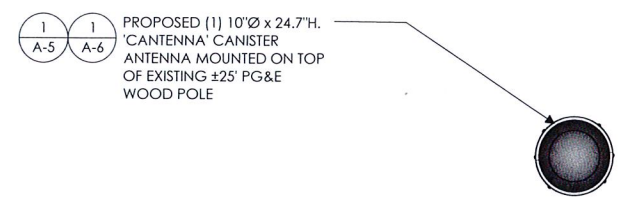
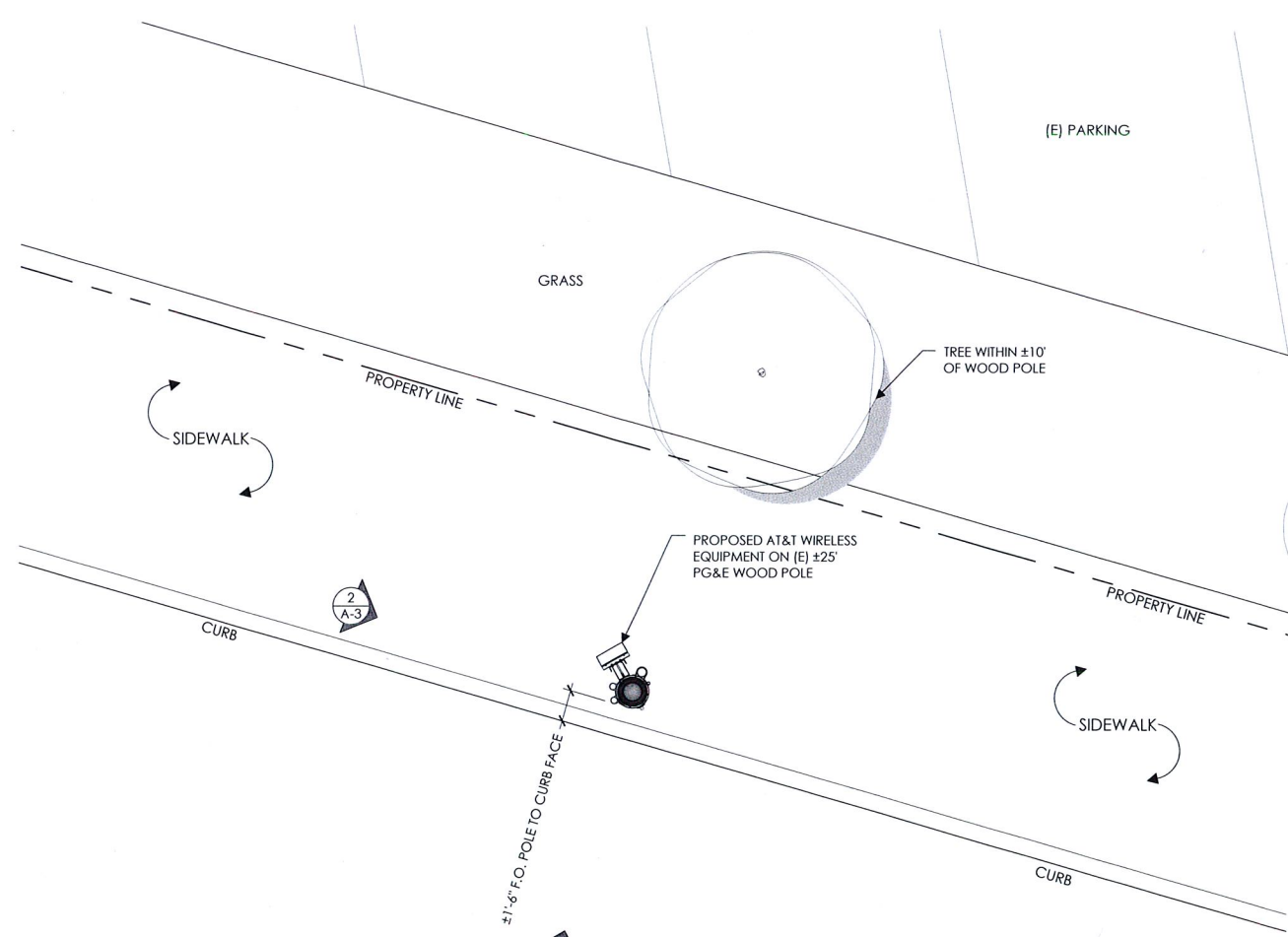
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Sheet No.:

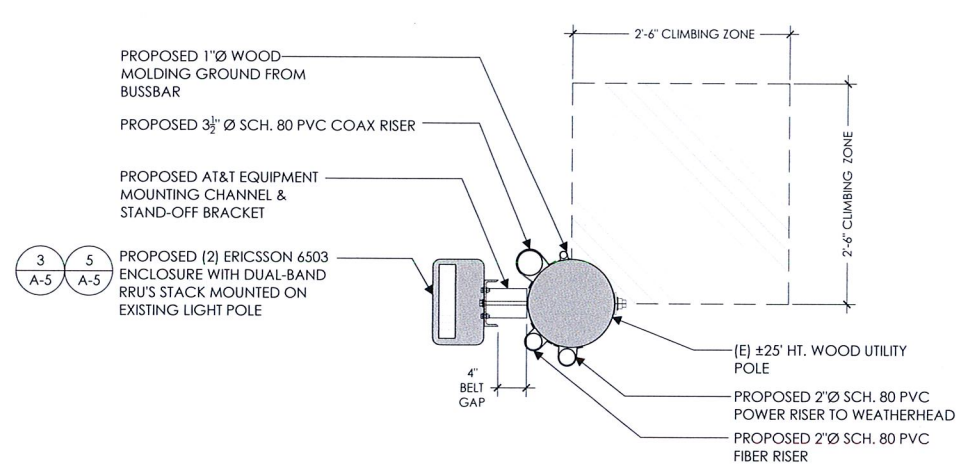
- (N) AT&T EQUIPMENT TO BE MOUNTED BETWEEN THE 9:00 AND 12:00 QUADRANT
- CLIMBING SPACE BETWEEN 12:00 & 3:00
- POLE STEPS REQUIRED FROM 8.5' TO COMMUNICATIONS ZONE PER GO95
- STEPS SHOULD BE USABLE WHEN INSTALLED WITHIN CLIMBING SPACE

EQUIPMENT SYSTEM:  
ALL NEW COMPONENTS NOT SHOP PAINTED SHOULD BE FIELD PAINTED SHERWIN WILLIAMS MESA BROWN

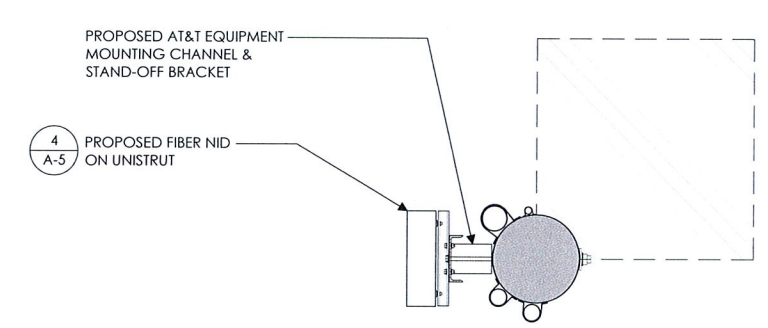
NEW CONDUIT FOR POWER/TELCO:  
(1) 2" CONDUIT FOR POWER  
(1) 2" CONDUIT FOR FIBER  
(1) 3/4" CONDUIT FOR COAX  
(1) 1" WOOD MOLDING FOR GROUND



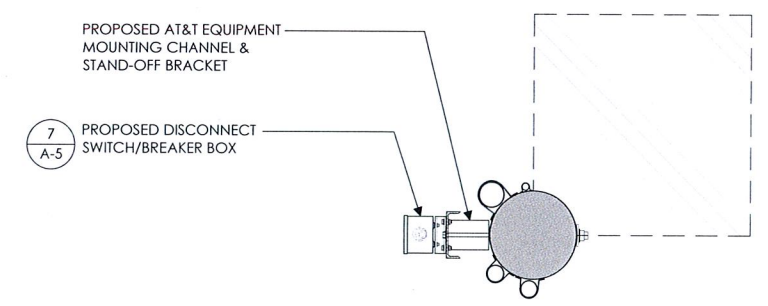
A. SECTION (CANISTER ANTENNA)



B. SECTION (RRUS)



C. SECTION (FIBER)



D. SECTION (DISCONNECT SWITCH/BREAKER BOX)



AT&T Wireless  
5001 Executive Parkway  
San Ramon, CA 94583

Client:



Project Architect:



Site Agent:

90% Zoning Drawings

(E) LIGHT POLE  
Drawing Phase:

CRAN-RSFR-SF0K7-001  
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Designed By: JG Checked: RB

