COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: September 17, 2020

TO: Zoning Hearing Officer

FROM: Planning Staff

SUBJECT: Consideration of two Coastal Development Permits and Use Permits, pursuant to Sections 6328.4 and 6512.1 of the San Mateo County Zoning Regulations, respectively, to modify joint utility poles for the installation of new AT&T Wireless Telecommunication Facilities consisting of small cell antennas and ancillary pole-mounted equipment, located in the public right-of-way at Avenue Alhambra and Avenue Portola (in front of APN 047-232-010; 100 Avenue Portola) and Avenue Del Oro (in front of APN 047-211-100; 255 Avenue Del Oro) in the unincorporated El Granada area of San Mateo County. The Coastal Development Permits are appealable to the California Coastal Commission.

County File Numbers: PLN 2020-00121 and PLN 2020-00122 (AT&T Wireless/Modus)

PROPOSAL

The applicant proposes to modify existing joint utility poles for the installation of new AT&T Wireless Telecommunication Facilities in the unincorporated El Granada area. The 30 feet high existing pole located in the public right-of-way at Avenue Alhambra and Avenue Portola (in front of APN 047-232-010) would be replaced with a new pole to a new height of 40'-10", while the existing approximately 37'-6" pole located at Avenue Del Oro (in front of APN 047-211-100) will be maintained with added equipment totaling a height of 46'-6". The facilities will consist of antennas at the top of the poles and ancillary pole mounted equipment boxes. No grading or tree removal activities are proposed.

RECOMMENDATION

That the Zoning Hearing Officer approve the Coastal Development Permits and Use Permits, County File Numbers as listed below, by making the required findings and adopting the conditions of approval listed in Attachment A:

Item 1: PLN 2020-00121
Item 2: PLN 2020-00122

BACKGROUND

Report Prepared By: Camille Leung, Project Planner, cleung@smcgov.org

Applicant: AT&T Wireless c/o Cole Iles at Modus

Land Owners: San Mateo County Department of Public Works

Pole Owner: Joint Pole Association (JPA)

Property Details for the Proposed Use Permits:

Item 1 – County File Number PLN2020-00121	
Location	Public Right-of-Way in front of 100 Avenue Portola
APN	047-232-010
Existing Zone	R-3/S-3/DR/CD
General Plan Designation	High Density Residential
Flood Zone	Zone X (area of minimal flood risk); FEMA Panel No. 06081C0138F; Effective August 2, 2017
Sphere-of-Influence	City of Half Moon Bay

Item 2 – County File Number PLN2020-00122	
Location	Public Right-of-Way in front of 255 Avenue Del Oro
APN	047-211-100
Existing Zone	R-1/S-17/DR/CD
General Plan Designation	Medium Density Residential
Flood Zone	Zone X (area of minimal flood risk); FEMA Panel No. 06081C0138F; Effective August 2, 2017
Sphere-of-Influence	City of Half Moon Bay

Environmental Evaluation: Categorically exempt under the provisions of Class 3, Section 15303, of the California Environmental Quality Act (CEQA) Guidelines for the construction of new, small structures and installation of small new equipment and facilities in small structures.

Setting: The proposed project sites are located in the public right-of-way (ROW) east of Cabrillo Highway in the unincorporated El Granada area of San Mateo County.

Chronology:

Date		Action
April 8, 2020	-	Coastal Development and Use Permit applications submitted for PLN 2020-00121 and PLN 2020-00122.
July 6, 2020	-	Applications deemed complete.
September 17, 2020	-	Zoning Hearing Officer Public Hearing date.

DISCUSSION

A. KEY ISSUES

1. Compliance with the General Plan

Staff has determined that the proposed projects comply with the applicable County General Plan policies, specifically:

Visual Quality Policies

Policy 4.21 (*Utility Structures*) requires minimizing adverse visual impacts generated by utility structures. The project sites are located within the public right-of-way (ROW) along local roads in single-family residential and commercial areas. In order to reduce the visual impacts of the proposed projects, the antennas and mounted equipment will be painted to match the color of the existing wood utility pole and shall be constructed of non-reflective materials, as required by Condition No. 4.

2. Compliance with the Local Coastal Program

A Coastal Development Permit is required pursuant to Section 6328.4 of the County Zoning Regulations for projects meeting the definition of development in the Coastal Development (CD) District and proposed uses which are not a permitted use in the zoning district. Staff has determined that the projects are considered development and in compliance with applicable Local Coastal Program (LCP) Policies, elaborated as follows:

a. Energy

Policies 4.31 (*Locational Criteria*) and 4.35 (*Siting*) require the utilization of existing utility rights-of-way to provide consolidated transmission facilities wherever such uses are compatible or feasible and minimize impacts on coastal resources such as scenic

views, recreation, sensitive habitats, archaeological areas, and geological hazard areas. The project would modify the existing utility poles thereby consolidating utility services and avoiding impacts on undisturbed coastal resources.

Policy 4.36 (*Color and Design*) requires the color and design of the facilities to be compatible with the surroundings. The telecommunications facilities will be painted to match the existing wood utility pole, to blend with the surroundings, in order to minimize impacts on visual resources.

3. Compliance with the Zoning Regulations

The proposed project areas are located within the public ROW in the R-3/S-3/DR/CD, and R-1/S-17/DR/CD Zoning Districts. Zoning district standards, with the exception of height are not applicable to projects located within the public right-of-way. The maximum height allowed in the R-3/S-3/DR/CD and R-1/S-17/DR/CD Zoning Districts is 36 feet and 28 feet, respectively. The proposed projects will add 9 to 10 feet to the existing and replaced utility poles to exceed the maximum heights allowed in said Zoning Districts, as indicated in the table below. General Order No. 95 (GO-95), mandated by the California Public Utilities Commission, requires a 6-foot vertical separation between all cellular antennas and the nearest adjacent power supply lines and a 2-foot vertical separation from communication conductors and equipment. The applicant has proposed to extend the height of the utility poles to comply with the State-required 6-foot and 2-foot safety separation distance mandates.

Item No.	Planning Case No.	Zoning District	Maximum Height Allowed in Zoning District	Existing Pole Height	Proposed Pole and Equipment Height
Item 1	PLN 2020-00121	R-3/S-3/DR/CD	36 ft.	30 ft.	40 ft.-10 in.
Item 2	PLN 2020-00122	R-1/S-17/DR/CD	28 ft.	37 ft- 6 in.	46 ft.- 6 in.

The applicant requests that the proposed projects be permitted to exceed the height standards in order to comply with the safety and engineering requirements of GO-95. While the alternative site analyses submitted by the applicant identified nearby alternative utility poles, they were determined to be infeasible by the project applicant. Federal law preempts the application of the County's height criteria if it results in the prohibition of wireless facilities being installed in County project areas. In this instance, State (i.e., GO-95) and Federal regulations take priority over local regulations that limit projects to the height limits of the respective zoning district.

4. Compliance with the Wireless Telecommunication Facilities Ordinance

Staff has reviewed these projects against the provisions of the Wireless Telecommunications Facilities (WTF) Ordinance and determined that the projects comply with the applicable standards discussed below:

a. Development and Design Standards

Section 6512.2.A prohibits location in a Sensitive Habitat as defined by Policy 7.1 of the Local Coastal Program for facilities proposed in the Coastal Zone.

The proposed projects are not located in or near mapped sensitive habitats, as defined by Policy 7.1 of the Local Coastal Program.

Section 6512.2.B prohibits wireless facilities to be located in residential-zoned areas, unless the applicant demonstrates that no other site allows feasible or adequate capacity and coverage. Evidence shall include an alternative site analysis within 2.5 miles of the proposed facility.

Both projects would be located in the location of an existing joint utility pole in the public ROW within a residential zoning district. Small cell technology requires sites to be much closer together than larger macro sites. These sites are not meant to increase the coverage of an area but to assist with unloading traffic from the macro site network to provide increased data speeds and decrease dropped calls for the surrounding residences and transient traffic. As such, small cell facilities are frequently located in residential neighborhoods where data traffic is high. The alternative site analyses submitted by the applicant identified nearby alternative utility poles which were determined to be infeasible by the project applicant, however, the alternate sites were also located within the residential zoning districts (with the exception of Pole 5 for Item 1 which was determined by the applicant to be more intrusive than the subject proposal).

Additionally, although the WTF Ordinance requires applicants to demonstrate the need for wireless facilities through the submittal of propagation maps and alternative analyses, wireless providers have a state mandated right to place their facilities in the public ROW (California Public Utilities Code Section 7901), and recent legal developments indicate that wireless providers are not required to consider alternatives outside of the ROW, nor prove the need for their facilities when they are located in the right-of-way. Consequently, the County's ability to request further information demonstrating the need for proposed facilities in the public ROW is limited.

Section 6512.2.C prohibits wireless telecommunication facilities to be located in areas where co-location on existing facilities would provide equivalent coverage with less environmental impact.

The small cell technology proposed by the applicant is the least environmentally impactful wireless technology currently available. As small cell technology requires sites to be located in close proximity to one another and closer to targeted service areas, co-locating small cell sites on macro cell towers (which are often located far outside service areas) is often infeasible. As local jurisdictions cannot require wireless providers to locate outside the right-of-way, a 2.5-mile radius alternatives map may not identify feasible alternative right-of-way locations to serve the identified target area. Instead, the applicant has identified and researched alternative utility pole sites within the required service area. These alternative utility poles would either not meet GO-95 safety separation standards or would be more intrusive than the subject poles. As such, the applicant was unable to identify any existing wireless facilities or alternative poles that would allow an opportunity for co-location, provide the necessary coverage to the target area, and be equally or less intrusive that the subject proposals.

Section 6512.2.D requires wireless telecommunication facilities to be constructed so as to accommodate and be made available for co-location unless technologically infeasible.

Future co-locations would be technically feasible as long as the proposed facilities comply with GO-95 engineering requirements. As pole top-mounted facilities cannot accommodate additional wireless facilities in a manner that complies with both PG&E and GO-95 requirements, the applicant does not expect future co-locations given the equipment configuration of the utility poles.

Sections 6512.2.E and F seek to minimize and mitigate visual impacts from public views by siting new facilities outside of public view, using natural vegetation for screening, painting equipment to blend with existing landscaping, and designing the facility to blend in with the surrounding environment.

To mitigate the visual impact of the proposed projects, the antennas and utility boxes shall be painted to match the existing utility poles (Condition No. 4). No trees or vegetation are proposed for removal to accommodate the proposed projects.

Section 6512.2.G requires that the exterior of wireless telecommunication facilities be constructed of non-reflective materials.

As required by Condition No. 4, the proposed facilities shall be painted a non-reflective earth tone color to blend-in with the neighborhood area.

Section 6512.2.H requires that wireless telecommunication facilities comply with all the requirements of the underlying zoning district, including, but not limited to setbacks.

The utility poles are located in the public right-of-way. As discussed in Section 2 above, zoning district standards (with the exception of height) are not applicable to wireless facilities located in the right-of-way.

Section 6512.2.I.2 requires that no new equipment located on existing facilities in the public right-of-way in any Residential (R) District shall be allowed to exceed the maximum height for structures allowed in that district by 10 percent of the height of the existing facility, or by 5 feet, whichever is less.

General Order No. 95 requires a 6-foot vertical safety separation between all wireless facilities and the nearest adjacent powerlines for facilities located on utility poles. Based on the height of the existing utility lines at approximately 29 feet the 6-feet and 2-feet vertical separation distances required by GO-95, and the approximate 2-foot height of the antennas, the proposed projects would exceed the 28 and 36 feet height limits of their respective zoning districts by more than 10 percent of those heights. The proposed heights are 40 feet-10 inches for Item 1 and 46 feet 6 inches for Item 2.

Imposition of the County's height regulations would effectively prohibit the installation of wireless facilities on utility poles; such a prohibition is preempted by Federal law. Because wireless carriers: (1) have a state mandated right to utilize the public ROW, (2) must abide by a 6-foot safety separation (GO-95), and (3) are not required to consider alternative sites outside the ROW, this is a situation in which State and Federal regulations take priority over location regulations (i.e., height criteria).

Section 6512.2.J seeks to regulate the size, quantity, and location of accessory buildings required for wireless facilities located in any Residential (R) District.

No accessory buildings or ground floor equipment boxes are required for these projects. The equipment boxes necessary for these projects are small in size and would be mounted onto the utility poles.

Section 6512.2.K requires the overall footprint of a facility to be as minimal as possible and not cover more than 15 percent in area of the lot or an area greater than 1,600 sq. ft. in residential districts.

No new ground structures would be built or utilized to support the operation of these wireless telecommunication facilities. The required utility box would be small in size and mounted 7 feet above grade on the utility poles.

Section 6512.2.L prohibits diesel generators as emergency power sources unless electricity, natural gas, solar, wind or other renewable energy sources are not feasible.

No generators are proposed.

b. Performance Standards

The proposed projects meet the required standards of Section 6512.3 (*Performance Standards for New Wireless Telecommunication Facilities that are Not Co-Location Facilities*) for lighting, licensing, provision of a permanent power source, timely removal of the facility, and visual resource protection. There is no lighting proposed, proper licenses will be obtained from both the Federal Communications Commission (FCC) and the California Public Utilities Commission (CPUC), power for the facilities will be provided by PG&E, visual impacts will be minimal, and conditions of approval will require maintenance and/or removal of the facilities when they are no longer in operation. Furthermore, road access to the proposed project sites is existing and no noise in excess of San Mateo County's Noise Ordinance would be produced.

5. Compliance with the Use Permit Findings

For the Use Permits to be approved by the Zoning Hearing Officer, the following findings must be made:

a. **That the establishment, maintenance and/or conducting of the use will not, under the circumstances of this particular case, result in a significant adverse impact to coastal resources, be detrimental to the public welfare or injurious to property or improvements in said neighborhood.**

The proposed wireless facilities would be unmanned and serviced such that their maintenance would not generate significant traffic, noise, or be detrimental to the public welfare.

