COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: April 19, 2018

TO: Zoning Hearing Officer

FROM: Planning Staff

SUBJECT: Consideration of a Use Permit, pursuant to Sections 6500 and 6510 of the San Mateo County Zoning Regulations, to install a new wireless telecommunication facility on an existing joint utility pole, located in the Reiner Street public right-of-way across from the property addressed as 305 B Street in the unincorporated Colma area of San Mateo County.

County File Number: PLN 2017-00467

PROPOSAL

The applicant proposes to install a new wireless telecommunication facility on an existing joint utility pole located in the public right-of-way at the intersection of Reiner Street and B Street (across the street from 305 B Street) in the unincorporated Colma area. The new facility will consist of adding a 7-ft. pole top extension bayonet to the top of the existing utility pole, one cylindrical shaped antenna to be mounted on the top of the extension bayonet, located at a maximum height of 53 feet 6 inches above grade, two remote radio units (RRU's), located at a maximum height of 17 feet 3 inches above grade, and associated equipment boxes, located between 7 and 18 feet above the existing grade, mounted on an existing joint utility pole. No grading or tree removal activities are proposed.

RECOMMENDATION

That the Zoning Hearing Officer approve the Use Permit, County File Number PLN 2017-00467, by making the required findings and adopting the conditions of approval as listed in Attachment A.

BACKGROUND

Report Prepared By: Angela Chavez, Project Planner, 650/599-7217

Applicant: Abby Reed for Modus Corp on behalf of AT&T

Land Owner: Public Right-of-Way (San Mateo County Department of Public Works)

Pole Owner: Pacific Gas and Electric

Sphere-of-Influence: Daly City

Existing Land Use: Utility Pole in the Public Right-of-Way

Location: Intersection of Reiner Street and B Street (Within the Reiner Street Right-of-Way, across from 305 B Street), Unincorporated Colma

APN: Public Right-of-Way across from 008-121-140.

Existing Zoning: PC/DR (Planned Colma/Design Review)

General Plan Designation: None

Flood Zone: The project site is located in Flood Zone X as defined by FEMA (Community Panel Number 06081C0037E, dated October 16, 2012), which is an area of minimal flood hazard.

Environmental Evaluation: The project is categorically exempt under the provisions of Class 3, Section 15303, of the California Environmental Quality Act (CEQA) Guidelines for construction of a new small structure and the installation of small new equipment and a facility in a small structure.

Setting: The project site is located approximately .12 of a mile from the intersection of B Street and El Camino Real in the unincorporated Planned Colma area. The properties immediately adjacent to the right-of-way consist of a vehicle towing and storage operation, residential development, and the Colma BART station.

Chronology:

Date		Action
October 31, 2017	-	Use permit application, the subject of this application, submitted.
February 22, 2018	-	Application deemed complete.
April 19, 2018	-	Zoning Hearing Officer Public Hearing date.

DISCUSSION

A. KEY ISSUES

1. Compliance with the General Plan

Staff has determined that the project complies with all 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 site is located within the public right-of-way adjacent to the Colma BART Station and an existing vehicle towing and storage business. The existing pole currently stands at 43 feet 1 inch above grade and the project proposes to add a 7-ft. pole top extension bayonet bracket to the top of the existing utility pole. The additional height is required in order to provide the minimum 6 feet of clearance between the proposed antenna and the existing power lines as required by California Public Utilities Commission General Order 95 (GO95) engineering requirements. While the proposed antenna reaches a maximum height of 53 feet 6 inches, all of the associated equipment is mounted lower on the utility pole between 7 and 18 feet above grade. There is low lying vegetation in the area but no significant trees or other types of vegetation to provide screening. However, the proposed antenna is cylindrical in shape in keeping with the profile of the utility pole, and all proposed equipment is designed to attach directly to the pole to minimize added bulk. To ensure that visual impacts are minimized, the equipment clusters will be similar in scale and appearance to the equipment typically found on utility poles and will be painted brown to match the wood material of the joint utility pole.