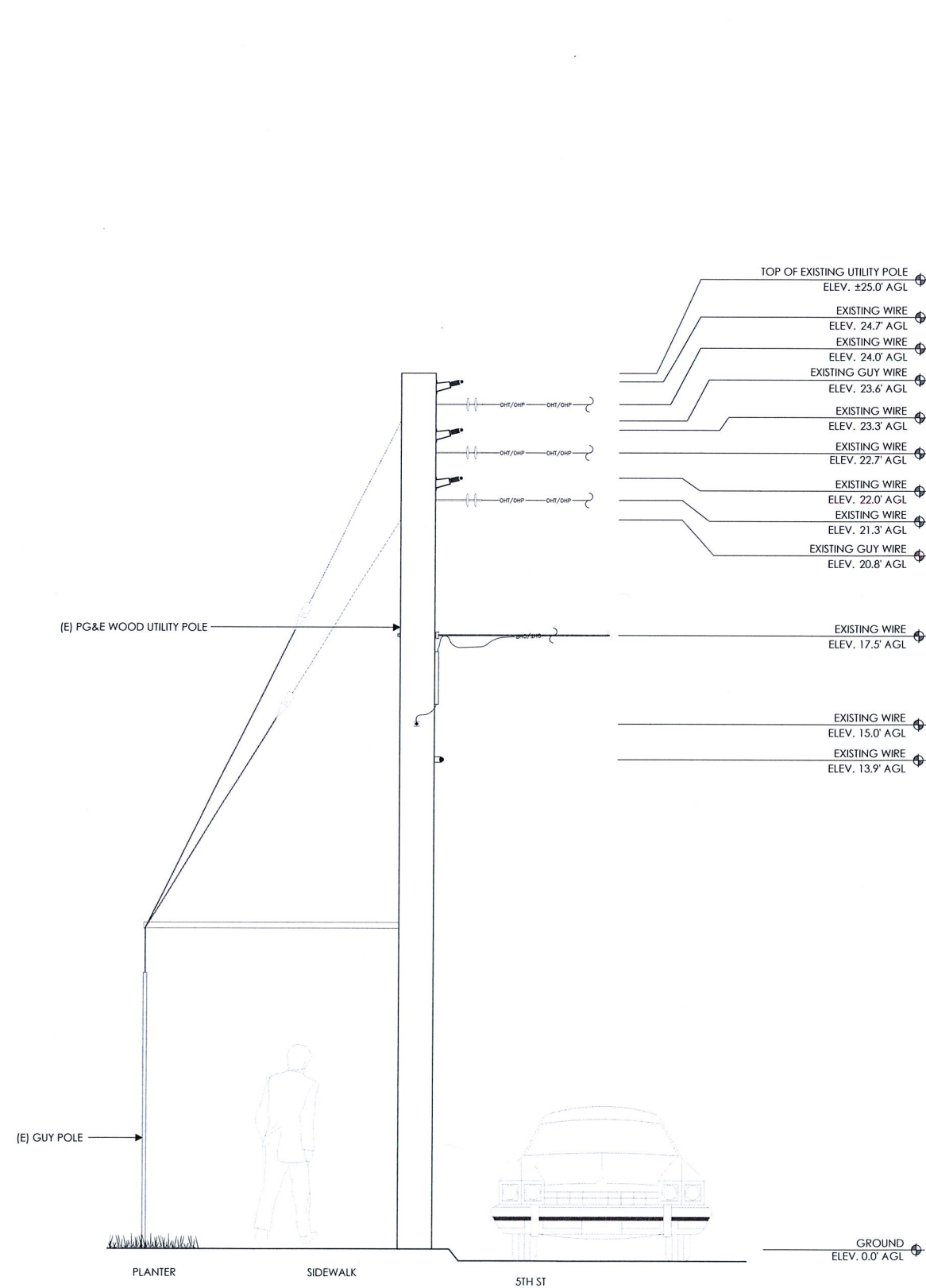
POLE PLAN  
EQUIPMENT  
ENLARGEMENTS

Sheet Title:

A.2

Sheet No.:

SCALE NOTE:  
IF DIMENSIONS SHOWN ON PLAN DO NOT SCALE CORRECTLY, CHECK FOR REDUCTION OR ENLARGEMENT FROM ORIGINAL PLANS.

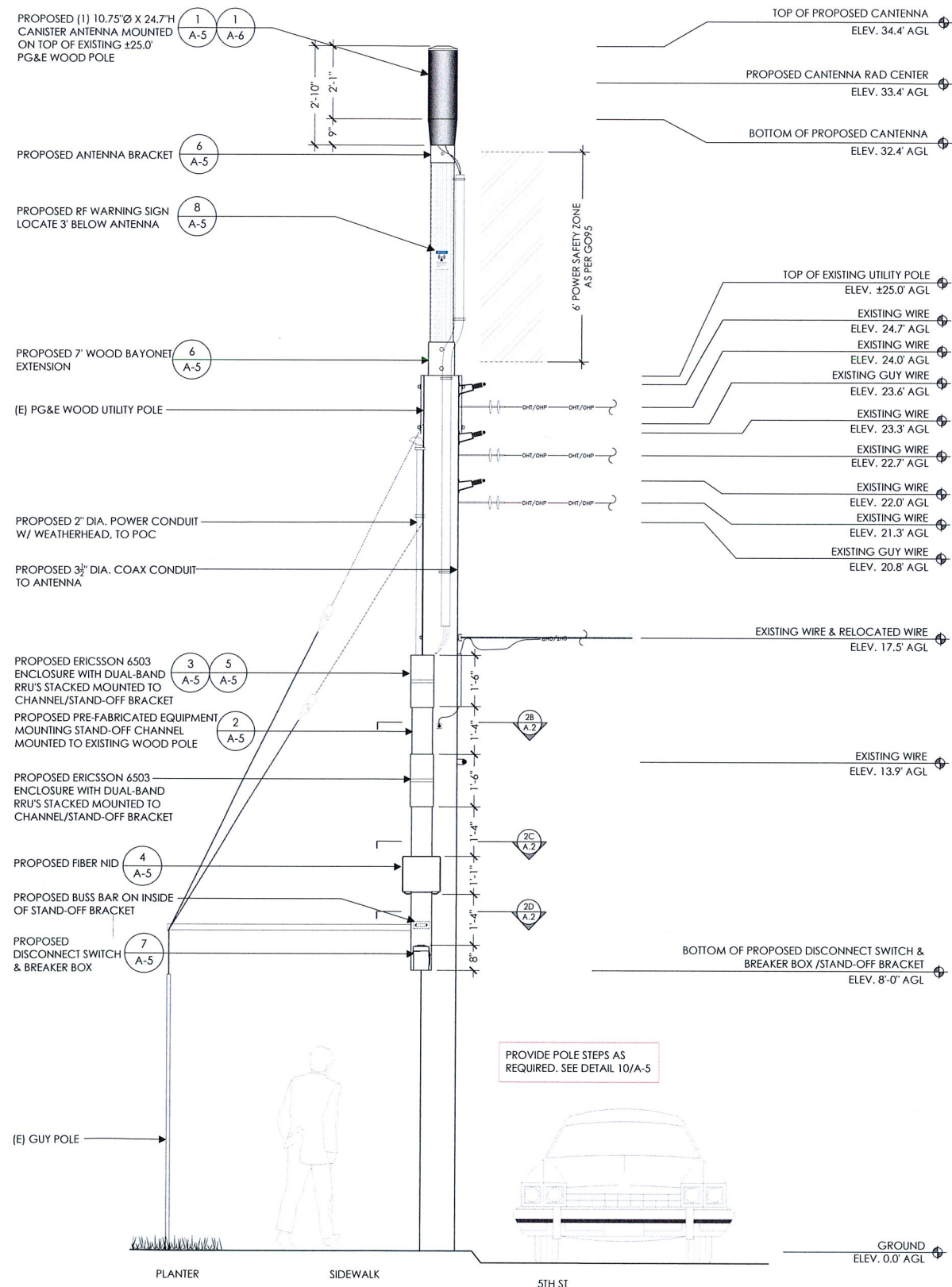


NORTHWEST ELEVATION - EXISTING

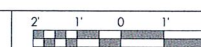


SCALE  
1/2" = 1'-0"

1



NORTHWEST ELEVATION - PROPOSED



SCALE  
1/2" = 1'-0"

2



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SUITE 125  
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T 925.482.8500

Site Agent:

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Drawing Phase:

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Designed By: JG Checked: RB

ELEVATIONS

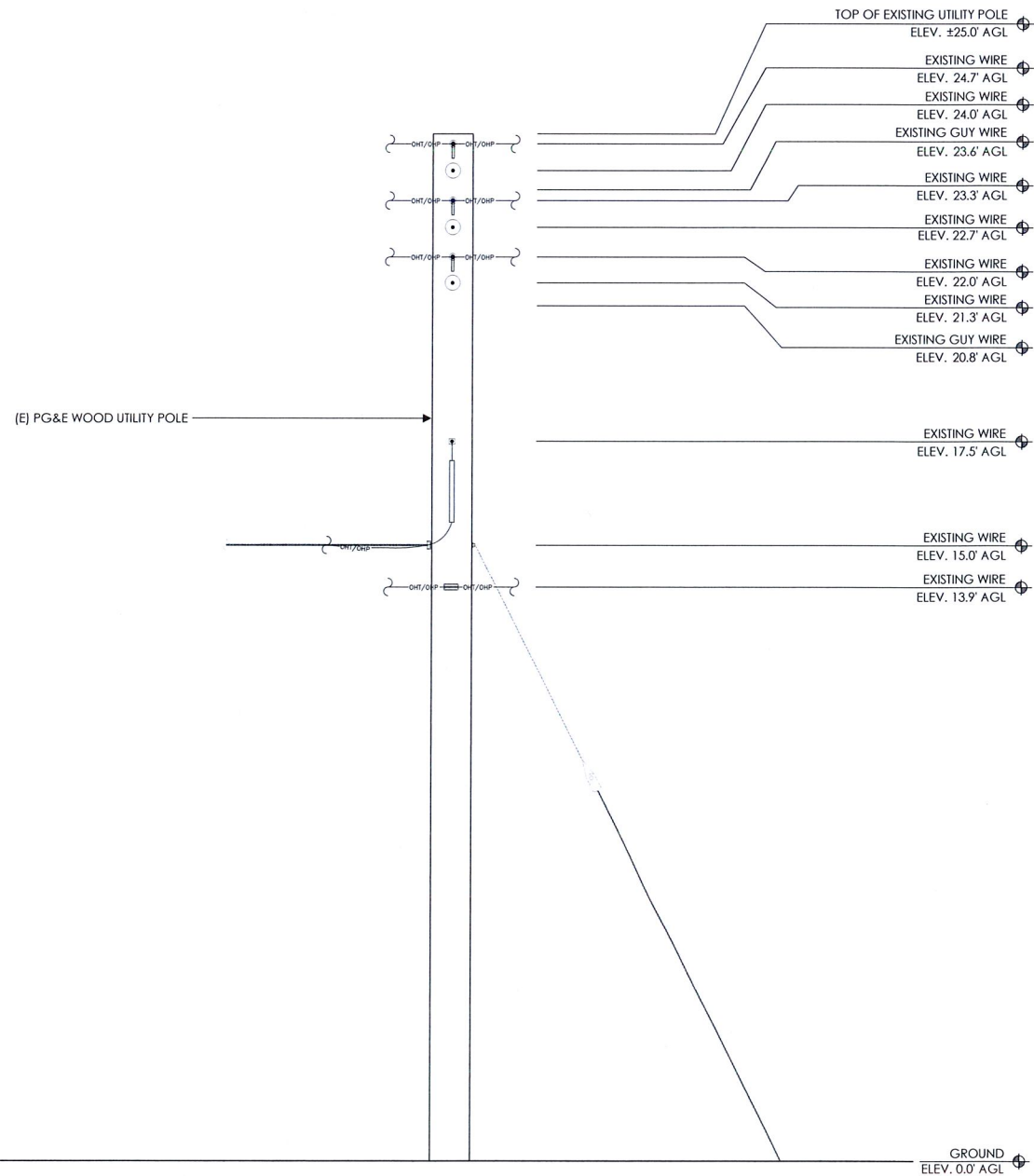
Sheet Title:

A.3

Sheet No.:

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SCALE NOTE:  
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CORRECTLY, CHECK FOR REDUCTION OR  
ENLARGEMENT FROM ORIGINAL PLANS.



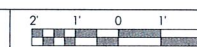
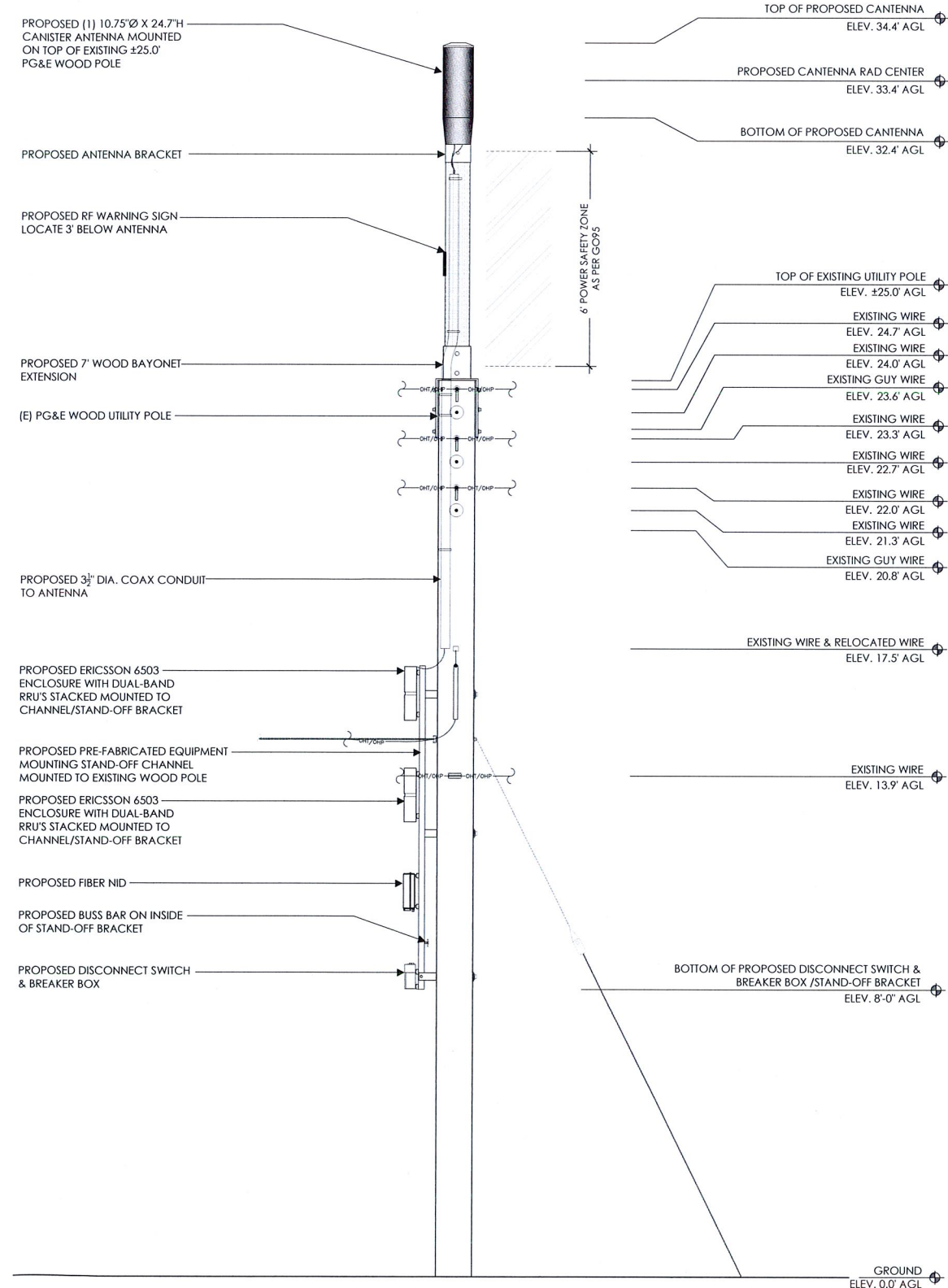
SOUTHWEST ELEVATION - EXISTING



SCALE  
1/2" = 1'-0"

1

SOUTHWEST ELEVATION - PROPOSED



SCALE  
1/2" = 1'-0"

2



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90% Zoning Drawings

Drawing Phase: \_\_\_\_\_

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Scale: AS SHOWN CAD File: \_\_\_\_\_

Designed By: JG Checked: RB

ELEVATIONS

Sheet Title: \_\_\_\_\_

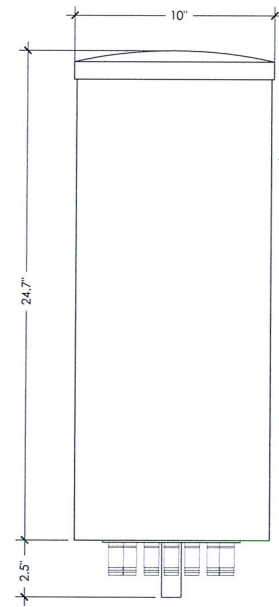
A.4

Sheet No.: \_\_\_\_\_

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**AT&T CANISTER ANTENNA 'CAN-TENNA'**

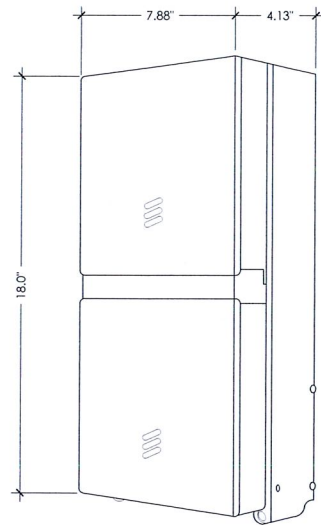
ANTENNA COLOR: LIGHT GRAY  
 DIMENSIONS: 10.0"Ø x 24.7" TALL  
 NET WEIGHT: 19.0 LBS