Cellular communication facilities, such as the proposed projects, require the submittal and review of radio frequency (RF) reports to ensure that the RF emissions from the proposed antennas do not exceed the Federal Communications Commission's (FCC) public exposure limits. The applicant submitted radio frequency reports prepared by Hammett and Edison, Inc., dated April 2, 2020 confirming that the proposed facilities would comply with the prevailing standards for limiting public exposure to radio frequency energy and thus, would not cause a significant impact on the environment (Attachments C4 and D4). The reports state that the maximum RF exposure experienced at ground level would range from 1.6 - 2.3 percent of the applicable public exposure limit (see Table 2 below). 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.

Item No.	Planning Case No.	Approximate Location	Radio Frequency Exposure at Ground Level
Item 1	PLN 2020-00121	Avenue Portola	1.6%
Item 2	PLN 2020-00122	Avenue Del Oro	2.3%

Based on the reports, due to the mounting locations and heights of the facilities, the antennas would not be accessible to unauthorized persons. Therefore, no measures are necessary to comply with the FCC public exposure guidelines. In order to prevent occupational exposures in excess of the FCC guidelines, the report recommends that appropriate RF safety training be implemented to all workers who have access within twenty (20) feet outward from the antennas. No access within 4.5 feet directly in front of the antennas should be allowed during maintenance operations high on the pole unless occupational protection requirements are in place. The report also recommends that warning signs be posted at each antenna and/or on each pole below each antenna that are readable from any angle of approach.

b. **That this telecommunication facility is necessary for the public health, safety, convenience or welfare of the community.**

Staff has determined that installation of a cellular facility at these locations would allow for increased clarity, range, and capacity of the

existing cellular network. The proposed facilities are the least intrusive option available to expand AT&T Wireless's network capacity and service coverage in El Granada. The proposed facilities would use existing utility infrastructure and add small equipment without disturbing the overall character of the neighborhood.

B. ENVIRONMENTAL REVIEW

The projects are categorically exempt pursuant to Section 15303, Class 3, of the California Environmental Quality Act (CEQA) related to the construction of a new, small structures and installation of small new equipment and facilities in small structures.

C. REVIEW BY THE MIDCOAST COMMUNITY COUNCIL

Staff referred the project to the Midcoast Community Council (Council) and received a comment that expressed its support for projects that improve and upgrade telecommunication qualities of the Midcoast area. This project therefore is supported by the Council.

D. REVIEW BY THE CALIFORNIA COASTAL COMMISSION

Staff referred the project to the California Coastal Commission and received a comment regarding the potential impact on encroachment of the tower into tree limbs. The applicant has stated they would implement maintenance of the trees according to best practice methods. Staff has included a condition (Condition No. 6) that addresses the potential need for tree trimming.

E. OTHER REVIEWING AGENCIES

Building Inspection Section
Geotechnical and Drainage Section
Department of Public Works
Coastside Fire Protection District

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Vicinity Maps
C1-C4. PLN 2020-00121: Project Plans, Photo Simulations, Alternative Analysis, Radio Frequency Radiation Reports prepared by EBI Consulting, dated February 28, 2018
D1-D4. PLN 2020-00122: Project Plans, Photo Simulations, Alternative Analysis, Radio Frequency Radiation Reports prepared by EBI Consulting, dated February 15, 2018

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Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Numbers: PLN 2020-00121, PLN 2020-00122 Hearing Date: September 17, 2020

Prepared By: Camille Leung, Project Planner For Adoption By: Zoning Hearing Officer

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. That the proposed projects are categorically exempt pursuant to Section 15303, Class 3, of the California Environmental Quality Act (CEQA) related to the construction of a new, small structures and installation of small new equipment and facilities in small structures.

Regarding the Coastal Development Permit, Find:

2. That the project, as described in the application and accompanying materials required by the Zoning Regulations, Section 6328.4, and as conditioned in accordance with Section 6328.14, conforms with the applicable policies and required findings of the San Mateo County Local Coastal Program (LCP). Specifically, the project complies with policies regarding location and impacts to visual resources.

Regarding the Use Permit, Find:

3. That the establishment, maintenance, and/or conducting of the use will not, under the circumstances of this particular case, result in a significant adverse impact to coastal resources, or be detrimental to the public welfare or injurious to the property or improvements in said neighborhood because the projects will meet the health and safety standards set by the California Public Utilities Commission (CPUC) and the Federal Communications Commission (FCC). The project has been conditioned to require maintenance of a valid FCC license and has been reviewed and granted conditional approval by Coastside Fire Protection District and the County's Building Inspection Section.

4. That these telecommunications facilities are necessary for the public health, safety, convenience, or welfare of the community. The proposed facilities contribute to an enhanced AT&T wireless network for increased clarity, range, and system capacity for its users. The wireless network will be utilized by residents, commuters, and emergency personnel and is considered necessary for public health, safety, convenience, and welfare for the area.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

1. This approval applies only to the proposal, documents, and plans described in this report and submitted to and approved by the Zoning Hearing Officer on September 17, 2020. Minor revisions or modifications may be approved by the Community Development Director if they are consistent with the intent of and in substantial conformance with this approval.

2. These use permits shall be for the proposed projects only. Substantial change to a project shall require an amendment to the use permit. Amendments to these use permits require an application for amendment, payment of applicable fees, and consideration at a public hearing prior to any changes to the facilities.

3. These permits shall be valid for ten (10) years from the date of final approval. If the applicant seeks to renew these permits, renewal shall be applied for six (6) months prior to expiration with the Planning and Building Department and shall be accompanied by the renewal application and fee applicable at that time. Renewal of these permits shall be considered at a public hearing.

4. The applicant shall paint the antennas and associated ancillary boxes a non-reflective color to match the existing wood utility pole. Color verification will be confirmed by the Current Planning Section prior to a final inspection for the building permit.

5. During project construction, the applicant shall, pursuant to Chapter 4.100 of the San Mateo County Ordinance Code, minimize the transport and discharge of stormwater runoff from the construction site into storm drain systems by:

    a. Stabilizing all denuded areas and maintaining erosion control measures continuously between October 1 and April 30. Stabilizing shall include both proactive measures, such as the placement of hay bales or coir netting, and passive measures, such as revegetating disturbed areas with plants propagated from seed collected in the immediate area.

    b. Storing, handling, and disposing of construction materials and wastes properly, so as to prevent their contact with stormwater.

c. Controlling and preventing the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-stormwater discharges to storm drains and watercourses.

d. Avoiding cleaning, fueling, or maintaining vehicles on-site, except in a designated area where wash water is contained and treated.

e. Delineating with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.

f. Protecting adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

g. Performing clearing and earth-moving activities only during dry weather.

h. Limiting and timing application of pesticides and fertilizers to prevent polluted runoff.

i. Limiting construction access routes and stabilizing designated access points.

j. Avoiding tracking dirt or other materials off-site; cleaning off-site paved areas and sidewalks using dry sweeping methods.

k. The contractor shall train and provide instruction to all employees and subcontractors regarding the construction best management practices.

6. These permits do not allow for the removal of any trees. Any tree removal will require a separate permitting process. In the event that tree trimming is needed, the applicant shall comply with industry best practices for tree trimming.

7. The applicant shall not enter into a contract with the landowner or lessee which reserves for one company exclusive use of structures on this site for telecommunications facilities.

8. The wireless telecommunications facilities shall not be lighted or marked unless required by the Federal Communications Commission (FCC) or the Federal Aviation Administration (FAA).

9. The applicant shall file, receive, and maintain all necessary licenses and registrations from the Federal Communications Commission (FCC), the California Public Utilities Commission (CPUC), and any other applicable regulatory bodies prior to initiating the operation of these facilities. The applicant shall supply the Planning and Building Department with evidence of each of these licenses and

registrations. If any required license is ever revoked, the applicant shall inform the Planning and Building Department of the revocation within ten (10) days of receiving notice of such revocation.

10. Once a use permit is obtained, the applicant shall obtain a building permit and build in accordance with the approved plans.

11. The projects' final inspection approval shall be dependent upon the applicant obtaining a permanent and operable power connection from the applicable energy provider.

12. The wireless telecommunication facilities and all equipment associated with it shall be removed in its entirety by the applicant within 90 days if the FCC and/or CPUC license and registration are revoked or the facility is abandoned or no longer needed, and the sites shall be restored to blend with the surrounding area. The owner and/or operator of the wireless telecommunication facilities shall notify the Planning Department upon abandonment of the facility. Restoration shall be completed within two (2) months of the removal of the facility.

13. These wireless telecommunications facilities shall be maintained by the permittee(s) and subsequent owners in a manner that implements visual resource protection requirements of Section 6512.2.E and F above (e.g., painting), as well as all other applicable zoning standards and permit conditions.

14. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m., weekdays and 9:00 a.m. to 5:00 p.m., Saturdays. Said activities are prohibited on Sundays, Thanksgiving, and Christmas (San Mateo Ordinance Code Section 4.88.360).

15. If technically practical and without creating any interruption in commercial service caused by electronic magnetic interference (EMI), floor space, tower space and/or rack space for equipment in a wireless telecommunication facility shall be made available to the County for public safety communication use.

16. To reduce the impact of construction and maintenance activities within the public right-of-way and/or on neighboring properties, the applicant shall ensure that no construction-related vehicles impede through traffic along Avenue Portola and Avenue Del Oro or other public right-of-ways.

17. Caution signs are required to be posted 10-15 feet below the antennas readily visible from any angle of approach to persons who might need to work within the project area as recommended by the project RF reports.

18. If a less visually obtrusive/reduced antenna technology becomes available for use during the life of this project, the applicant shall present a redesign incorporating

this technology into the project for review by the Community Development Director and any parties that have expressed an interest.

Department of Public Works

19. No proposed construction work within the County right-of-way shall begin until County requirements for the issuance of an encroachment permit, including review of the plans, have been met and an encroachment permit issued. Applicant shall contact a Department of Public Works Inspector 48 hours prior to commencing work in the right-of-way.

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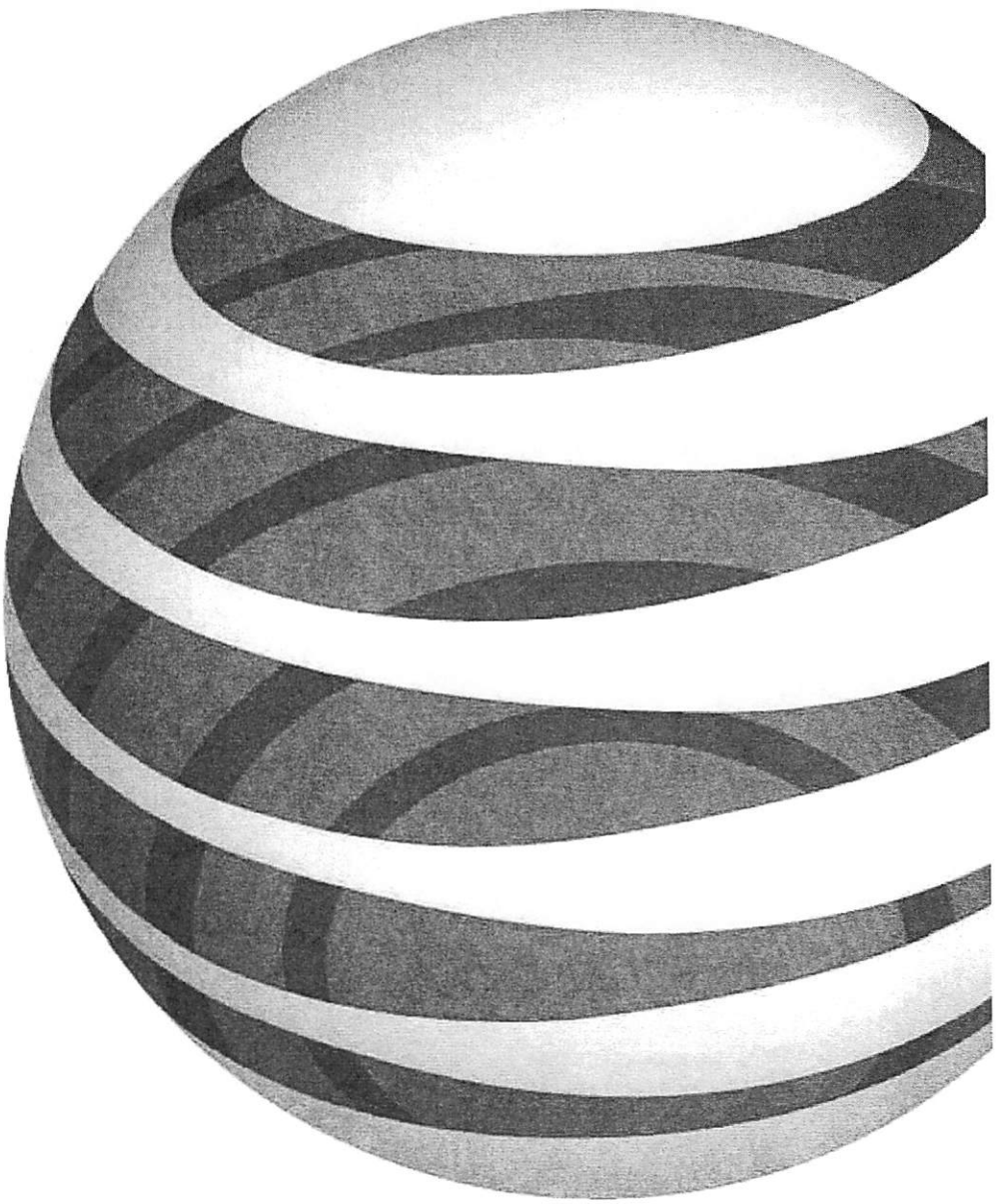
Santiago Avenue
Ventura Street
Malaga Street
Avenue Cabrillo
Avenue Cabrillo
Avenue Cabrillo
Cabrillo Highway
California Coastal Trail
California Coastal Trail
Obispo Road
Avenue Alhambra
Santa Maria Avenue
El Granada
Columbus Street
Isabella Avenue
Coronado Street
The Alameda
Ferdinand Avenue
Avenue Alhambra
Avenue Balboa
Palma Street
Francisco Street
El Granada Boulevard
Dunn Road
Francisco Street
Palma Street
The Alameda
Avenue Balboa
Avenue Alhambra
San Carlos Avenue
Avenue del Oro
Ferdinand Avenue
Avenue Portola
San Pedro Road
San Clemente Road
Isabella Road
Isabella Road
Del Monte Road
Dolores Street
Columbus Street
San Juan Avenue
Vallejo Street
Carmel Avenue
Valencia Avenue
Avenue Balboa
San Juan Avenue



PROJECT DESCRIPTION

THIS IS AN UNMANNED WIRELESS TELECOMMUNICATION FACILITY FOR AT&T MOBILITY CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTE AND ASSOCIATED EQUIPMENT ON A PROPOSED WOOD UTILITY POLE IN TH PUBLIC RIGHT OF WAY.