2. Compliance with the Zoning Regulations

The proposed project site is within the public right-of-way in the PC/DR (Planned Colma/Design Review) Zoning District. The zoning district standards, with the exception of height, are not applicable since the site is located within the public right-of-way.

The PC/DR Zoning District has a variety of maximum heights allowed throughout the district, which are dependent on the underlying land use designation. The subject parcel sits at the intersection of three land use designations. The parcel immediately adjacent to the subject utility pole (to the rear) has a land use designation of low density residential and has a maximum height of 36 feet; the parcels just south of the pole have a transportation facilities designation which includes no maximum height standard; and the parcels across Reiner Street to the east of the pole have a high density residential land use designation which allows a maximum height of 65 feet. Historically, right-of-way development is evaluated against the zoning standards of the nearest parcel which, in this case, would allow a maximum height of 36 feet. While the proposed height extension would bring the total height of the utility pole to 53 feet 6 inches, the Wireless Telecommunication Facilities Chapter of the Zoning Ordinance (Section 6512.2.I.2) allows for height exceptions with the issuance of the required Use Permit.

3. Compliance with the Wireless Telecommunication Facilities Ordinance

Staff has reviewed the project against the provisions of the Wireless Telecommunication Facilities (WTF) Ordinance and determined that the project complies with the applicable standards discussed below:

a. Development and Design Standards

Section 6512.2.A states that new wireless telecommunication facilities shall be prohibited in a Sensitive Habitat, as defined by Policy 1.8 of the General Plan (*Definition of Sensitive Habitats*) for facilities proposed outside of the Coastal Zone.

The project site is not located in a sensitive habitat area, as defined by Policy 1.8 of the General Plan.

Section 6512.2.B prohibits new wireless telecommunication facilities from being located in areas zoned Residential (R), unless the applicant demonstrates that a review has been conducted of other options and no other sites or combination of sites allow feasible service or adequate capacity and coverage.

The proposed facility will be located on a joint utility pole within the public right-of-way in the PC/DR Zoning District. While the PC/DR Zoning District allows residential uses, it is not explicitly defined as a Residential (R) District. The applicant chose the proposed location to adequately and consistently provide AT&T wireless voice and data coverage to the surrounding area. The proposed facility is part of a larger Distribution Antenna System (DAS) providing increased data speed and to decrease the number of dropped calls. This site is not meant to increase the coverage in the area but rather to off-load demand on the macro site.

The proposed small cell facility is specifically focused on providing more reliable coverage to the Colma BART Transit hub and surrounding residences. Small cell facilities have an effective radius of approximately 100 feet which therefore require that related sites be more closely located to each other in order to be effective. Therefore, the alternatives analysis is focused on a much smaller area in which the applicant has identified and researched alternative sites within a smaller radius than the 2.5 miles defined by the Ordinance. The analysis includes a total of six sites within the project location. The six alternative locations were ruled out as viable candidates due to their location outside of the proposed small cell network, height, and existing construction.

Among the researched locations, the proposed location is the least intrusive and will fill the coverage gap necessary to provide adequate wireless and data coverage.

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

The applicant was unable to identify any existing wireless facilities within the immediate vicinity that would either allow co-location or provide coverage to the target area. Though several other utility poles exist within the project vicinity, these alternative sites are not feasible due to their location outside of the proposed small cell network, height, or design.

Section 6512.2.D requires new wireless telecommunication facilities to be constructed so as to accommodate co-location, and must be made available for co-location.

Future co-locations are technically feasible as long as the proposed facilities comply with California Public Utilities Commission General Order 95 (GO95) engineering requirements. However, it would be difficult to comply with the GO95 safety and separation requirements if another wireless facility were to be installed at this location. Therefore, future co-locations are unlikely.

Sections 6512.2.E and F seek to minimize and mitigate visual impacts from public views by siting new facilities outside of the 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.