**ERICSSON 6503**

SINGLE BAND 2203: 2 TX / 2 RX (AWS OR PCS)  
 DUAL BAND RRU (2 - 2203'S): 4 TX / 4 RX (AWS OR PCS)  
 MAXIMUM POWER CONSUMPTION: <100W PER 2203 RADIO-  
 ±95W PER SINGLE-BAND 2203 RADIO  
 ±190W PER DUAL-BAND 2203 RRU

MAX FUSE RATING: 32A  
 WIRE SIZE: #10 CU OR #8 ALU



**AFL MODEL# OPN-760 SPECIFICATIONS**

DEMARICATION CAPACITY: (2) JDSU BRIGHT JACKS WITH NO SPLICE TRAY OR (1) JSDU BRIGHT JACK WITH ONE SPLICE TRAY

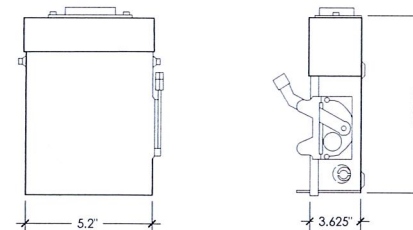
DIMENSIONS: 1'-1" H. x 1'-1" W. x 4" D.



- NOTES:
- INSTALL AT&T NETWORK INTERFACE DEVICE (NID) BELOW RRU ENCLOSURES & FEED FROM AT&T AERIAL FIBER CABLE ON POLE.
  - AFL - OPN-760 CONFIGURATION: DM000915, PID # 316079607

**MURRAY LW002GRU SPECIFICATIONS**

LOAD CENTER DEPTH: 3.625"  
 LOAD CENTER WIDTH: 5.2"  
 LOAD CENTER HEIGHT: 8.125"  
 WEIGHT: 4.55 LB  
 LOAD CENTER TYPE: MAIN LUG  
 MAX AMPERAGE: 60  
 MOUNTING TYPE: PLUG IN  
 NUMBER OF PHASES: 1  
 NUMBER OF SPACES: 2  
 VOLTAGE (VOLTS): 120/240  
 INDOOR/OUTDOOR: OUTDOOR  
 ELECTRICAL PRODUCT TYPE: LOAD CENTER



NOTICE

Radio frequency fields beyond this point may exceed the FCC general public exposure limit.

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

In accordance with Federal Communications Commission rules on radio frequency emissions 47 CFR 1.1307(b)

ANTENNA DETAIL

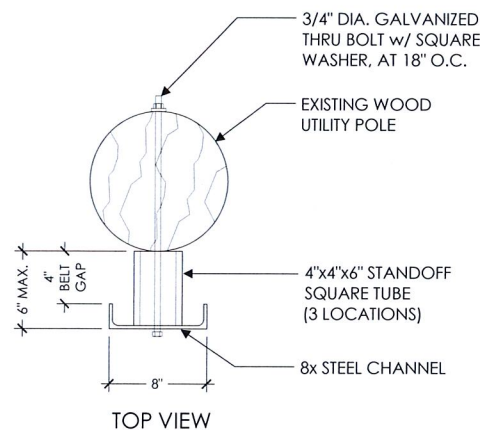
1 6503 RRU ENCLOSURE

3 FIBER NID

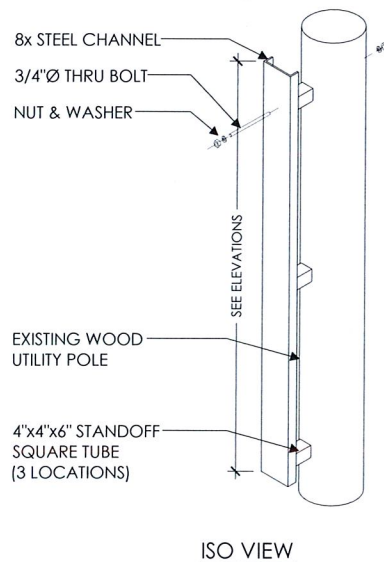
4 DISCONNECT SWITCH/BREAKER BOX

7 NOTICE SIGNAGE

8



TOP VIEW



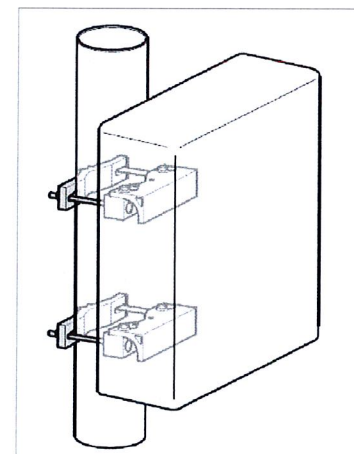
ISO VIEW

MOUNTING CHANNEL

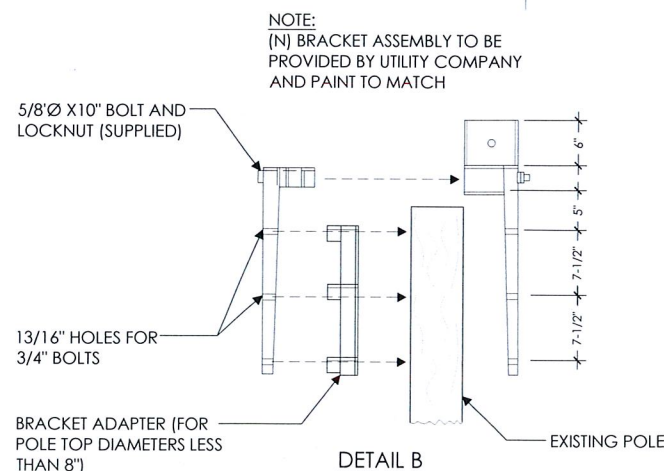
2 WOOD POLE EXTENSION

**Technical Specifications Radio 2203**

<b>FREQUENCY BANDS</b>	Bands: 3GPP Bands B1 (W/L), B3 (L), B3C (W/L), B6 (W/L), B66A (W/L), B5 (W/L), B2/B25 (W/L), B12 (L), B13 (L) and B7 (L)
<b>HW CAPACITY</b>	Carrier capacity WCDMA: Up to 4 carriers Carrier capacity LTE: Up to 40 MHz
<b>IBW:</b>	B1, B3 and B66A 45 MHz; B2/B25 and B7 40 MHz; B3C, B6, B5, B12 and B13 Full band
<b>MIMO:</b>	Yes, 2T2R
<b>Output power:</b>	Up to 2 x 5 W
<b>INTERFACE SPECIFICATIONS</b>	Antenna Ports: 2 x 4.3-10 (f) CPRI: 2 x 2.5/5/10 Gbps (exchangeable SFP modules) Optical indicators: 6 External alarms: 2 Field ground: 1
<b>MECHANICAL SPECIFICATIONS</b>	W x H x D: 200 mm x 200 mm x 100 mm, including mounting bracket and esthetic front cover Weight: <4.5 kg Volume: 4 l Mounting: Wall and pole mount
<b>ELECTRICAL SPECIFICATIONS</b>	Power Supply: -48 VDC or 100 - 250 VAC
<b>ENVIRONMENTAL SPECIFICATIONS</b>	Normal operating temp: -40 °C to +55 °C (cold start at -40 °C) Relative Humidity: 5 - 100% Environment: Outdoor class with IP65



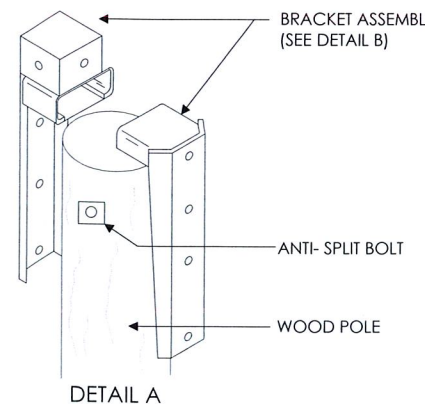
**ERICSSON 2203 RRU**



NOTE:  
 (N) BRACKET ASSEMBLY TO BE PROVIDED BY UTILITY COMPANY AND PAINT TO MATCH

DETAIL B

EXISTING POLE



DETAIL A

5

**DISCONNECT SIGNAGE**

**NORMAL SHUT-DOWN PROTOCOLS:**

- Call 800-264-6620 NOC 24 HRS prior to schedule a shutdown day and time.
- Give NOC the Node number
- On scheduled day of shut-down, pull the disconnect handle to the "OFF" position.
- Call NOC when work is completed.