SCOPE OF WORK & SITE COMPLETION CHECKLIST

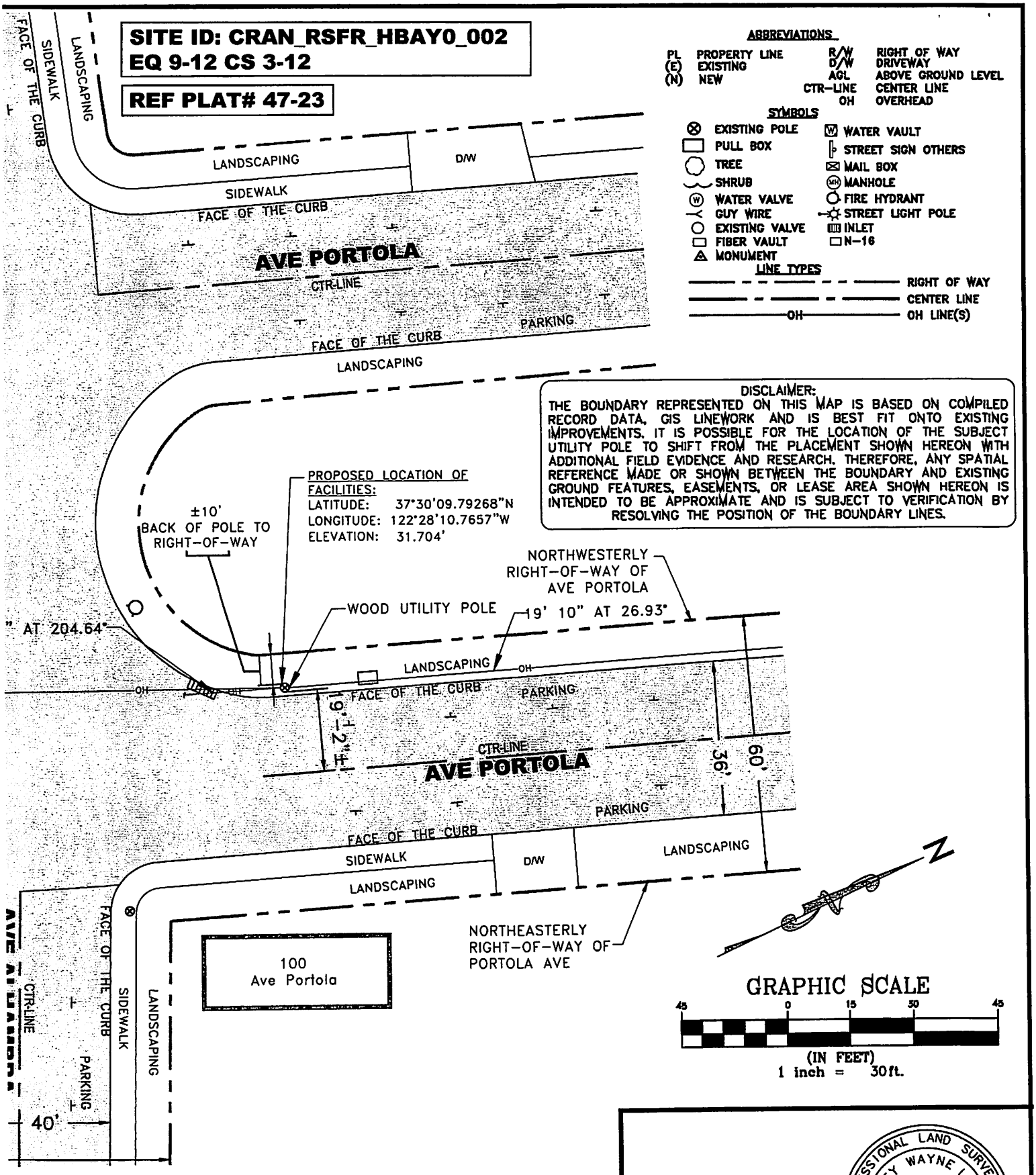
ABBREVIATIONS:

A.B.	ANCHOR BOLT
ABV.	ABOVE
ACCA	ANTENNA CABLE COVER ASSEMBLY
ADD'L	ADDITIONAL
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
ALUM.	ALUMINUM
ALT.	ALTERNATE
ANT.	ANTENNA
APPRX.	APPROXIMATE(LY)
ARCH.	ARCHITECT(URAL)
AWG.	AMERICAN WIRE GAUGE
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BM.	BEAM
B.N.	BOUNDARY NAILING
BTCW.	BARE TINNED COPPER WIRE
B.O.F.	BOTTOM OF FOOTING
B/U	BACK-UP CABINET
CAB.	CABINET
CANT.	CANTILEVER(ED)
C.I.P.	CAST IN PLACE
CLG.	CEILING
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION(OR)
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
d	PENNY (NAILS)
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DOUGLAS FIR
DIA.	DIAMETER
DIAG.	DIAGONAL
DIM.	DIMENSION
DWG.	DRAWING(S)
DWL.	DOWEL(S)
EA.	EACH
EL.	ELEVATION
ELEC.	ELECTRICAL
ELEV.	ELEVATOR
EMT.	ELECTRICAL METALLIC TUBING
E.N.	EDGE NAIL
ENG.	ENGINEER
EQ.	EQUAL
EXP.	EXPANSION
EXST.(E)	EXISTING
EXT.	EXTERIOR
FAB.	FABRICATION(OR)
F.F.	FINISH FLOOR
F.G.	FINISH GRADE
FIN.	FINISH(ED)
FLR.	FLOOR
FDN.	FOUNDATION
F.O.C.	FACE OF CONCRETE

IN. (")	IN
INT.	IN
LB.(#)	PC
L.B.	LA
L.F.	LIN
L.	LC
MAS.	M
MAX.	M
M.B.	M
MECH.	M
MFR.	M
MIN.	M
MISC.	M
MTL.	M
(N)	NE
NO.(#)	NU
N.T.S.	NC
O.C.	O
OPNG.	O
P/C	PR
PCS	PE
PLY.	PL
PPC	PC
PRC	PR
P.S.F.	PC
P.S.I.	PC
P.T.	PR
PWR.	PC
QTY.	Q
RAD.(R)	RA
REF.	RE
REINF.	RE
REQ'D/	RE
RGS.	RI
SCH.	SC
SHT.	SH
SIM.	SIM
SPEC.	SP
SQ.	SC
S.S.	ST
STD.	ST
STL.	ST
STRUC.	ST
TEMP.	TE
THK.	TH
T.N.	TC
T.O.A.	TC
T.O.C.	TC
T.O.F.	TC
T.O.P.	TC
T.O.S.	TC
T.O.W.	TC
TYP.	TY
U.G.	UN
U.L.	UN
U.N.O.	UN
V.I.F.	VI

SITE ID: CRAN_RSFR_HBAY0_002
EQ 9-12 CS 3-12

REF PLAT# 47-23



DISCLAIMER:
THE BOUNDARY REPRESENTED ON THIS MAP IS BASED ON COMPILED RECORD DATA, GIS LINEWORK AND IS BEST FIT ONTO EXISTING IMPROVEMENTS. IT IS POSSIBLE FOR THE LOCATION OF THE SUBJECT UTILITY POLE TO SHIFT FROM THE PLACEMENT SHOWN HEREON WITH ADDITIONAL FIELD EVIDENCE AND RESEARCH. THEREFORE, ANY SPATIAL REFERENCE MADE OR SHOWN BETWEEN THE BOUNDARY AND EXISTING GROUND FEATURES, EASEMENTS, OR LEASE AREA SHOWN HEREON IS INTENDED TO BE APPROXIMATE AND IS SUBJECT TO VERIFICATION BY RESOLVING THE POSITION OF THE BOUNDARY LINES.

ı, Concord, CA, 94521.
.159
@gmail.com
neng.com

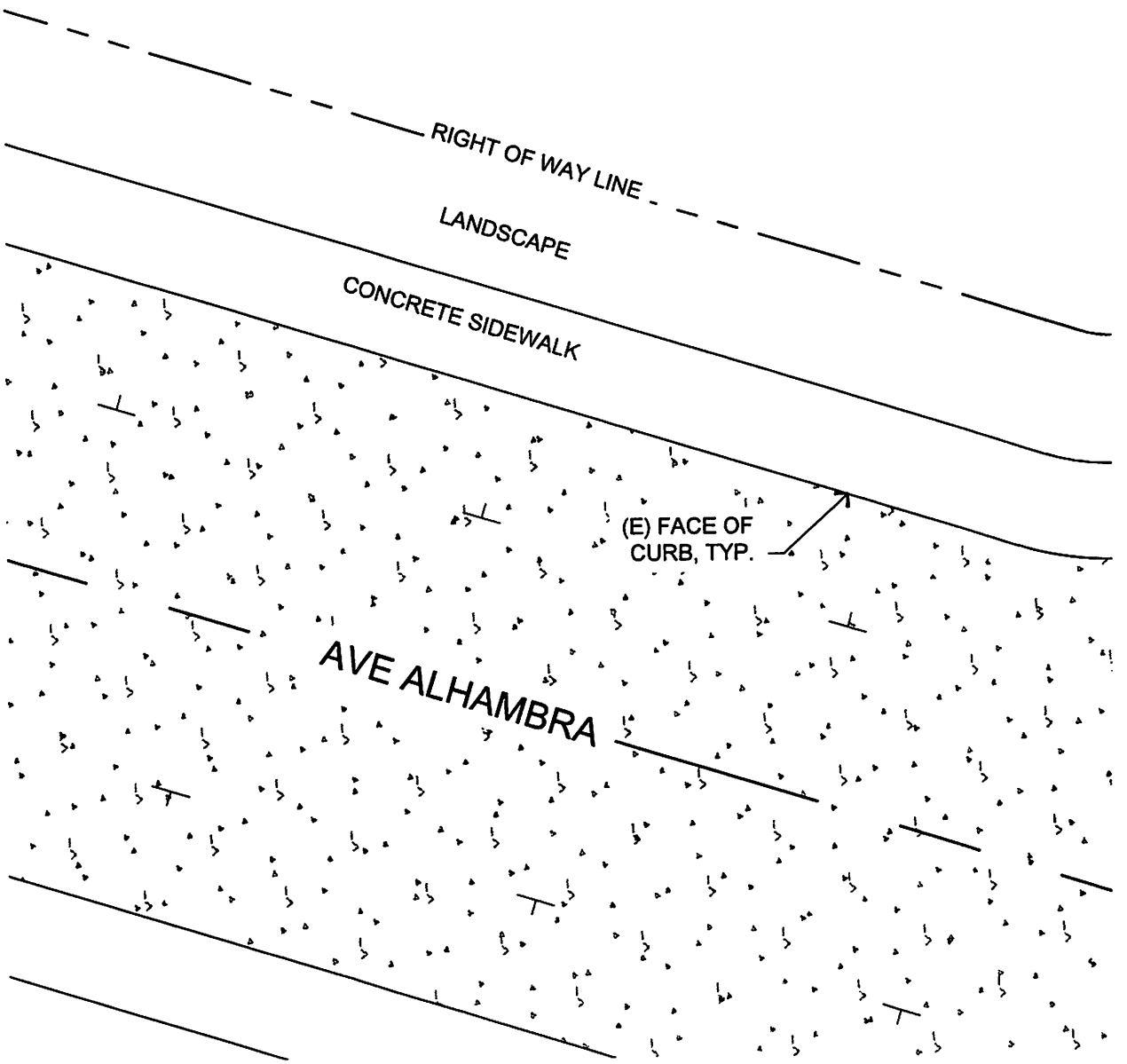
CRAN_RSFR_HBAY0_002
30 AVE PORTOLA
EL GRANADE,
CA,SAN MATEO COUNTY