The proposed facility includes one cylindrical antenna to be mounted on a new 7-ft. pole extension for a maximum height of 53 feet 6 inches above grade, mounted on an existing joint utility pole located in the public right-of-way. Given that there is little surrounding foliage, the proposed equipment shall be painted a non-reflective brown color to match the utility pole. The equipment boxes shall also be painted a non-reflective brown color to match the utility pole which will reduce visual impacts and blend in with the existing equipment. No trees or vegetation are proposed for removal.

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

The proposed facility will be constructed of non-reflective materials. As discussed in the section above, the facility will be painted a non-reflective brown color to match the existing utility pole.

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.

As discussed in Section 2, Compliance with Zoning Regulations, the proposed facility will comply with all applicable requirements of the PC/DR Zoning District. The existing joint utility poles are situated in the public right-of-way and are not subject to the development standards for setbacks.

Section 6512.2.I. states that ground mounted towers, spires, and similar structures may be built and used to a greater height than the limit established for the zoning district in which the structure is located: provided that no such exception shall cover, at any level, more than 15% in the area of the lot nor have an area at the base greater than 1,600 sq. ft.; provided, further, that no tower, spire, or similar structure in any district shall ever exceed a maximum height of 150 feet.

This section provides further limits on the application of this exception to the PAD, RM, RM-CZ, TPZ, TPZ-CZ, and R districts. Given that the project parcel is located in the PC/DR Zoning District, the limitations detailed do not apply to this site. As mentioned previously, the project site is most closely located to a parcel which has a maximum height allowance of 36 feet. However, California Public Utilities Commission General Order 95 (GO95) requires a minimum of 6 feet of clearance between power lines and wireless telecommunications equipment. Therefore, the applicant has proposed the 7-ft. pole top extension bayonet on the existing pole to provide the necessary clearance between the top of the utility lines and the bottom of the antenna. The antenna itself is approximately 2 feet 2 inches in height which, along with the mounting bracket, brings the total height of the utility pole to 53 feet 6 inches. While the proposed height exceeds the height defined by the nearest parcel, the project conforms to the criteria of the exception as all the proposed equipment is to be mounted to the utility pole thereby avoiding any new square footage to be located in the right-of-way. The existing utility pole does not occupy 15% of the right-of-way or 1,600 sq. ft. Further, the proposed modifications are well below the 150 feet allowed by the exception.

b. Performance Standards

The proposed project meets 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 facility will be provided by PG&E, the visual impact will be minimal, and the conditions of approval will require maintenance and/or removal of the facility when it is no longer in operation. Furthermore, road access to the proposed project site is existing and no noise in excess of San Mateo County's Noise Ordinance will be produced. Conditions of Approval Nos. 8-19 were added to ensure compliance with the performance standards of this section (see Attachment A).

4. Compliance with the Use Permit Findings

For the use permit 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, be detrimental to the public welfare or injurious to property or improvements in said neighborhood.

Cellular communications facilities, such as the proposed project, require the submittal and review of a radio frequency (RF) report to ensure that the RF emissions from the proposed antenna do not exceed the Federal Communications Commission's public exposure limits. The applicant submitted a radio frequency report prepared by Hammett & Edison, Inc., dated October 27, 2017, confirming that the proposed facility will comply with the prevailing standards for limiting public exposure to radio frequency energy and, thus, will not cause a significant impact on the environment. The report states that the maximum RF level at ground level is 0.47% of the applicable public exposure limit. The maximum calculated level at any nearby building is 0.92% of the public exposure limit. It should be noted that these results include "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation. Due to the location of the mounted antenna, it will not be accessible to the general public and therefore no mitigation measures are necessary to comply with the FCC public exposure guidelines. To ensure compliance with occupational exposure limitations, staff has included a Condition of Approval, recommended by Hammett & Edison, Inc., for the posting of explanatory warning signs at the antennas and/or on the pole below the antennas, readily visible from any angle of approach to persons who may need to work within the area (see Attachment A).