**EMERGENCY SHUT-DOWN PROTOCOLS:**

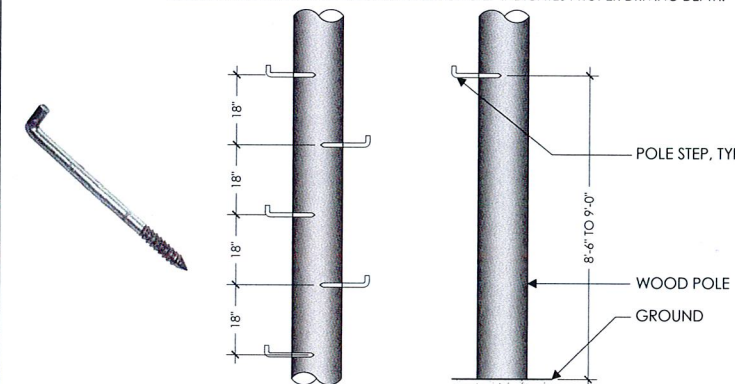
- Call 800-264-6620 NOC.
- Give NOC the Node number
- Pull the disconnect handle to the "OFF" position.
- Call NOC when work is completed.

POLE 5/8 X 10 INCH GALVANIZED  
 99 LBS  
 MANUFACTURER: AERIAL SERVICE COMPANY, INC.  
 1-800-256-5186  
 http://www.linemen-tools.com/J1118

MODEL #:

DESCRIPTION:

POLE STEPS ARE USED ON WOOD POLES WHERE FREQUENT ACCESS TO POLE MOUNTED EQUIPMENT IS REQUIRED. FLAT DRIVING SURFACE AND SHARP POINT EASE INSTALLATION. FETTER-DRIVE THREAD PERMITS REMOVAL WITH A WRENCH. HOT-DIPPED GALVANIZED FOR CORROSION RESISTANCE. NOTCHED MARK ON STEP INDICATES PROPER DRIVING DEPTH.



6 POLE STEPS

9



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Site Agent:

90% Zoning Drawings

Drawing Phase:

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EQUIPMENT  
 DETAILS

Sheet Title:

**A.5**

Sheet No.:



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San Ramon, CA 94583

Client:



Project Architect:



575 LENNON LANE  
SUITE 125  
WALNUT CREEK, CA 94598  
T 925.482.8500

Site Agent:

90% Zoning Drawings

Drawing Phase:

CRAN-RSFR-SFOK7-001  
PACE ID:  
ROW AT 1425 5TH ST  
OAKLAND, CA 94607  
COUNTY: ALAMEDA

Site Name:

Professional Seal:

It is a violation of law for any person,  
unless they are acting under the direction  
of a licensed Professional  
Architect/Engineer, to alter this document.

Rev.	Date	Description
01	09/27/17	Zoning Dwgs 90%

Project No.:

Date: 09/27/17 Job No.:

Scale: AS SHOWN CAD File:

Designed By: JG Checked: RB

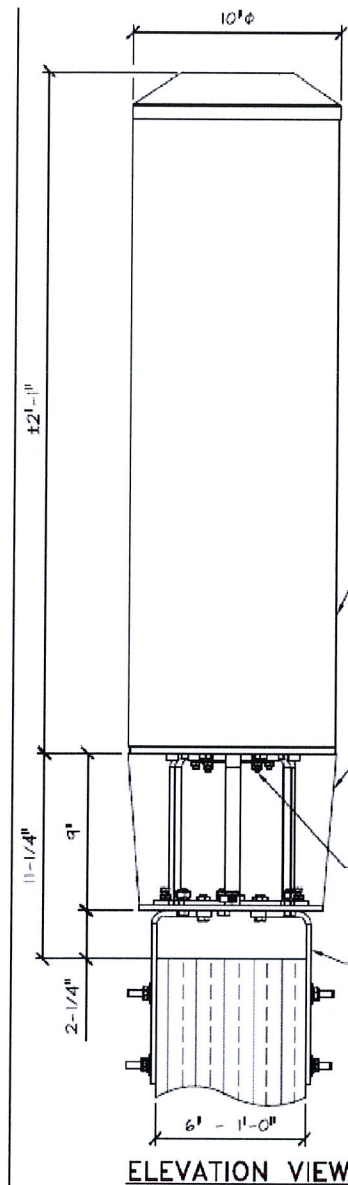
EQUIPMENT  
DETAILS

Sheet Title:

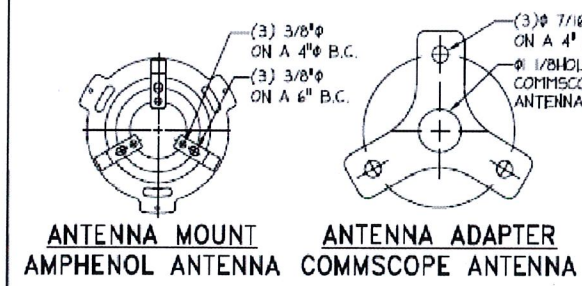
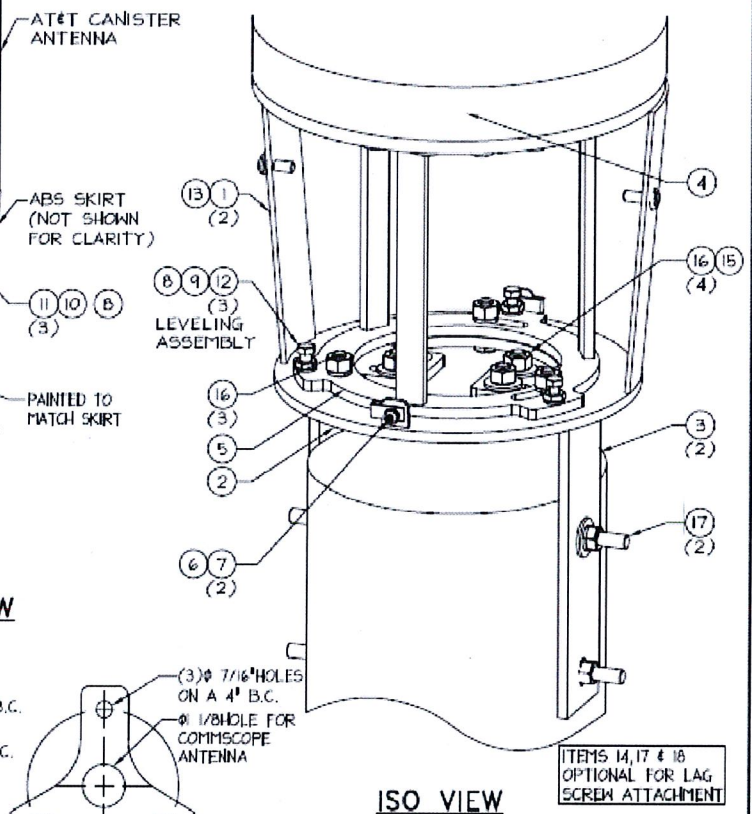
A.6

Sheet No.:

©Meridian Management LLC. 2017



ITEM #	PART #	DESCRIPTION	QTY.	UNIT
1	PL-2341	1/4 3/4" TD x 13" BD x 10 1/2" TALL TAPERED SKIRT HALF	2	2.8
2	HA-1142	3/8"x1"-1/8" A36, PLATE WLD MNT	1	9.9
3	PL-2342	3/8"x3 1/2"-1 5/16" A36, FORMED PLATE	2	4.1
4	PL-1879	1/4"x4 3/8"x5" A36, ANTENNA ADAPTER	1	0.6
5	HA-1146	3/8"x11 5/8" O.D. A36, TOP CAP WLD MNT	1	8.0
6	55600	1/4-20 U-STYLE SPEED NUT	2	0.02
7	70217	1/4"x1/4" SS FLGD BUTTON-HD SCKT CAP SCRW	2	0.02
8	4300	3/8" LOCK WASHER, S.S.	4	0.01
9	51995	3/8" JAM NUT, S.S.	3	0.02
10	56001	3/8" HEX NUT, S.S.	3	0.02
11	70428	3/8" x 1 1/4" S.S. COUNTERSUNK SCKT HD SCRWH	3	0.01
12	7110	3/8" x 1" BOLT, S.S.	3	0.05
13	91137	3/8" x 1" ROUND HEAD SLOTTED NYLON SCREW	2	0.01
14	40020	1/2" FLAT WASHER, GALV.	4	0.04
15	40024	1/2" FLAT WASHER, S.S.	4	0.04
16	70011	1/2" x 1 1/2" S.S. BOLT/NUT/LH	7	0.2
17	81344	1/2" x 10" A36 THREADED ROD ASSY, GALV.	2	0.7
18	91117	1/2" x 2 1/2" HEX LAG SCREW, GALV.	4	0.16
19	41020	1/2" LOCK WASHER, GALV.	4	0.01
TOTAL GALV. WT.				48



**WESTERN**  
UTILITY & TELECOM, INC.  
5032 SALEM DALLAS HWY.  
SALEM, OR 97304  
Ph: 503-587-2131 Fax: 503-587-1984  
WesternUtilityTelecom.com