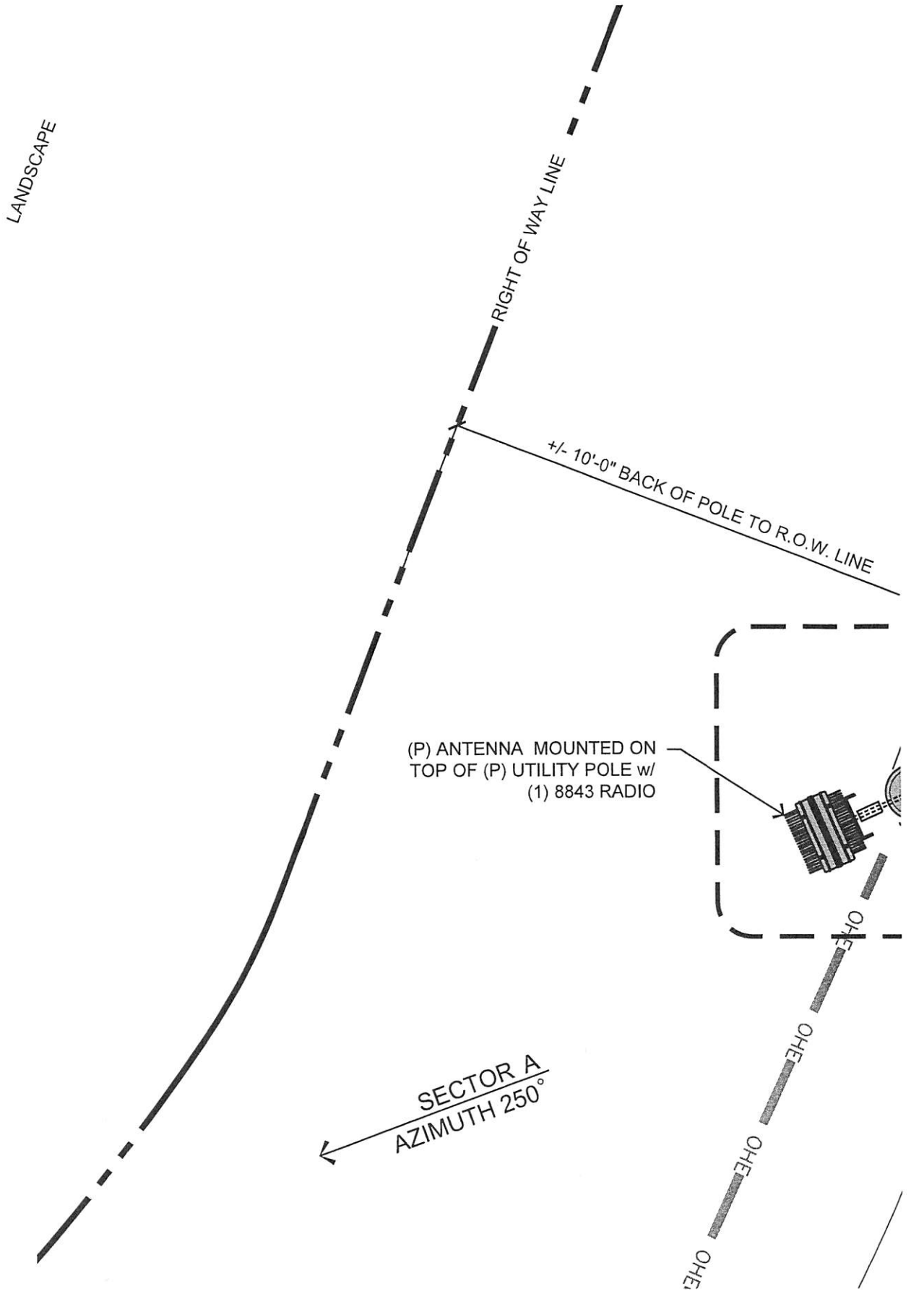
PROFESSIONAL LAND SURVEYOR
CASEY WAYNE LOWRY
No. 8154
STATE OF CALIFORNIA

8/26/2019

PLS STAMP

APN: 047-206-240




LANDSCAPE
RIGHT OF WAY LINE
+/- 10'-0" BACK OF POLE TO R.O.W. LINE
(P) ANTENNA MOUNTED ON
TOP OF (P) UTILITY POLE w/
(1) 8843 RADIO
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OHE
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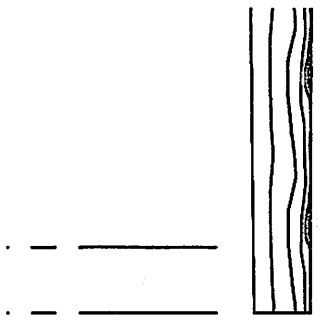
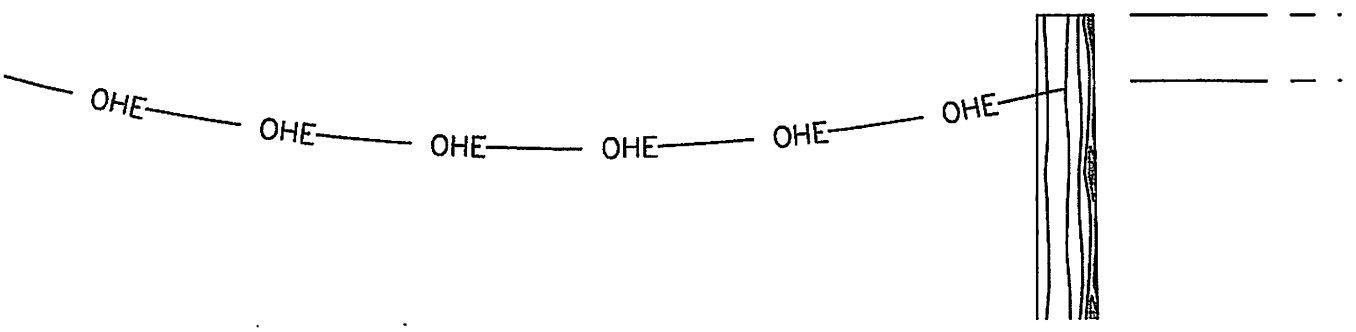
SECTOR A
AZIMUTH 250°

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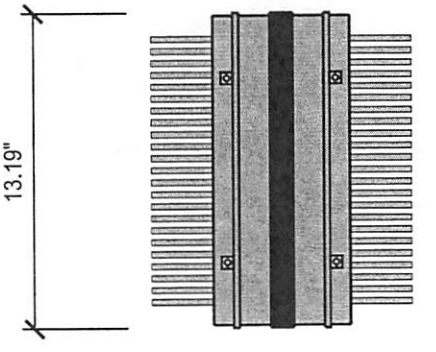
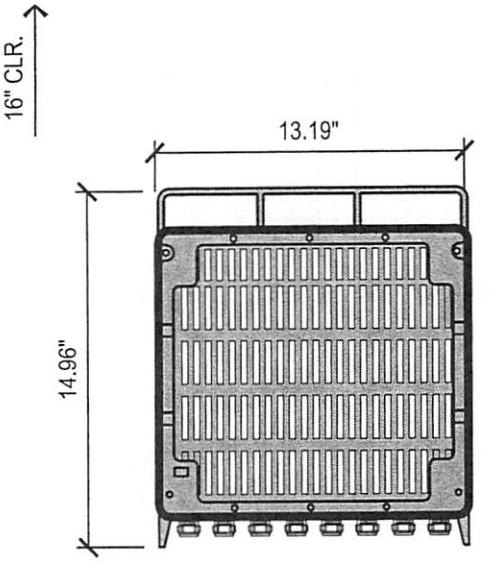
ERICSSON RRUS-8843 REMOTE RADIO UNIT

COLOR: WHITE

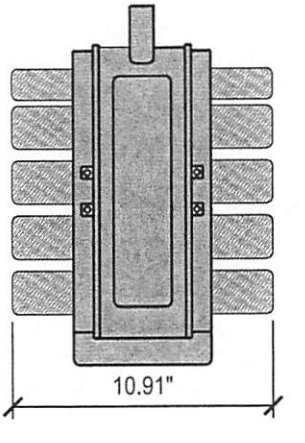
DIMENSIONS: 14.96" (380mm) TALL X 13.19" (335mm) WIDE X 10.91" (277mm) DEEP
WIEGHT: +/- 71.87 LBS. (32.6kg) EXCLUDING MOUNTING HARDWARE



TOP VIEW



FRONT VIEW



SIDE VIEW

16

ITEM NO.	QTY.	PAR
1	1	
2	1	
3	3	
4	1	00
5	1	

ELECTRICAL NOTES

GENERAL REQUIREMENTS:

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE NATIONAL ELECTRICAL CODE AND ALL STATE AND LOCAL CODES. NOTHING IN THESE PLANS OR SPECIFICATIONS SHALL BE CONSTRUED AS TO PERMIT WORK NOT CONFORMING TO THE MOST STRINGENT OF THESE CODES. SHOULD CHANGES BE NECESSARY IN THE DRAWINGS OR SPECIFICATIONS TO MAKE THE WORK COMPLY WITH THESE REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND CEASE WORK ON PARTS OF THE CONTRACT WHICH ARE AFFECTED.

2. THE CONTRACTOR SHALL MAKE A SITE VISIT PRIOR TO BIDDING AND CONSTRUCTION TO VERIFY ALL EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCIES. THE CONTRACTOR ASSUMES ALL LIABILITY FOR FAILURE TO COMPLY WITH THIS PROVISION.

3. THE EXTENT OF THE WORK IS INDICATED BY THE DRAWINGS, SCHEDULES, AND SPECIFICATIONS AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT. THE WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS, AND SUPPLIES NECESSARY FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. THE WORK SHALL ALSO INCLUDE THE COMPLETION OF ALL ELECTRICAL WORK NOT MENTIONED OR SHOWN WHICH IS NECESSARY FOR SUCCESSFUL OPERATION OF ALL SYSTEMS.

4. THE CONTRACTOR SHALL PREPARE A BID FOR A COMPLETE AND OPERATIONAL SYSTEM, WHICH INCLUDES THE COST FOR MATERIAL AND LABOR.

5. WORKMANSHIP AND NEAT APPEARANCE SHALL BE AS IMPORTANT AS THE OPERATION. DEFECTIVE OR DAMAGED MATERIALS SHALL BE REPLACED OR REPAIRED PRIOR TO FINAL ACCEPTANCE IN A MANNER ACCEPTABLE TO OWNER AND ENGINEER.

6. COMPLETE THE ENTIRE INSTALLATION AS SOON AS THE PROGRESS OF THE WORK WILL PERMIT. ARRANGE ANY OUTAGE OF SERVICE WITH THE OWNER AND BUILDING MANAGER IN ADVANCE. MINIMIZE DOWNTIME ON THE BUILDING ELECTRICAL SYSTEM.

7. THE ENTIRE ELECTRICAL SYSTEM INSTALLED UNDER THIS CONTRACT SHALL BE DELIVERED IN PROPER WORKING ORDER. REPLACE, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECTIVE MATERIAL AND EQUIPMENT WITHIN ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.

8. ANY ERROR, OMISSION OR DESIGN DESCREPANCY ON THE DRWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION OR CORRECTION BEFORE CONSTRUCTION.

9. "PROVIDE" INDICATES THAT ALL ITEMS ARE TO BE FURNISHED, INSTALLED AND CONNECTED IN PLACE.

10. CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS AND PAY ALL REQUIRED FEES.

EQUIPMENT LOCATION:

1. THE DRAWINGS INDICATE DIAGRAMMATICALLY THE DESIRED LOCATIONS OR ARRANGEMENTS OF CONDUIT RUNS, OUTLETS, EQUIPMENT, ETC., AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. PROPER JUDGEMENT MUST BE EXERCISED IN EXECUTING THE WORK SO AS TO SECURE THE BEST POSSIBLE INSTALLATION IN THE AVAILABLE SPACE LIMITATIONS OR INTERFERENCE OF STRUCTURE CONDITIONS ENCOUNTERED.

2. IN THE EVENT CHANGES IN THE INDICATED LOCATIONS OR ARRANGEMENTS ARE NECESSARY, DUE TO FIELD CONDITIONS IN THE BUILDING CONSTRUCTION OR

PRODUCTS:

1. ALL MATERIAL
   BE U.L. LISTED

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   E) ALL
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7. PANELBOARD
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ATTACHMENT C2