Furthermore, the proposed facility will be unmanned, operate at all times, and be serviced periodically by an AT&T technician. The proposed facility will not generate significant traffic, noise, or intensification of use of the site.

With the discussion above, staff has determined that the proposed project will not have a negative environmental, health, or visual impact on persons or property within the project vicinity.

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 this location will allow for increased clarity, range, and capacity of the existing cellular network and will enhance services for the public. The proposed facility is the least intrusive option available to expand AT&T's network capacity and service coverage in this area of unincorporated Colma. The proposed facility will use existing utility infrastructure and add small equipment without disturbing the character of the neighborhood.

B. ENVIRONMENTAL REVIEW

This project is categorically exempt pursuant to Section 15303, Class 3, of the California Environmental Quality Act (CEQA) related to the construction of a new, small structure and the installation of small new equipment and a facility in a small structure.

C. REVIEWING AGENCIES

San Mateo County Building Inspection Section
San Mateo County Department of Public Works
Colma Fire Protection District

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Location Map
C. Project Plans
D. Alternative Site Analysis
E. Photo Simulations
F. Radio Frequency Radiation Report prepared by Hammett & Edison, Inc., dated October 27, 2017

ACC:jlh – ACCCC0150_WJU.DOCX

Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN 2017-00467 Hearing Date: April 19, 2018

Prepared By: Angela Chavez
Project Planner

For Adoption By: Zoning Hearing Officer

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. That this project is categorically exempt from environmental review, per Class 3, Section 15303, of the California Environmental Quality Act (CEQA) Guidelines for construction of a new small structure and the installation of small new equipment and a facility in a small structure.

Regarding the Use Permits, Find:

2. That the establishment, maintenance, and/or conducting of the use will not, under the circumstances of this particular case, be detrimental to the public welfare or injurious to the property or improvements in said neighborhood because the project will meet current Federal Communications Commission (FCC) standards as shown in the radio frequency radiation reports and has been conditioned to maintain valid FCC and California Public Utilities Commission (CPUC) licenses.

3. That this telecommunication facility is necessary for the public health, safety, convenience, or welfare of the community in that installing this cellular facility at this location will provide increased and improved cellular coverage in the area for residents, commuters, and emergency personnel.

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 April 19, 2018. 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. This use permit shall be for the proposed project only. Any change or change in intensity of use 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.

3. This permit shall be valid for ten (10) years until April 19, 2028. If the applicant seeks to renew this permit, 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 this permit shall be considered at a public hearing.

4. Prior to final inspection for the building permit, the applicant shall paint and maintain the equipment and antennas a non-reflective brown color to match the existing utility pole.

5. At the time of use permit renewal, if staff has determined, based on a field inspection, that the color of the equipment and antennas is no longer in compliance with the approved color, the applicant shall repaint the equipment and/or antennas, as necessary.

6. 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.

7. This permit does not allow for the removal of any trees. Any tree removal will require a separate permitting process.

8. 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 telecommunication facilities.

9. The wireless telecommunication facility shall not be lighted or marked unless required by the Federal Communications Commission (FCC) or the Federal Aviation Administration (FAA).

10. 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 this facility. 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.

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

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

13. The wireless telecommunication facility and all equipment associated with it shall be removed in its entirety by the applicant within ninety (90) days if the FCC and/or CPUC licenses and registrations are revoked or if 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 facility shall notify the Planning Department upon abandonment of the facility. Restoration shall be completed within two (2) months of the removal of the facility.

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. Explanatory signs are required to be posted at the antennas and/or on the pole below the antennas, readily visible from any angle of approach to persons who might need to work within the project area.