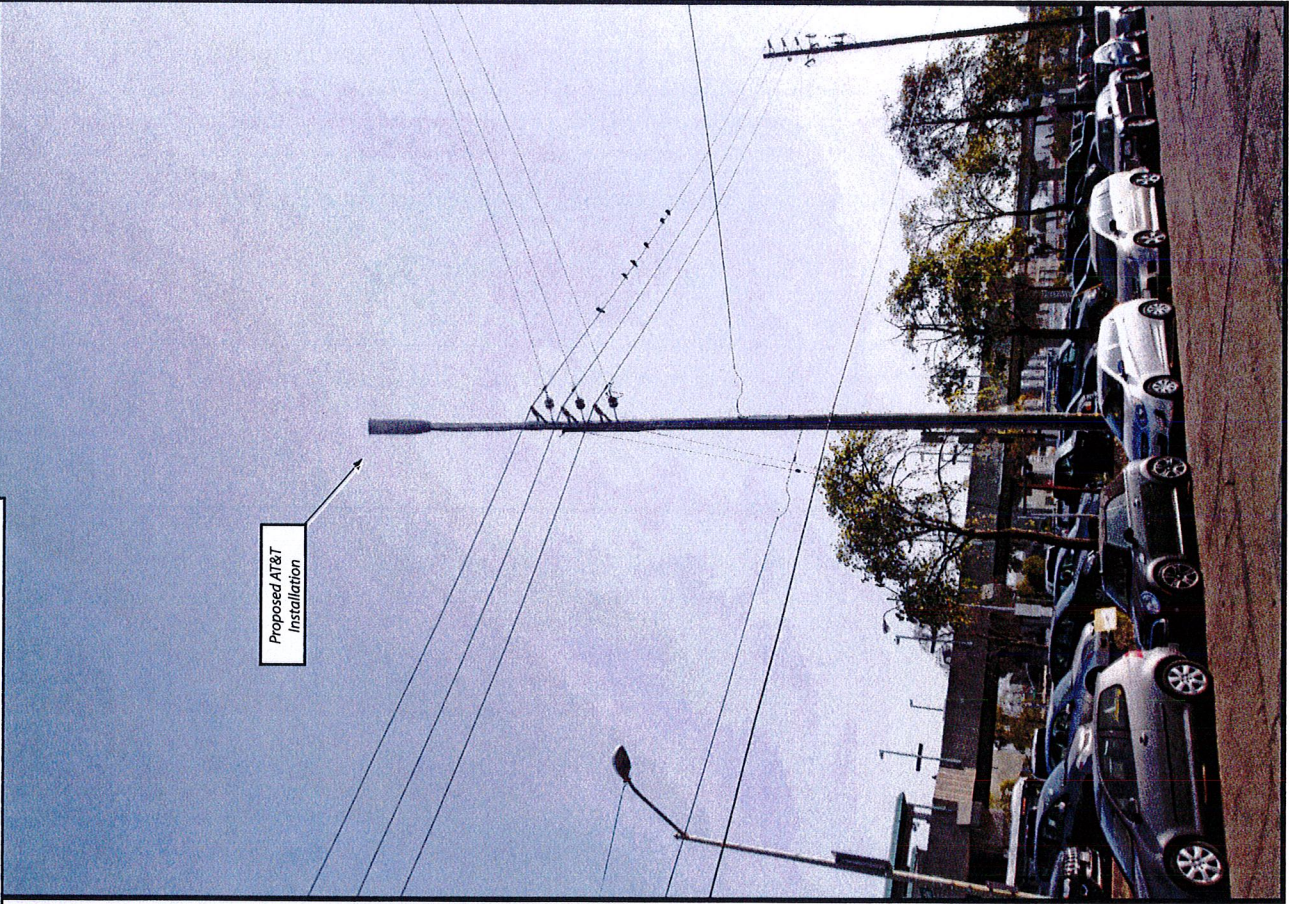


Existing



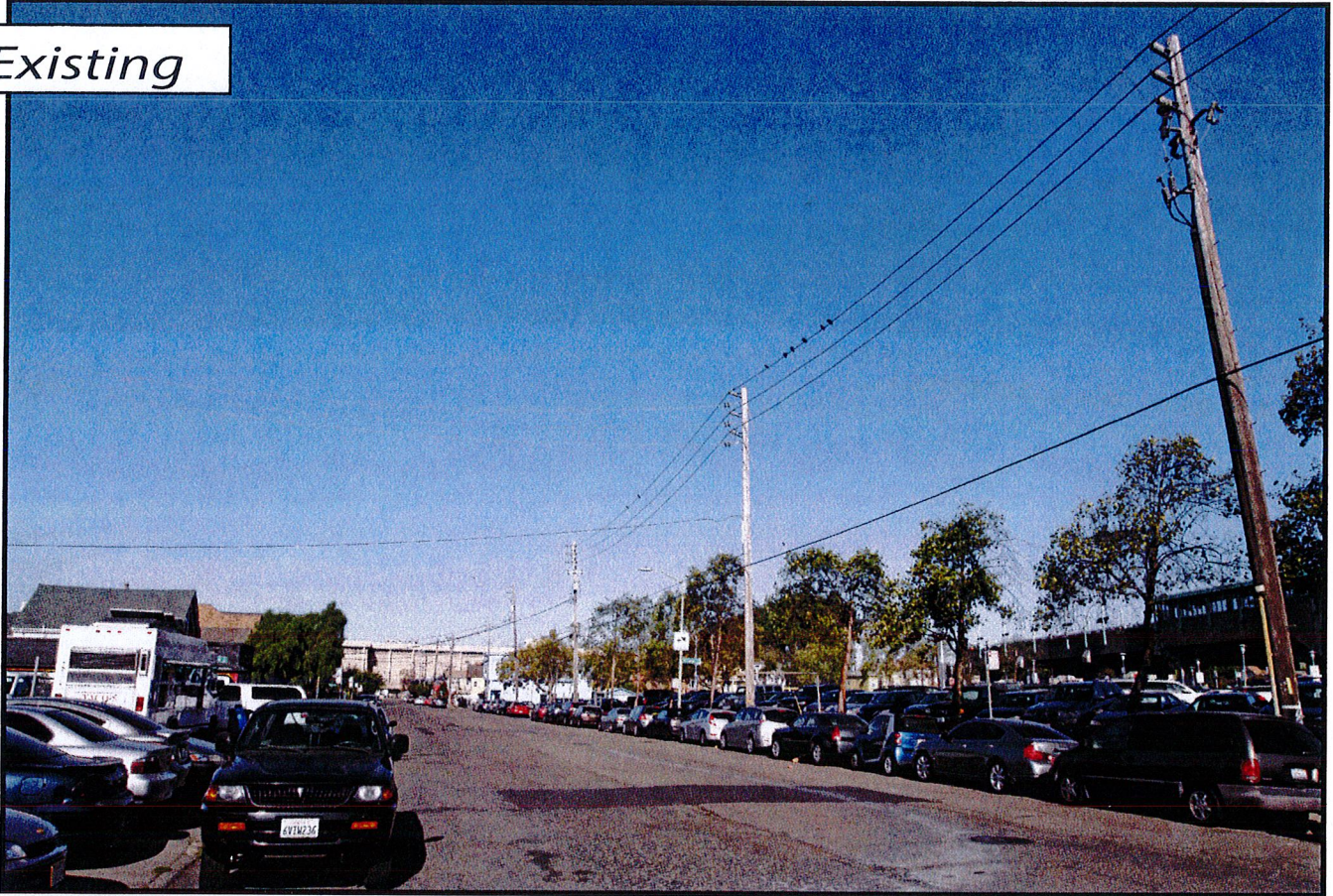
view from Powell Street looking west at site  
CRAN-RSFR-SFOK7-001  
ROW at 1425 5th Street, Oakland, CA  
Photosims Produced on 10-5-2017