at&t

CRAN_RSFR_HBAY0_002
100 Avenue Portola, El Grenada, CA

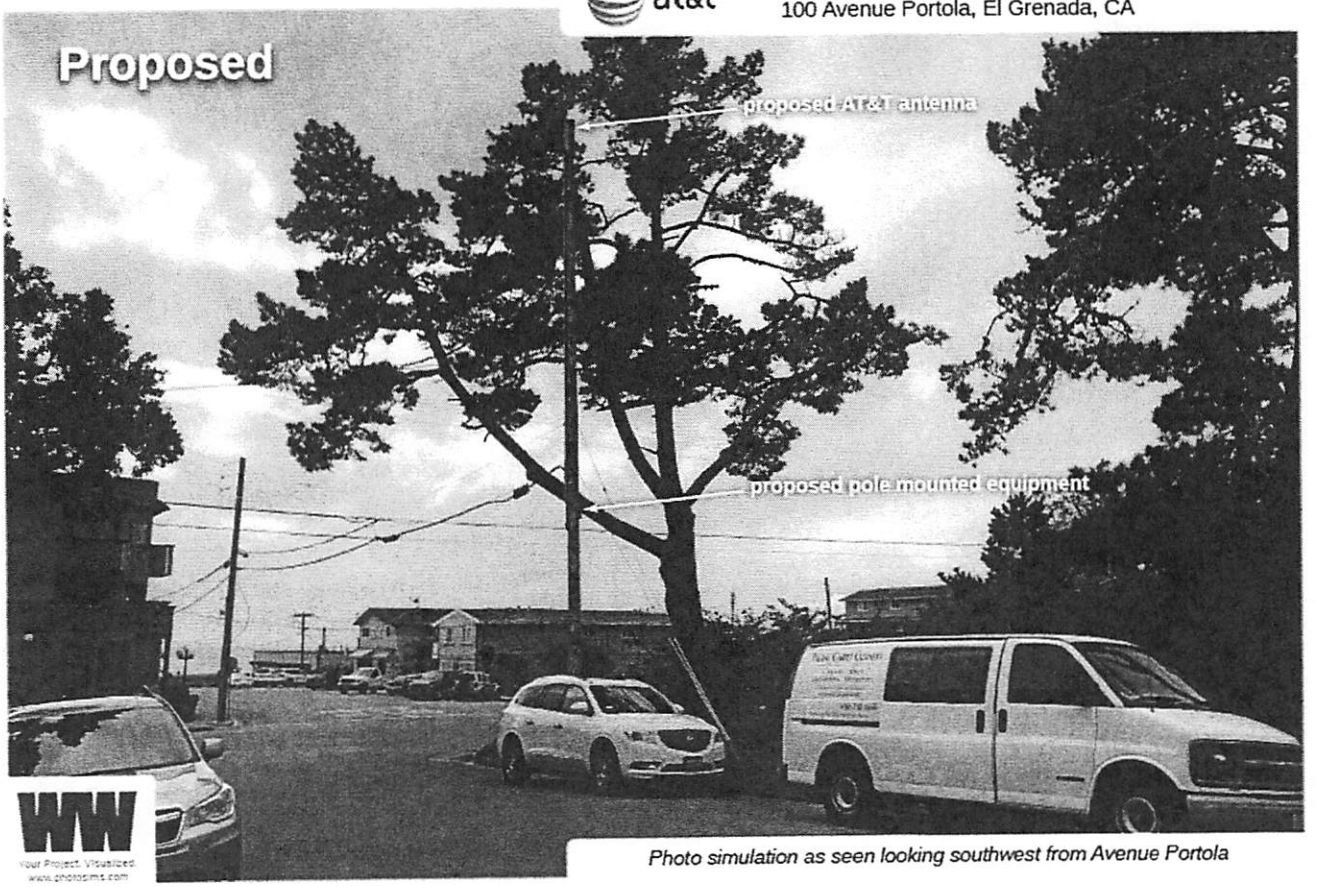
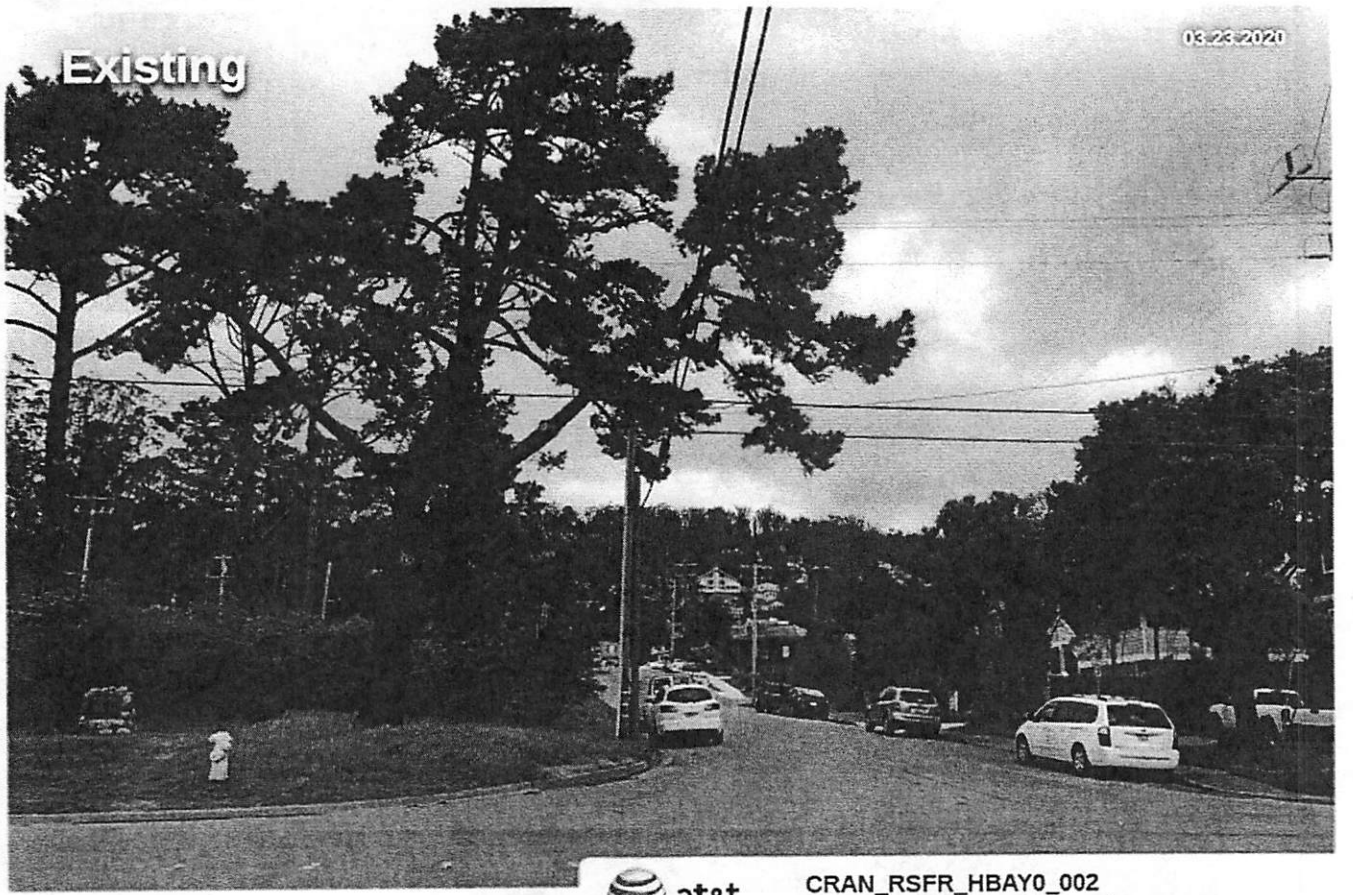


Photo simulation as seen looking southwest from Avenue Portola



at&t

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100 Avenue Portola, El Grenada, CA

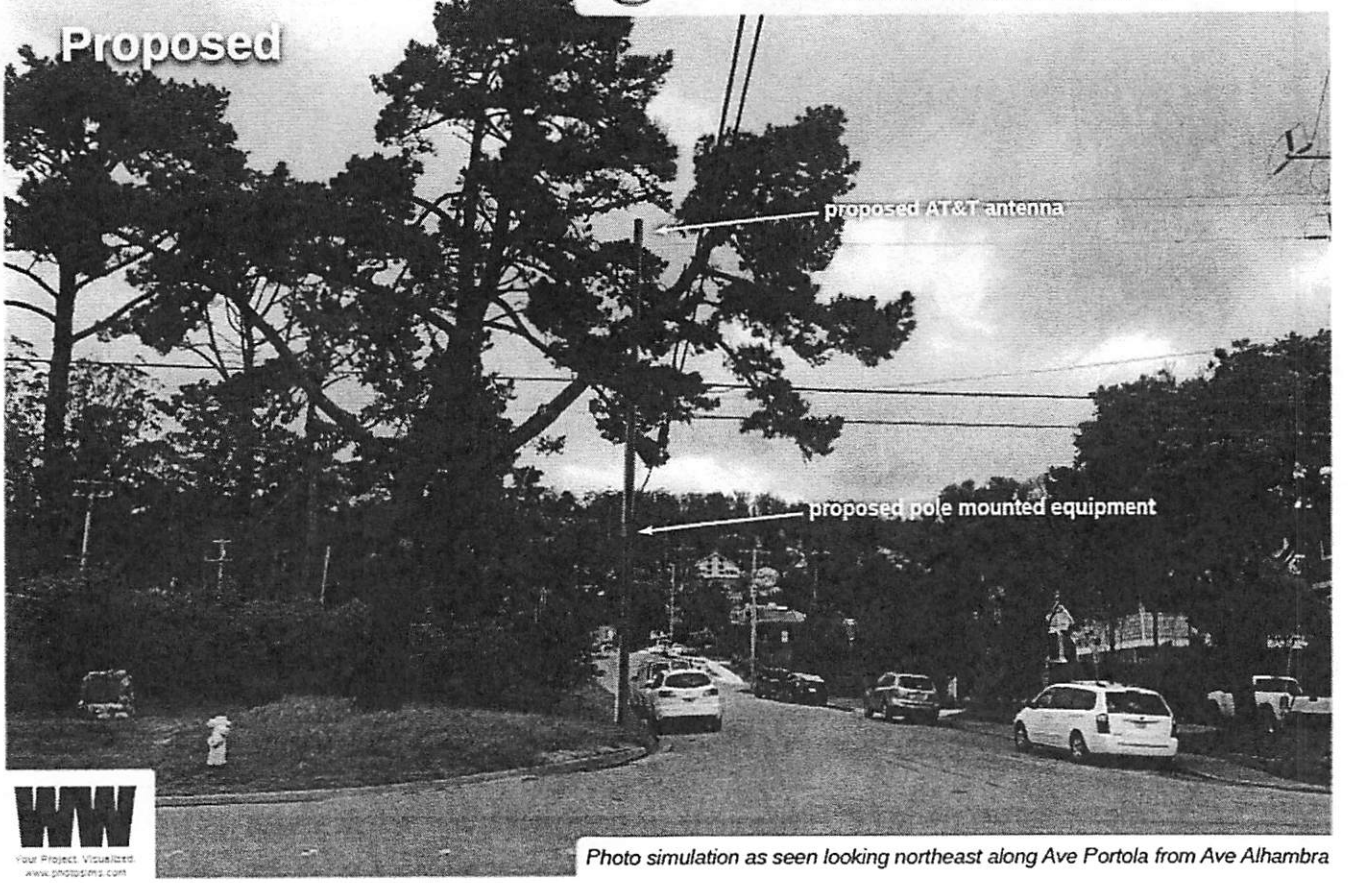

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Photo simulation as seen looking northeast along Ave Portola from Ave Alhambra


HBAY0_002 ASA
Pole 3, Transformer, non complaint
Pole 2 Cut outs connected to primary power, cannot be licensed
Subject pole
Pole 4, Cut outs, non complaint with GO95 standards
Pole 5, more intrusive than subject pole
The Coronado Apartments
Mavericks Apartments
San Mateo County Harbor District
DH Distribution
El Granada Beverage & Video
United States Postal Service
Mini Ramp
Surfer's Parking Lot
Surfers Beach
Temporarily closed

AT&T Mobility • Proposed Node (No. HBAY0_002)
100 Avenue Portola • El Granada, 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 the addition of Node No. HBAY0_002 to the AT&T network in El Granada, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

AT&T proposes to install a cylindrical antenna on the utility pole sited in the public right-of-way near 100 Avenue Portola in El Granada. 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 limit for exposures of unlimited duration at several wireless service bands are as follows:

Wireless Service Band	Transmit Frequency	"Uncontrolled" Public Limit	Occupational Limit (5 times Public)
Microwave (point-to-point)	1–80 GHz	1.0 mW/cm^2	5.0 mW/cm^2
Millimeter-wave	24–47	1.0	5.0
Part 15 (WiFi & other unlicensed)	2–6	1.0	5.0
CBRS (Citizens Broadband Radio)	3,550 MHz	1.0	5.0
BRS (Broadband Radio)	2,490	1.0	5.0
WCS (Wireless Communication)	2,305	1.0	5.0
AWS (Advanced Wireless)	2,110	1.0	5.0
PCS (Personal Communication)	1,930	1.0	5.0
Cellular	869	0.58	2.9
SMR (Specialized Mobile Radio)	854	0.57	2.85
700 MHz	716	0.48	2.4
600 MHz	617	0.41	2.05
[most restrictive frequency range]	30–300	0.20	1.0

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

Wireless nodes typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to a central "hub" (which in turn are connected to the traditional wired telephone lines), and the passive antenna(s) that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are often located on the same pole as the antennas and are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the 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 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"). This methodology is an industry standard for evaluating RF exposure conditions and has been demonstrated through numerous field tests to be a conservative prediction of exposure levels.

Site and Facility Description

Based upon information provided by AT&T, including drawings by Borges Architectural Group, Inc., dated December 26, 2019, it is proposed to install one Denki Kogyo Model DKOBDYKDP-7R45F, 2-foot tall, omnidirectional* cylindrical antenna on top of a new utility pole to replace the existing pole sited in the public right-of-way in the wide boulevard of Avenue Portola opposite the three-story residential building at 100 Avenue Portola in El Granada. The antenna would employ 10° downtilt and would be mounted at an effective height of about 46½ feet above ground. The maximum effective radiated power proposed in any direction is 1,040 watts, representing simultaneous operation at 520 watts each for AWS and PCS service. There are reported no other wireless telecommunications base stations at the site or nearby.

* Assumed to be omnidirectional, although manufacturer's patterns show reduced power in certain directions.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed AT&T operation is calculated to be 0.016 mW/cm^2, which is 1.6% of the applicable public exposure limit. The maximum calculated level at the top-floor elevation of any nearby building[†] is 3.5% 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.

Recommended Compliance Measures

Due to its mounting location and height, the antenna would not be accessible to unauthorized persons, and so no measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all workers who have access within 20 feet outward from the antenna. No access within 4½ feet directly in front of the antenna, such as might occur during certain maintenance activities high on the pole, should be allowed while the antenna is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that explanatory signs[‡] be posted at the antenna and/or on the pole below the antenna, readily visible from any angle of approach.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the node proposed by AT&T Mobility near 100 Avenue Portola in El Granada, 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 nodes. Training authorized personnel and posting explanatory signs are recommended to establish compliance with occupational exposure limits.

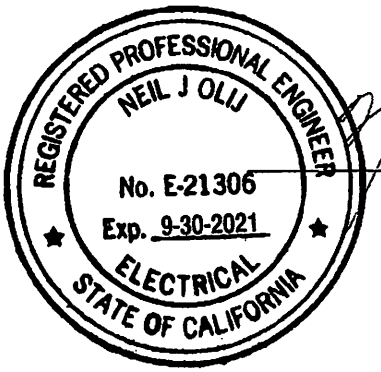
---

† Located at least 70 feet away, based on photographs from Google Maps.

‡ Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidelines from the landlord, local zoning or health authority, or appropriate professionals may be required. Signage may also need to comply with the requirements of California Public Utilities Commission General Order No. 95.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2021. 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.



Neil J. Olij, P.E.
707/996-5200

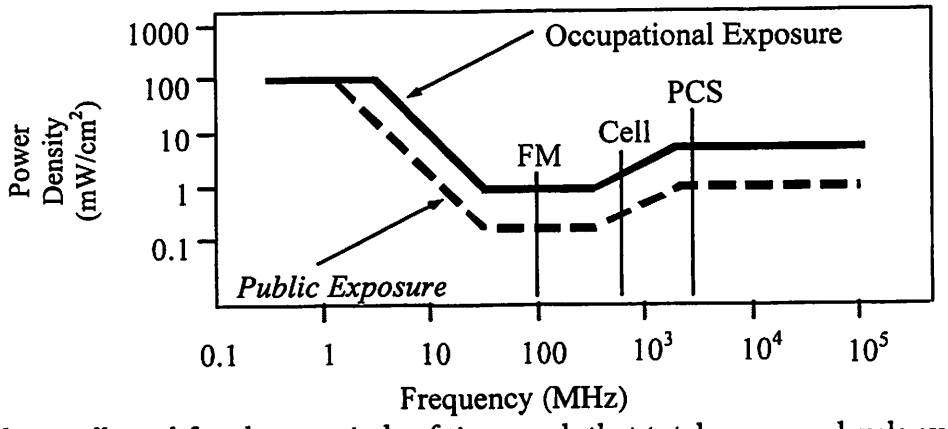
April 2, 2020

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



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 incorporated those formulas in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, 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^2,

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^2,

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

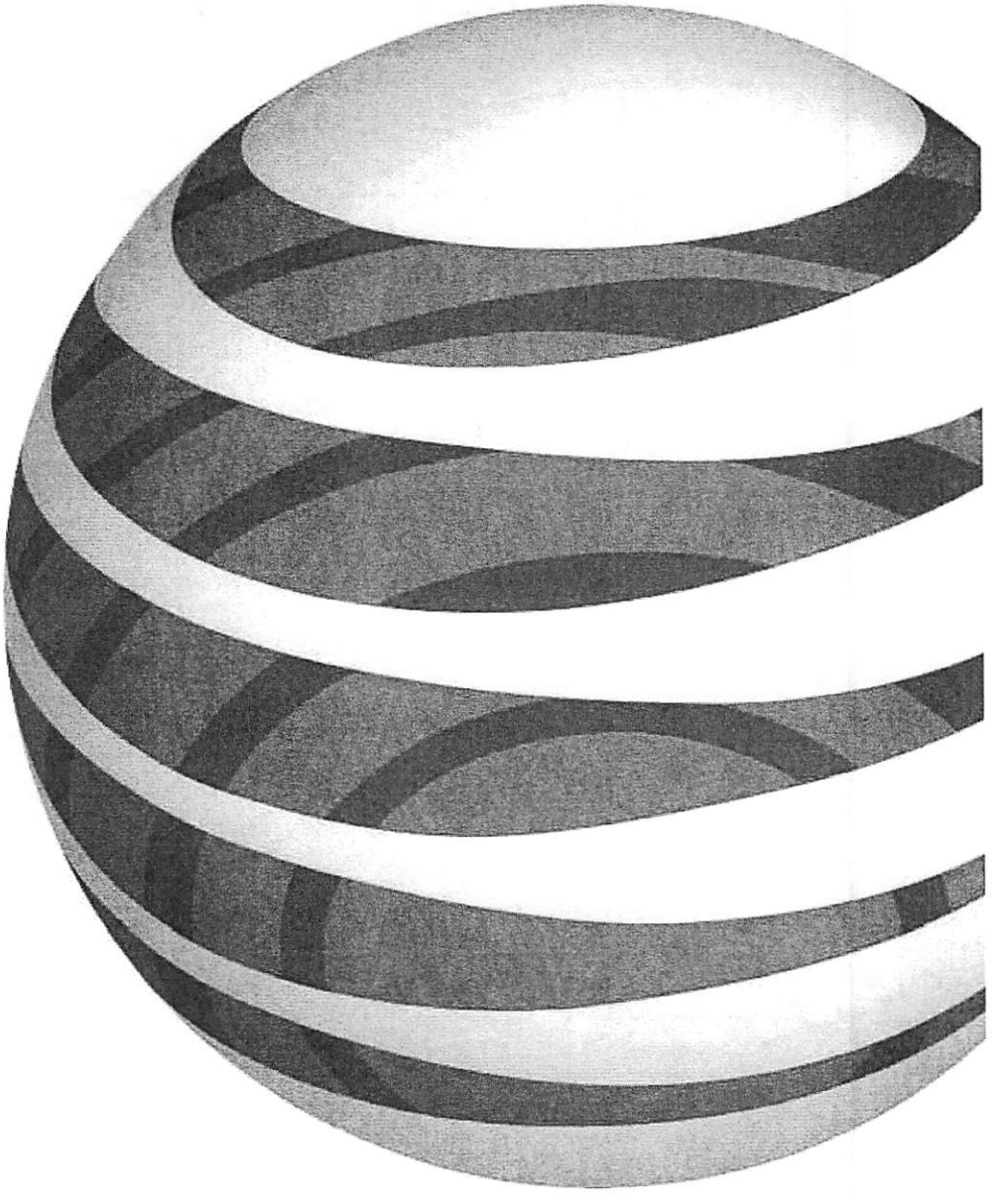
The factor of 0.1 in the numerators converts to the desired units of power density.

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 = three-dimensional relative field factor toward point of calculation, and
D = distance from antenna effective height to 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 is used in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program also allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, to obtain more accurate projections.



PROJECT DESCRIPTION

THIS IS AN UNMANNED WIRELESS TELECOMMUNICATION FACILITY FOR AT&T MOBILITY CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTE AND ASSOCIATED EQUIPMENT ON AN EXISTING WOOD UTILITY POLE IN THE PUBLIC RIGHT OF WAY.

SCOPE OF WORK & SITE COMPLETION CHECKLIST

ABBREVIATIONS:

A.B.	ANCHOR BOLT
ABV.	ABOVE
ACCA	ANTENNA CABLE COVER ASSEMBLY
ADD'L	ADDITIONAL
A.F.F.	ABOVE FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
ALUM.	ALUMINUM
ALT.	ALTERNATE
ANT.	ANTENNA
APPRX.	APPROXIMATE(LY)
ARCH.	ARCHITECT(URAL)
AWG.	AMERICAN WIRE GAUGE
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BM.	BEAM
B.N.	BOUNDARY NAILING
BTCW.	BARE TINNED COPPER WIRE
B.O.F.	BOTTOM OF FOOTING
B/U	BACK-UP CABINET
CAB.	CABINET
CANT.	CANTILEVER(ED)
C.I.P.	CAST IN PLACE
CLG.	CEILING
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION(OR)
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
d	PENNY (NAILS)
DBL.	DOUBLE
DEPT.	DEPARTMENT
D.F.	DOUGLAS FIR
DIA.	DIAMETER
DIAG.	DIAGONAL
DIM.	DIMENSION
DWG.	DRAWING(S)
DWL.	DOWEL(S)
EA.	EACH
EL.	ELEVATION
ELEC.	ELECTRICAL
ELEV.	ELEVATOR
EMT.	ELECTRICAL METALLIC TUBING
E.N.	EDGE NAIL
ENG.	ENGINEER
EQ.	EQUAL
EXP.	EXPANSION
EXST.(E)	EXISTING
EXT.	EXTERIOR
FAB.	FABRICATION(OR)
F.F.	FINISH FLOOR
F.G.	FINISH GRADE
FIN.	FINISH(ED)
FLR.	FLOOR
FDN.	FOUNDATION
F.O.C.	FACE OF CONCRETE
IN. (")	IN
INT.	IN
LB.(#)	PC
L.B.	LA
L.F.	LIN
L.	LC
MAS.	M
MAX.	M
M.B.	M
MECH.	M
MFR.	M
MIN.	M
MISC.	M
MTL.	M
(N)	NE
NO.(#)	NU
N.T.S.	NO
O.C.	O
OPNG.	O
P/C	PR
PCS	PE
PLY.	PL
PPC	PC
PRC	PR
P.S.F.	PC
P.S.I.	PC
P.T.	PR
PWR.	PC
QTY.	Q
RAD.(R)	RA
REF.	RE
REINF.	RE
REQ'D/	RE
RGS.	RI
SCH.	SC
SHT.	SH
SIM.	SI
SPEC.	SP
SQ.	SC
S.S.	ST
STD.	ST
STL.	ST
STRUC.	ST
TEMP.	TE
THK.	TH
T.N.	TC
T.O.A.	TC
T.O.C.	TC
T.O.F.	TC
T.O.P.	TC
T.O.S.	TC
T.O.W.	TC
TYP.	TY
U.G.	UN
U.L.	UN
U.N.O.	UN
V.I.F.	V

DISCLAIMER:
THE BOUNDARY REPRESENTED ON THIS MAP IS BASED ON COMPILED RECORD DATA, GIS LINEWORK AND IS BEST FIT ONTO EXISTING IMPROVEMENTS. IT IS POSSIBLE FOR THE LOCATION OF THE SUBJECT UTILITY POLE TO SHIFT FROM THE PLACEMENT SHOWN HEREON WITH ADDITIONAL FIELD EVIDENCE AND RESEARCH. THEREFORE, ANY SPATIAL REFERENCE MADE OR SHOWN BETWEEN THE BOUNDARY AND EXISTING GROUND FEATURES, EASEMENTS, OR LEASE AREA SHOWN HEREON IS INTENDED TO BE APPROXIMATE AND IS SUBJECT TO VERIFICATION BY RESOLVING THE POSITION OF THE BOUNDARY LINES.

ABBREVIATIONS

PL	PROPERTY LINE	R/W	RIGHT OF WAY
(E)	EXISTING	D/W	DRIVEWAY
(N)	NEW	AGL	ABOVE GROUND LEVEL
		CTR-LINE	CENTER LINE
		OH	OVERHEAD

SYMBOLS

- EXISTING POLE
- PULL BOX
- TREE
- SHRUB
- WATER VALVE
- GUY WIRE
- EXISTING VALVE
- FIBER VAULT
- MONUMENT
- WATER VAULT
- STREET SIGN OTHERS
- MAIL BOX
- MANHOLE
- FIRE HYDRANT
- STREET LIGHT POLE
- INLET
- N-16

LINE TYPES

- RIGHT OF WAY
- CENTER LINE
- OH LINE(S)

239 Avenue Del Oro
Half Moon Bay, CA
94019

PROPOSED LOCATION OF FACILITIES:
LATITUDE:
37°30'21.08278"N
LONGITUDE:
122°28'17.05452"W
ELEVATION: 76.268'

APN : 047-211-100
255 Avenue Del Oro
Half Moon Bay, CA
94019

OH LINE(S)
±9'
BACK OF POLE TO
RIGHT-OF-WAY

WOOD UTILITY POLE

NORTHWESTERLY
RIGHT-OF-WAY OF
AVE DEL ORO

D/W
D/W
LANDSCAPING
D/W
OH
OH
OH
EDGE OF PAVEMENT
60'
24'
13'
AVENUE DEL ORO
CTR LINE
EDGE OF PAVEMENT
EDGE OF PAVEMENT
LANDSCAPING
(E) MANHOLE

NORTHEASTERLY
RIGHT-OF-WAY OF
AVE DEL ORO

406 Francisco St
Half Moon Bay, CA
94019

Distance to
driveway, & curb

LANDSCAPING

N

GRAPHIC SCALE
45 0 15 30 45
(IN FEET)
1 inch = 30ft.