Proposed

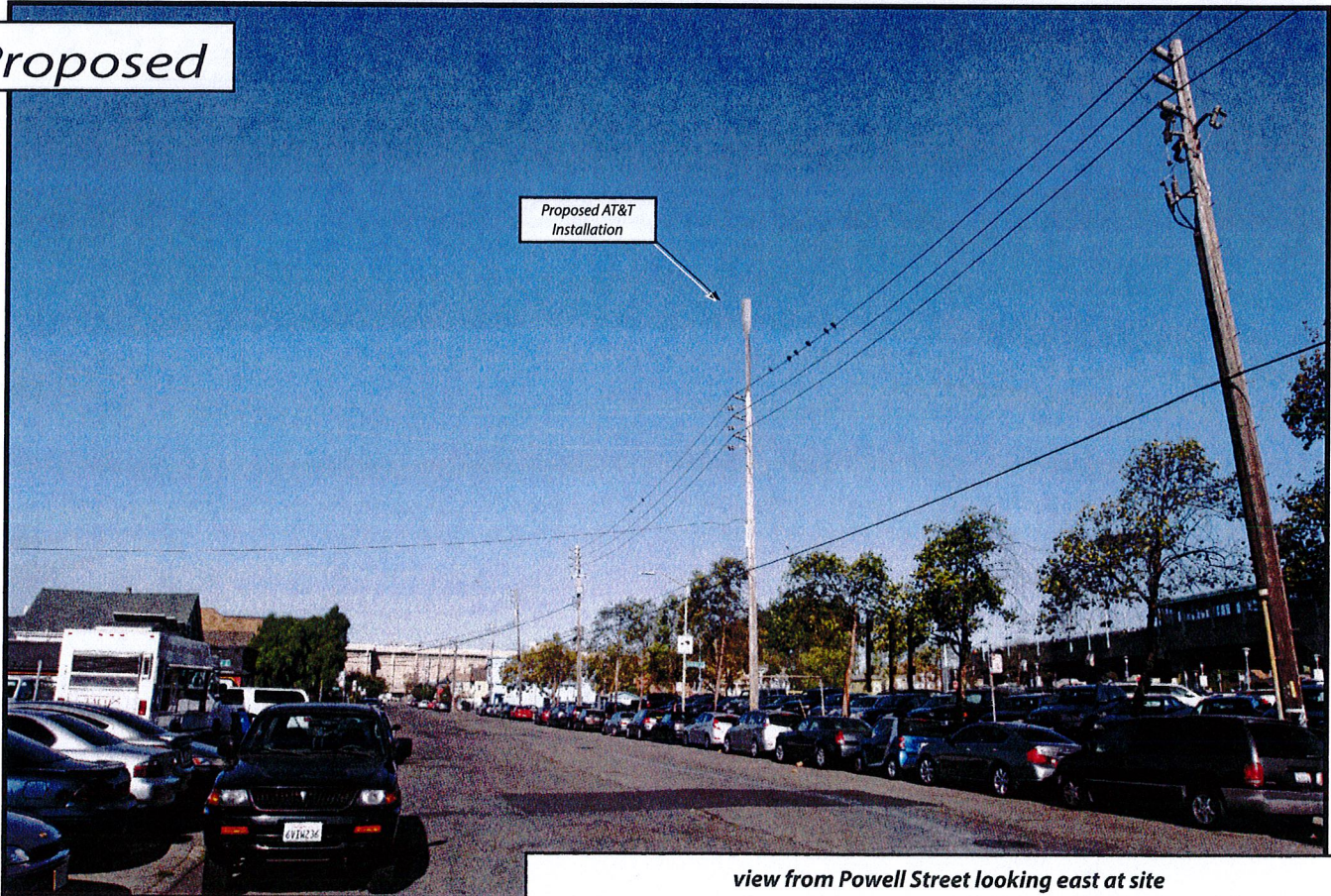


Proposed AT&T  
Installation

*Existing*



*Proposed*



Proposed AT&T  
Installation

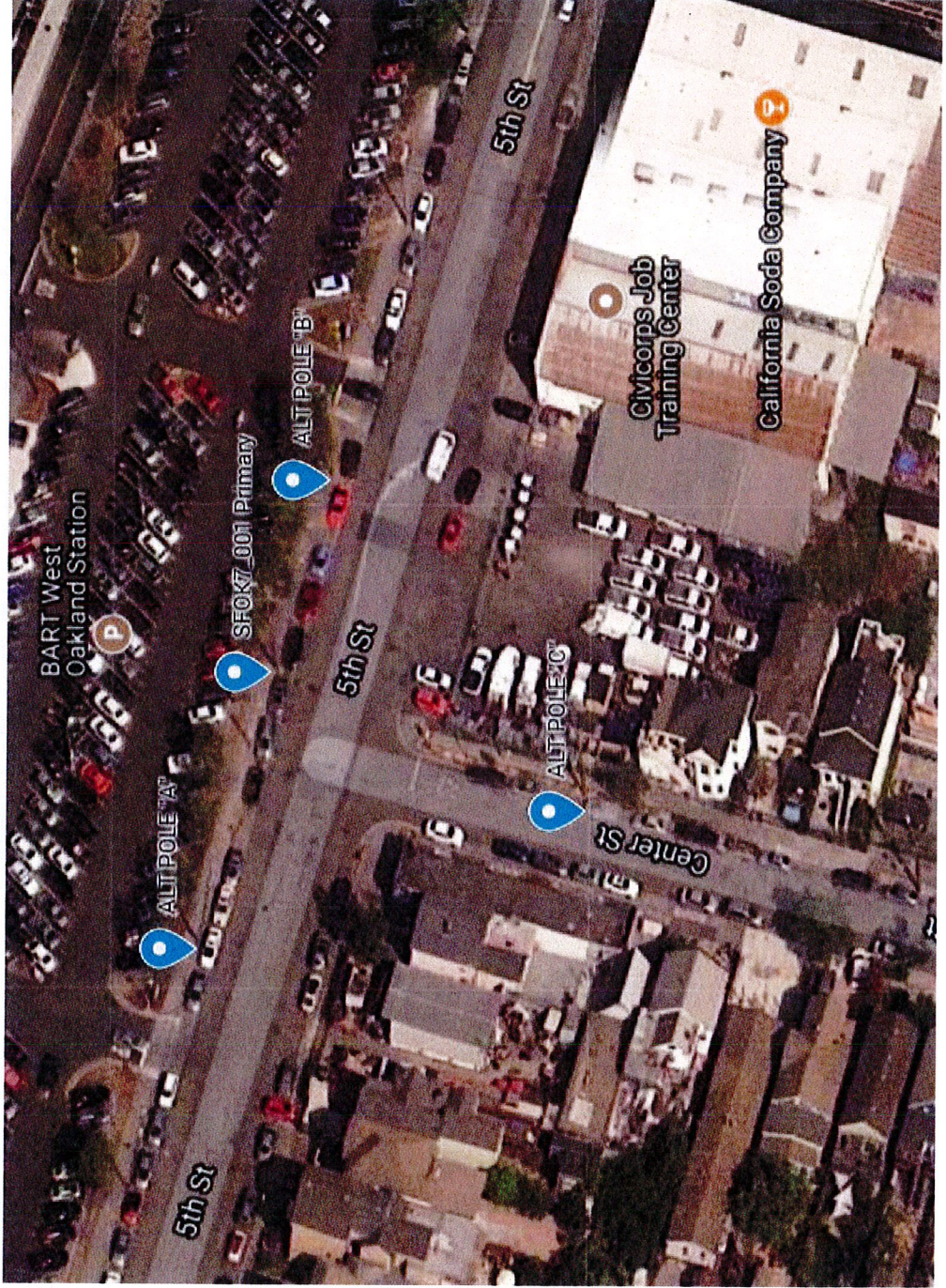
*view from Powell Street looking east at site*

**AdvanceSim**  
Photo Simulation Solutions  
Contact ( 925 ) 202-8507

 **AT&T Wireless**

CRAN-RSFR-SFOK7-001  
ROW at 1425 5th Street, Oakland, CA  
Photosims Produced on 10-5-2017

# ALTERNATIVE SITE ANALYSIS SF0K7\_001





## **AT&T PROPOSED LOCATION**

**SFOK7\_001  
1451 7th St, Oakland, CA 94607  
APN: 4-75-9  
37.8041800, -122.2952400**

**The project is located in an area with both existing residential & commercial structures. AT&T considered alternate utility poles immediately adjacent but none were desirable from a service coverage need, CPUC standards, PG&E standards, or an aesthetics perspective. The proposed project is in an underserved area.**



**ALTERNATIVE POLE "A"**

**PG&E Wood Utility Pole  
1451 7th St, Oakland, CA 94607  
37.804263, -122.295631**

**Findings: PG&E wood utility pole is braced at base of pole and is slated for pole replacement therefore we omitted from our candidate list.**



## **ALTERNATIVE POLE "B"**

**PG&E Wood Utility Pole  
1451 7th St, Oakland, CA 94607  
37.804116, -122.294966**

**Findings: PG&E wood utility poles with primary risers are precluded from attachment.**



## **ALTERNATIVE POLE "C"**

**PG&E Wood Utility Pole  
1441 5<sup>th</sup> St., Oakland, CA 94607  
37.803822, -122.295435**

**Findings: PG&E wood utility poles with manual cut off switches are precluded from attachment**

## ALTERNATIVE DESIGN ANALYSIS

SFOK7\_001

**APN:**

4-75-9

**LAT/LONG:**

37.8041800, -122.2952400

The project is located in an area with existing commercial structures. AT&T considered alternative monopole designs (see below) in this area but none of these designs are as desirable from a planning perspective or from an aesthetics perspective to minimize visual impacts. The proposed project is in an underserved area.