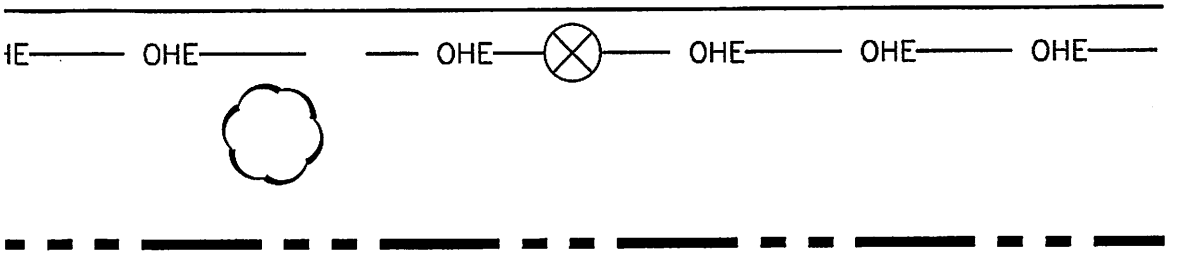
J, Concord, CA, 94521.
159
gmail.com
neng.com

CRAN_RSFR_HBAY0_003
255 AVENUE DEL ORO
HALF MOON BAY,
CA,SAN MATEO COUNTY

PROFESSIONAL LAND SURVEYOR
CASEY WAYNE LOWRY
No. 8154
STATE OF CALIFORNIA

8/26/2019

PLS STAMP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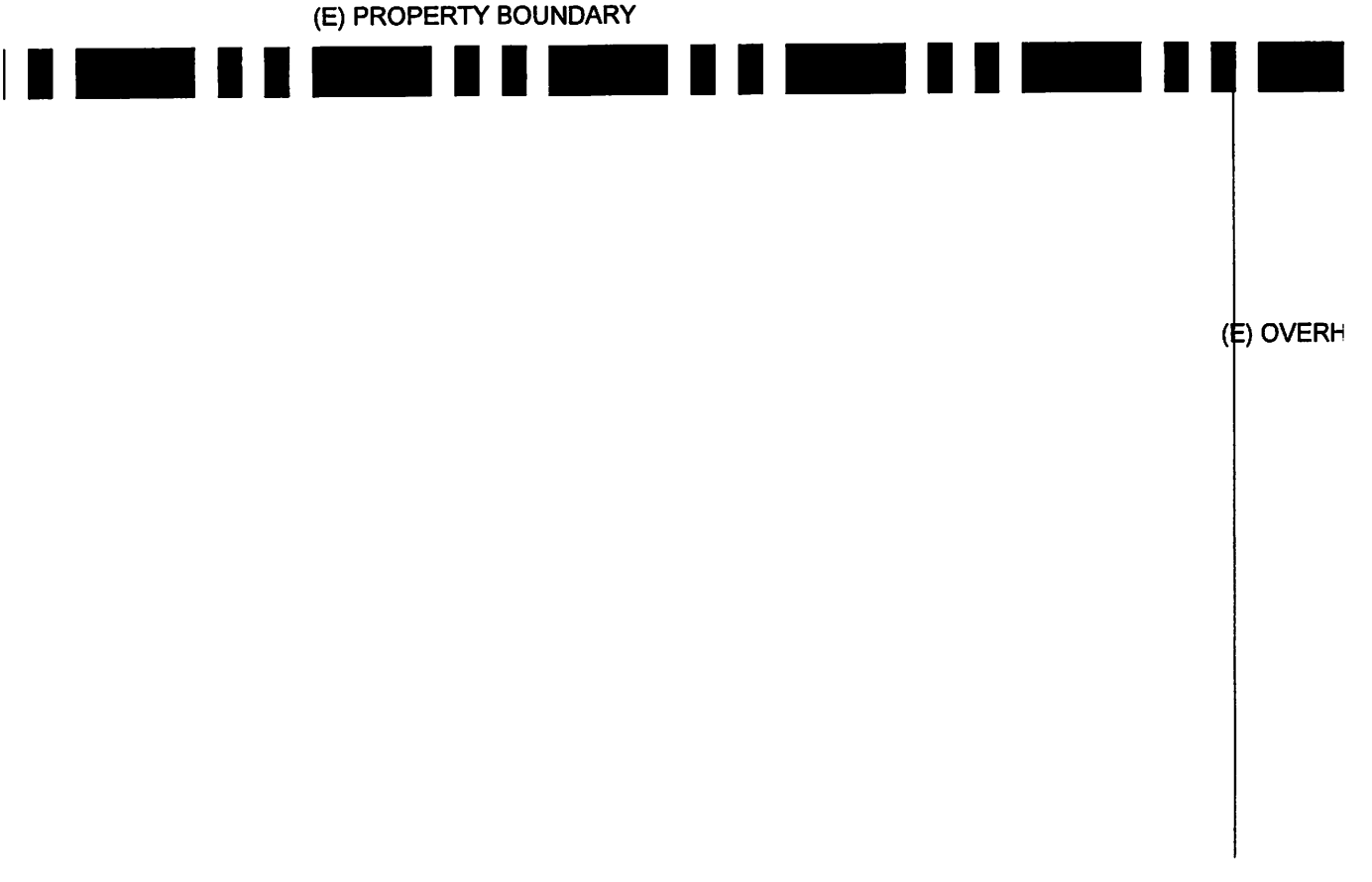
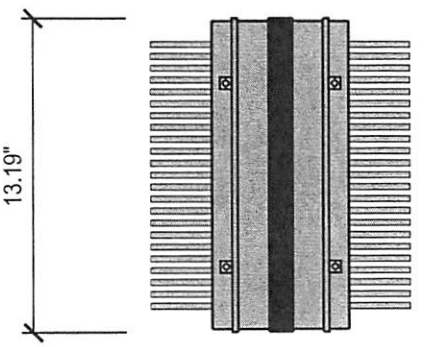

(E) PROPERTY BOUNDARY
(E) OVERH

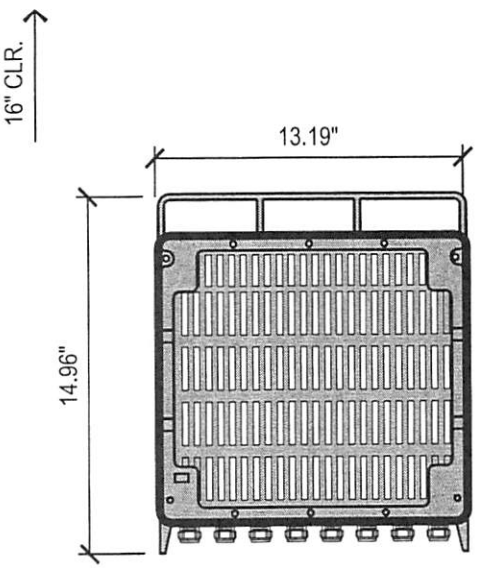
ERICSSON RRUS-8843 REMOTE RADIO UNIT

COLOR: WHITE

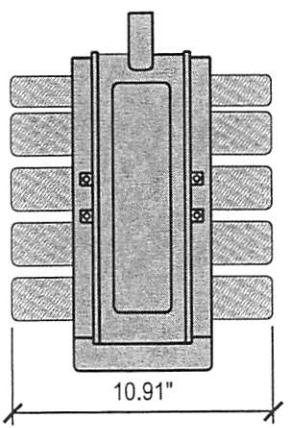
DIMENSIONS: 14.96" (380mm) TALL X 13.19" (335mm) WIDE X 10.91" (277mm) DEEP
WIEGHT: +/- 71.87 LBS. (32.6kg) EXCLUDING MOUNTING HARDWARE



TOP VIEW



FRONT VIEW



SIDE VIEW

ELECTRICAL NOTES

GENERAL REQUIREMENTS:

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE NATIONAL ELECTRICAL CODE AND ALL STATE AND LOCAL CODES. NOTHING IN THESE PLANS OR SPECIFICATIONS SHALL BE CONSTRUED AS TO PERMIT WORK NOT CONFORMING TO THE MOST STRINGENT OF THESE CODES. SHOULD CHANGES BE NECESSARY IN THE DRAWINGS OR SPECIFICATIONS TO MAKE THE WORK COMPLY WITH THESE REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND CEASE WORK ON PARTS OF THE CONTRACT WHICH ARE AFFECTED.

2. THE CONTRACTOR SHALL MAKE A SITE VISIT PRIOR TO BIDDING AND CONSTRUCTION TO VERIFY ALL EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCIES. THE CONTRACTOR ASSUMES ALL LIABILITY FOR FAILURE TO COMPLY WITH THIS PROVISION.

3. THE EXTENT OF THE WORK IS INDICATED BY THE DRAWINGS, SCHEDULES, AND SPECIFICATIONS AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT. THE WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS, AND SUPPLIES NECESSARY FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. THE WORK SHALL ALSO INCLUDE THE COMPLETION OF ALL ELECTRICAL WORK NOT MENTIONED OR SHOWN WHICH IS NECESSARY FOR SUCCESSFUL OPERATION OF ALL SYSTEMS.

4. THE CONTRACTOR SHALL PREPARE A BID FOR A COMPLETE AND OPERATIONAL SYSTEM, WHICH INCLUDES THE COST FOR MATERIAL AND LABOR.

5. WORKMANSHIP AND NEAT APPEARANCE SHALL BE AS IMPORTANT AS THE OPERATION. DEFECTIVE OR DAMAGED MATERIALS SHALL BE REPLACED OR REPAIRED PRIOR TO FINAL ACCEPTANCE IN A MANNER ACCEPTABLE TO OWNER AND ENGINEER.

6. COMPLETE THE ENTIRE INSTALLATION AS SOON AS THE PROGRESS OF THE WORK WILL PERMIT. ARRANGE ANY OUTAGE OF SERVICE WITH THE OWNER AND BUILDING MANAGER IN ADVANCE. MINIMIZE DOWNTIME ON THE BUILDING ELECTRICAL SYSTEM.

7. THE ENTIRE ELECTRICAL SYSTEM INSTALLED UNDER THIS CONTRACT SHALL BE DELIVERED IN PROPER WORKING ORDER. REPLACE, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECTIVE MATERIAL AND EQUIPMENT WITHIN ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.

8. ANY ERROR, OMISSION OR DESIGN DESCREPANCY ON THE DRWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION OR CORRECTION BEFORE CONSTRUCTION.

9. "PROVIDE" INDICATES THAT ALL ITEMS ARE TO BE FURNISHED, INSTALLED AND CONNECTED IN PLACE.

10. CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS AND PAY ALL REQUIRED FEES.

EQUIPMENT LOCATION:

1. THE DRAWINGS INDICATE DIAGRAMMATICALLY THE DESIRED LOCATIONS OR ARRANGEMENTS OF CONDUIT RUNS, OUTLETS, EQUIPMENT, ETC., AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. PROPER JUDGEMENT MUST BE EXERCISED IN EXECUTING THE WORK SO AS TO SECURE THE BEST POSSIBLE INSTALLATION IN THE AVAILABLE SPACE LIMITATIONS OR INTERFERENCE OF STRUCTURE CONDITIONS ENCOUNTERED.

2. IN THE EVENT CHANGES IN THE INDICATED LOCATIONS OR ARRANGEMENTS ARE NECESSARY, DUE TO FIELD CONDITIONS IN THE BUILDING CONSTRUCTION OR

PRODUCTS:

1. ALL MATERIAL
BE U.L. LISTED

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A) RIGI
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OR E
SHAL

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EXPC

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OTHE

F) ALL

G) CC
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3. ALL WIRE ANC
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TYPE THHN IN
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4. PROVIDE GAL
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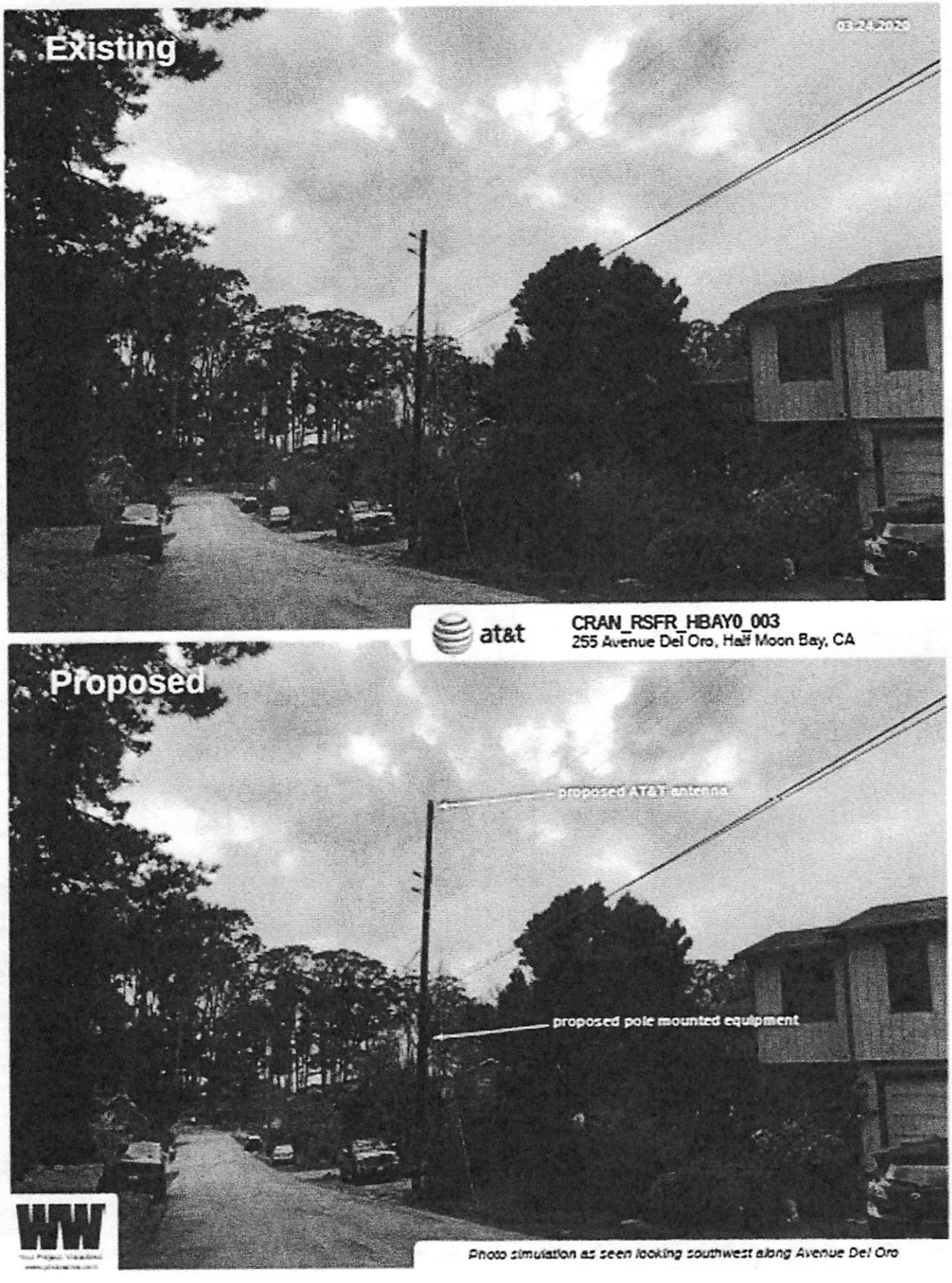


Photo simulation as seen looking southwest along Avenue Del Oro

at&t

CRAN_RSFR_HBAY0_003
255 Avenue Del Oro, Half Moon Bay, CA

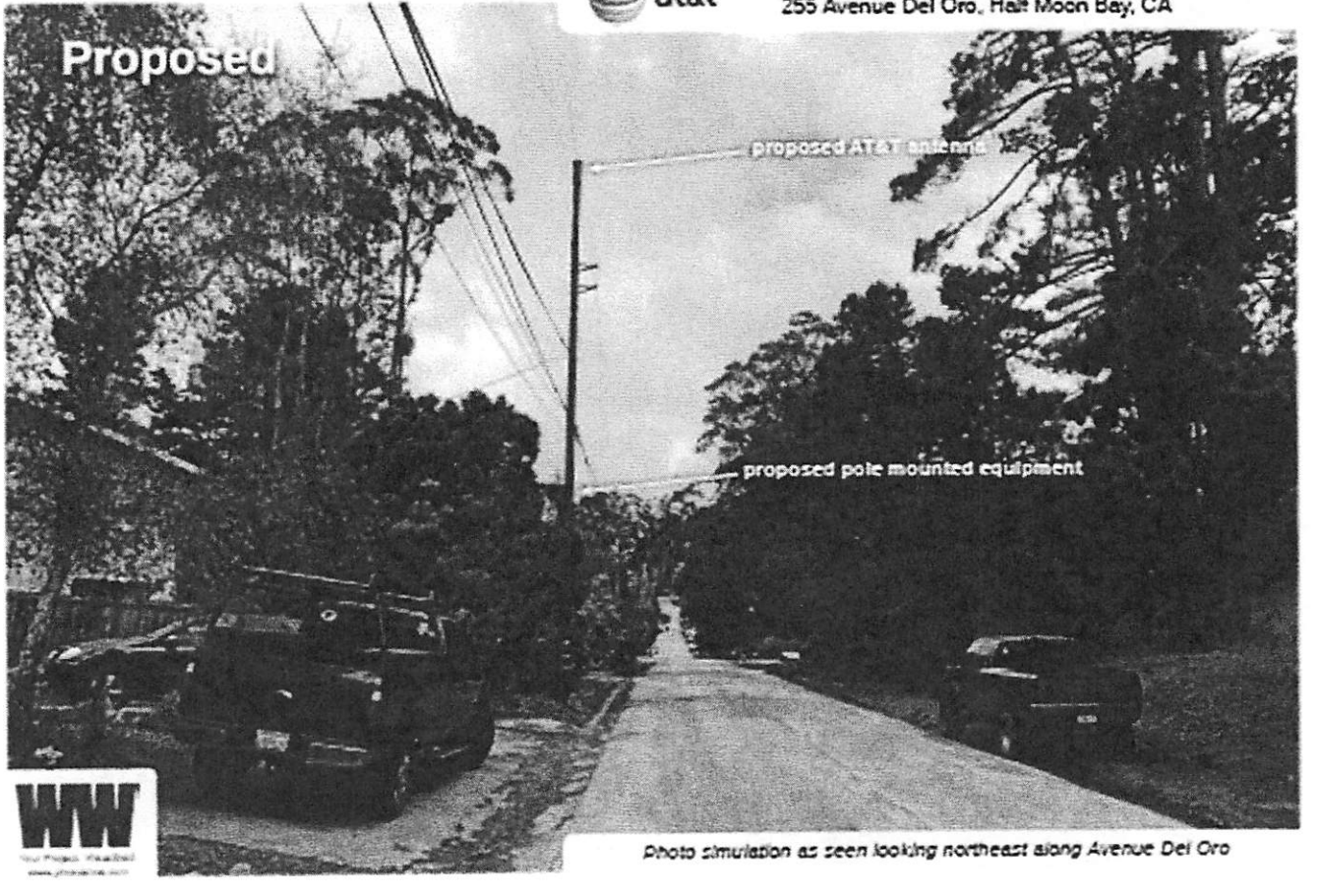
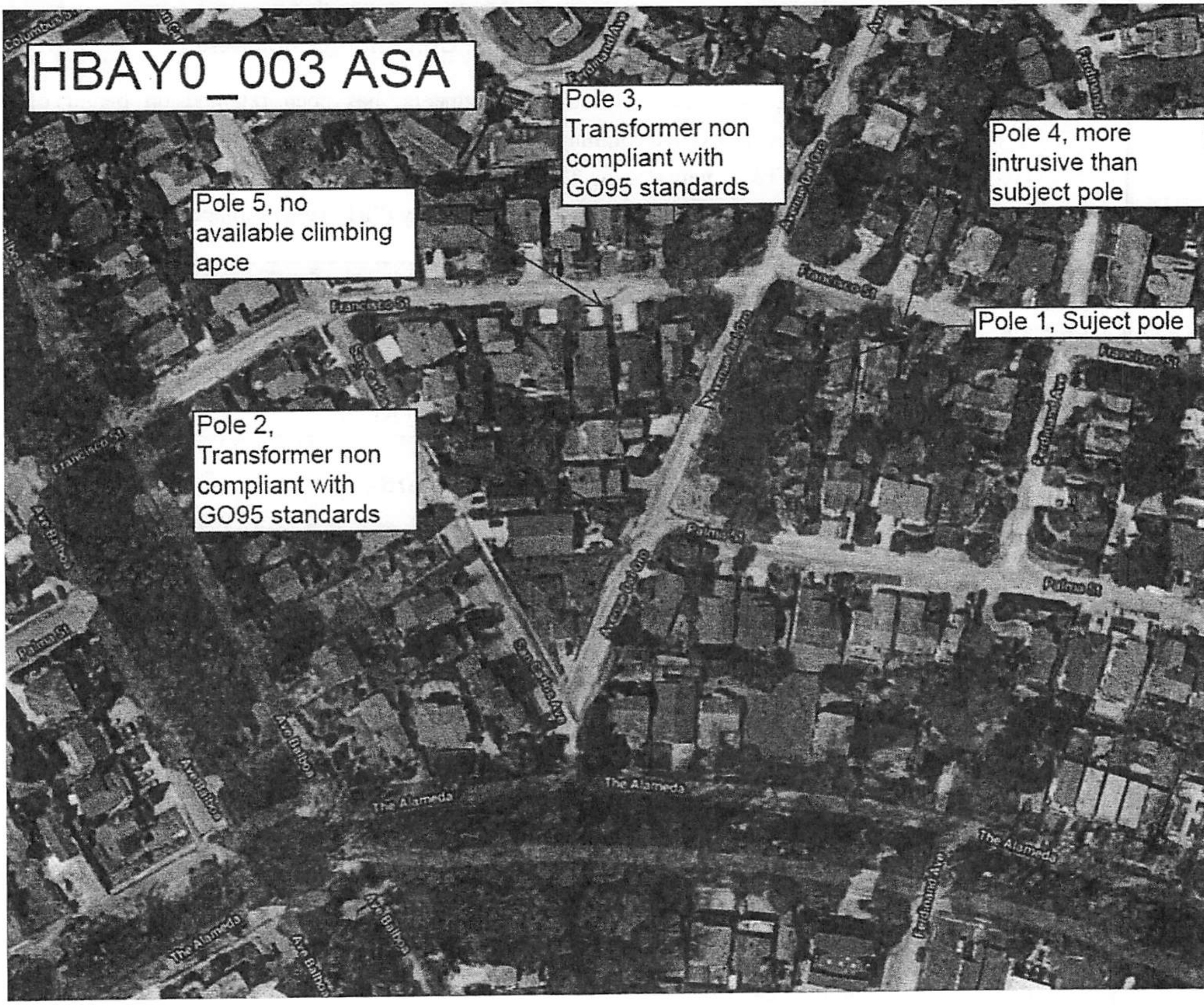


Photo simulation as seen looking northeast along Avenue Del Oro


HBAY0_003 ASA
Pole 3, Transformer non compliant with GO95 standards
Pole 4, more intrusive than subject pole
Pole 5, no available climbing apce
Pole 1, Suject pole
Pole 2, Transformer non compliant with GO95 standards
Francisco St
Palma St
The Alameda
Ave Balboa
Ferdinand Ave
Avenue del Oro
San Carlos Ave

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 the addition of Node No. HBAY0_003 to the AT&T network in Half Moon Bay, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

AT&T proposes to install a cylindrical antenna on the utility pole sited in the public right-of-way near 255 Avenue Del Oro in Half Moon Bay. 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 limit for exposures of unlimited duration at several wireless service bands are as follows:

Wireless Service Band	Transmit Frequency	"Uncontrolled" Public Limit	Occupational Limit (5 times Public)
Microwave (point-to-point)	1–80 GHz	1.0 mW/cm^2	5.0 mW/cm^2
Millimeter-wave	24–47	1.0	5.0
Part 15 (WiFi & other unlicensed)	2–6	1.0	5.0
CBRS (Citizens Broadband Radio)	3,550 MHz	1.0	5.0
BRS (Broadband Radio)	2,490	1.0	5.0
WCS (Wireless Communication)	2,305	1.0	5.0
AWS (Advanced Wireless)	2,110	1.0	5.0
PCS (Personal Communication)	1,930	1.0	5.0
Cellular	869	0.58	2.9
SMR (Specialized Mobile Radio)	854	0.57	2.85
700 MHz	716	0.48	2.4
600 MHz	617	0.41	2.05
[most restrictive frequency range]	30–300	0.20	1.0

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

Wireless nodes typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to a central "hub" (which in turn are connected to the traditional wired telephone lines), and the passive antenna(s) that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are often located on the same pole as the antennas and are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the 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 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"). This methodology is an industry standard for evaluating RF exposure conditions and has been demonstrated through numerous field tests to be a conservative prediction of exposure levels.

Site and Facility Description

Based upon information provided by AT&T, including drawings by Borges Architectural Group, dated December 4, 2019, it is proposed to install one Denki Kogyo Model DKOBDYKDP-7R45F, 2-foot tall, omnidirectional* cylindrical antenna on an extension to be added to the top of the utility pole sited in the public right-of-way in front of the two-story residence at 255 Avenue Del Oro in Half Moon Bay. The antenna would employ 10° downtilt and would be mounted at an effective height of about 44½ feet above ground. The maximum effective radiated power proposed in any direction is 1,040 watts, representing simultaneous operation at 520 watts each for AWS and PCS service. There are reported no other wireless telecommunications base stations at the site or nearby.

* Assumed to be omnidirectional, although manufacturer's patterns show reduced power in certain directions.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed AT&T operation is calculated to be 0.023 mW/cm^2, which is 2.3% of the applicable public exposure limit. The maximum calculated level at the second-story elevation of any nearby building[†] is 3.7% 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.

Recommended Compliance Measures

Due to its mounting location and height, the antenna would not be accessible to unauthorized persons, and so no measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all workers who have access within 20 feet outward from the antenna. No access within 4½ feet directly in front of the antenna, such as might occur during certain maintenance activities high on the pole, should be allowed while the antenna is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that explanatory signs[‡] be posted at the antenna and/or on the pole below the antenna, readily visible from any angle of approach.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the node proposed by AT&T Mobility near 255 Avenue Del Oro in Half Moon Bay, 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 nodes. Training authorized personnel and posting explanatory signs are recommended to establish compliance with occupational exposure limits.

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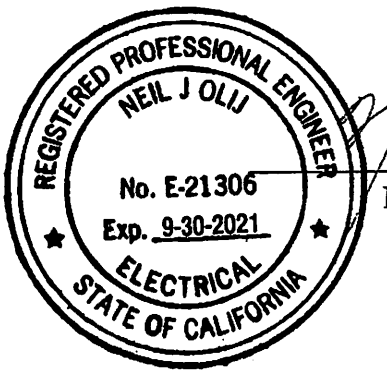
† Located at least 35 feet away, based on photographs from Google Maps.

‡ Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidelines from the landlord, local zoning or health authority, or appropriate professionals may be required. Signage may also need to comply with the requirements of California Public Utilities Commission General Order No. 95.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2021. 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.



Neil J. Olij, P.E.
707/996-5200

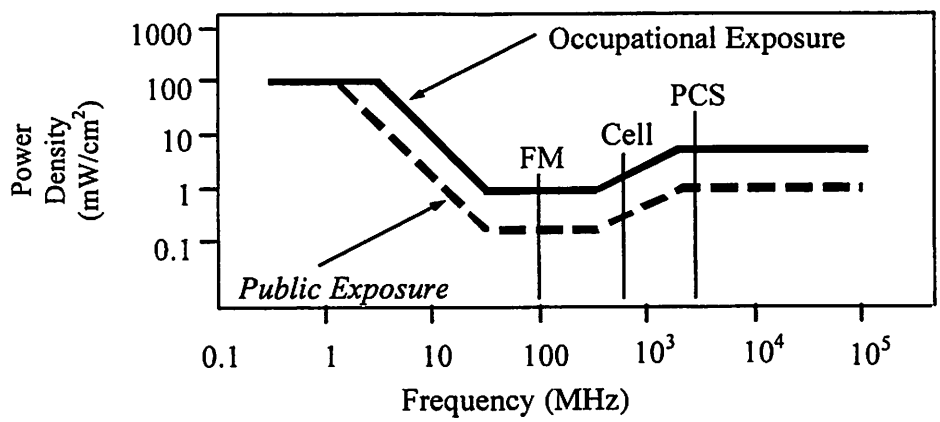
January 16, 2020

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



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 incorporated those formulas in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, 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^2,

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^2,

where θ_{BW} = half-power beamwidth of antenna, in degrees,
P_{net} = net power input to antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of antenna, in meters, and
η = 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:

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

where ERP = total ERP (all polarizations), in kilowatts,
RFF = three-dimensional relative field factor toward point of calculation, and
D = distance from antenna effective height to 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 is used in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program also allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, to obtain more accurate projections.