### Alternative light pole designs considered





**AT&T Mobility • Proposed Small Cell (No. CRAN-RSFR-SF0K7-001)  
1425 Fifth Street • Oakland, California**

**Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of AT&T Mobility, a personal wireless telecommunications carrier, to evaluate its small cell (No. CRAN-RSFR-SF0K7-001) proposed to be sited in Oakland, California, for compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

**Executive Summary**

AT&T proposes to install an omnidirectional cylindrical antenna on a utility pole sited in the public right-of-way at 1425 Fifth Street in Oakland. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

**Prevailing Exposure Standards**

The U.S. Congress requires that the Federal Communications Commission (“FCC”) evaluate its actions for possible significant impact on the environment. A summary of the FCC’s exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5,000–80,000 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
BRS (Broadband Radio)	2,600	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.35	0.47
[most restrictive frequency range]	30–300	1.00	0.20

Power line frequencies (60 Hz) are well below the applicable range of these standards, and there is considered to be no compounding effect from simultaneous exposure to power line and radio frequency fields.

**General Facility Requirements**

Small cells typically consist of two distinct parts: the electronic transceivers (also called “radios”) that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are typically mounted on the support pole or placed in a cabinet at ground level, and they are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the

**AT&T Mobility • Proposed Small Cell (No. CRAN-RSFR-SF0K7-001)  
1425 Fifth Street • Oakland, California**

FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

### **Computer Modeling Method**

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

### **Site and Facility Description**

Based upon information provided by AT&T, including drawings by Meridian Management LLC, dated September 27, 2017, it is proposed to install one KMW Model FLT-OM10H2, 2-foot tall, omnidirectional cylindrical antenna, on top of an existing utility pole sited in the public right-of-way on the north side of Fifth Street in Oakland, opposite the intersection of Center Street and next to a parking lot at the West Oakland BART Station. The antenna would employ 2° downtilt and would be mounted at an effective height of about 33½ feet above ground. The maximum effective radiated power in any direction would be 100 watts for PCS service. There are reported no other wireless telecommunications base stations at this site or nearby.

### **Study Results**

For a person anywhere at ground, the maximum RF exposure level due to the proposed AT&T operation is calculated to be 0.0017 mW/cm<sup>2</sup>, which is 0.17% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building is 0.10% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.



### No Recommended Mitigation Measures

Due to its mounting location and height, the AT&T antenna would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. The occupational limit is calculated to extend 4 inches from the antenna and, due to this short distance, the proposed operation is considered intrinsically compliant with that limit.

### Conclusion


Based on the information and analysis above, it is the undersigned's professional opinion that operation of the small cell proposed by AT&T Mobility at 1425 Fifth Street in Oakland, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating small cells.

### Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

November 15, 2017



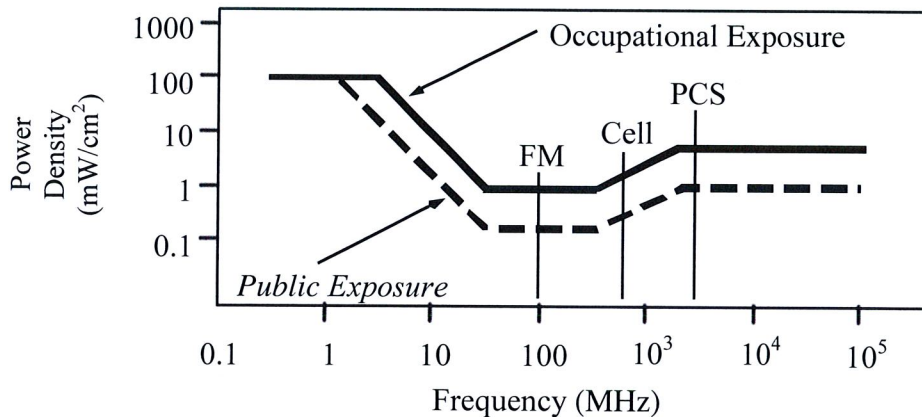
  
William F. Hammett, P.E.  
707/996-5200

## FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements (“NCRP”). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency Applicable Range (MHz)	Electromagnetic Fields (f is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm <sup>2</sup> )	
0.3 – 1.34	614	<i>614</i>	1.63	<i>1.63</i>	100	<i>100</i>
1.34 – 3.0	614	<i>823.8/f</i>	1.63	<i>2.19/f</i>	100	<i>180/f<sup>2</sup></i>
3.0 – 30	1842/f	<i>823.8/f</i>	4.89/f	<i>2.19/f</i>	900/f <sup>2</sup>	<i>180/f<sup>2</sup></i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	3.54√f	<i>1.59√f</i>	√f/106	<i>√f/238</i>	f/300	<i>f/1500</i>
1,500 – 100,000	137	<i>61.4</i>	0.364	<i>0.163</i>	5.0	<i>1.0</i>



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.



# RFR.CALC™ Calculation Methodology

## Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

### Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density  $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$ , in mW/cm<sup>2</sup>,

and for an aperture antenna, maximum power density  $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$ , in mW/cm<sup>2</sup>,

- where  $\theta_{BW}$  = half-power beamwidth of the antenna, in degrees, and  
 $P_{net}$  = net power input to the antenna, in watts,  
 $D$  = distance from antenna, in meters,  
 $h$  = aperture height of the antenna, in meters, and  
 $\eta$  = aperture efficiency (unitless, typically 0.5-0.8).

The factor of 0.1 in the numerators converts to the desired units of power density.

### Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

$$\text{power density } S = \frac{2.56 \times 1.64 \times 100 \times RFF^2 \times ERP}{4 \times \pi \times D^2}, \text{ in mW/cm}^2,$$

- where ERP = total ERP (all polarizations), in kilowatts,  
RFF = relative field factor at the direction to the actual point of calculation, and  
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

## Utility Contact System Search

The Utility Contact System (UCS) is the Communications Division's database for the primary regulatory contact for each telephone corporation operating in California. The Communications Division sends important regulatory notices to the regulatory contact for each telephone corporation via e-mail, so it is important for primary regulatory contacts to update their UCS record if their e-mail address changes.

Telephone corporations may update UCS contact information using the form on the following page: [Carrier Reporting Requirements](#)

A description of the different utility types (granted authorities) are listed on the following page: [Utility Type Descriptions](#)

Search Utility Name  Search Utility Number  Search

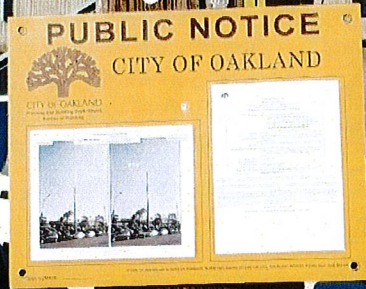
Utility Name ▲	Alias (DBA Name)	Utility Number	Street Address	City	State	Zip	Phone Number	Email	Utility Type	CPCN Appri
New Cingular Wireless Pcs, LLC	CINGULAR WIRELESS	3060	430 BUSH STREET	SAN FRANCISCO	CA	94108	(415) 778-1299	att-regulatory-ca@att.com	CEC	12-21-1995
New Cingular Wireless Pcs, LLC	CINGULAR WIRELESS	3060	7405 GREENHAVEN DRIVE	SACRAMENTO	CA	95831	(800) 498-1912	west.region.oopsac@awsmail.att.com	CEC	12-21-1995
New Cingular Wireless Pcs, LLC	CINGULAR WIRELESS	3060	11760 US HIGHWAY ONE, WEST TOWER	NORTH PALM BEACH	FL	33048	770-240-8849		CEC	12-21-1995

[Save Search Results as CSV Spreadsheet](#)

[Comments & Feedback](#)

10127  
250

**PUBLIC NOTICE**  
CITY OF OAKLAND



CITY OF OAKLAND  
OFFICE OF COMMUNITY DEVELOPMENT  
10127

**ATTACHMENT H**

02/16/2018 16:30:57



# AT&T OPEN HOUSE

*AT&T is improving wireless service in Oakland!*

*We will soon be proposing state-of-the-art small cell wireless facilities including antennas, attached to existing utility poles and light poles.*

*Want to learn more?*

*Please join us for an open house showcasing AT&T's network, designs, permitting and radio frequency engineering.*

*Tuesday, January 30th, 2018*

*Open House—Stop by anytime between 6pm–8pm*

*Light refreshments served*

*Temescal Oakland Public Library*

*5205 Telegraph Ave., Oakland, CA 94609*

*If you have any questions, please feel free to contact:*

*[oaklandoutreach@vinculums.com](mailto:oaklandoutreach@vinculums.com)*

*(925) 482-8550*







**AT&T**

# AT&T OPEN HOUSE

*AT&T is improving wireless service in Oakland!*

*We will soon be proposing state-of-the-art small cell wireless facilities including antennas, attached to existing utility poles and light poles.*

*Want to learn more?*

*Please join us for an open house showcasing AT&T's network, designs, permitting and radio frequency engineering.*

*Monday, January 8th, 2018*

*Open House—Stop by anytime between 6–8PM*

*Light refreshments served*

*Preservation Park - Nile Hall*

*1233 Preservation Park Way, Oakland, CA 94612*

*If you have any questions, please feel free to contact:*

*[oaklandoutreach@vinculums.com](mailto:oaklandoutreach@vinculums.com)*

*(925) 482-8550*



# AT&T Oakland Small Cell Master Plan Map



Map data © 2018 Google