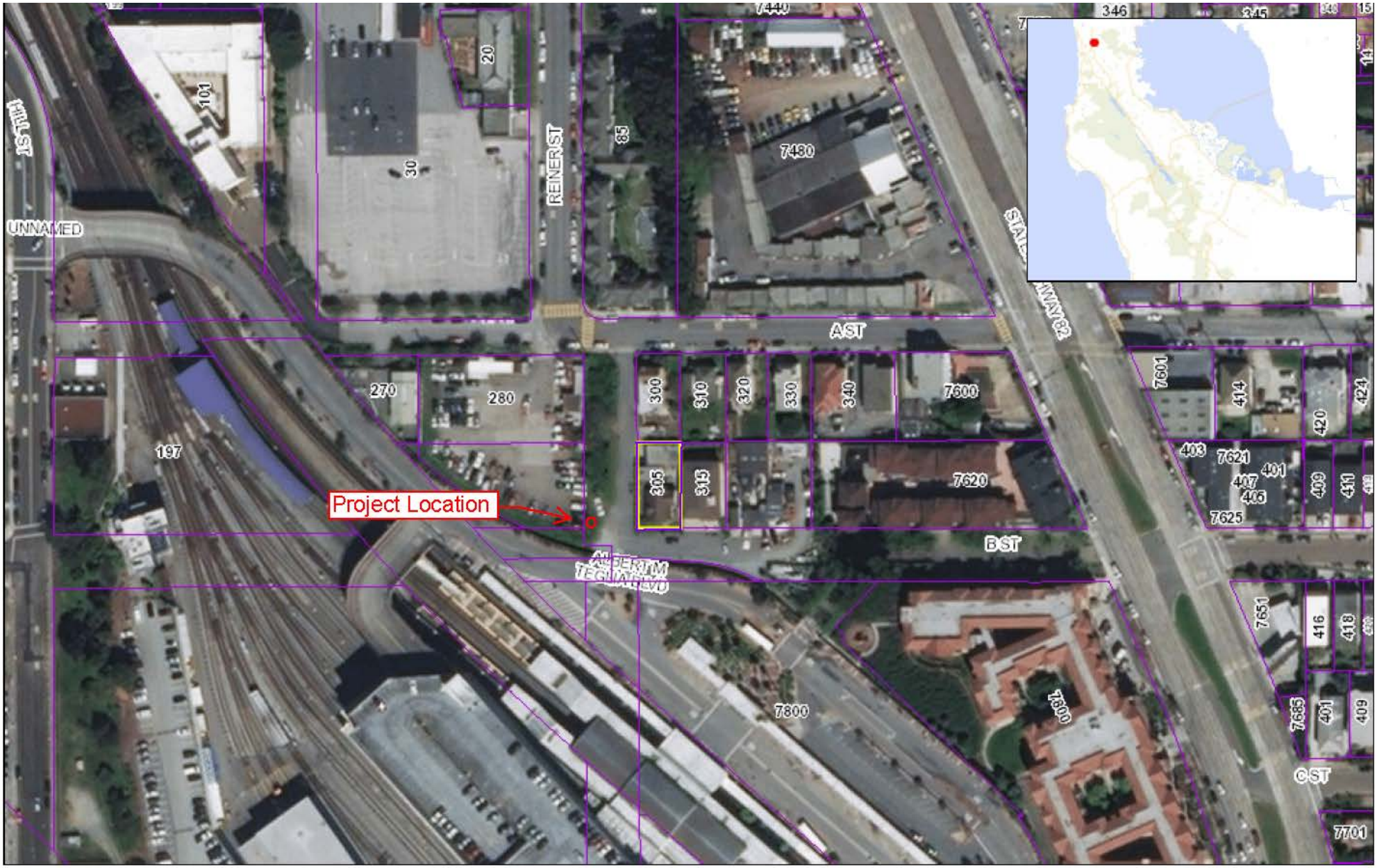
Building Inspection Section

16. The applicant shall comply with all Building Inspection Section requirements at the building permit stage of the application.

Department of Public Works

17. 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. The applicant shall contact a Department of Public Works Inspector 48 hours prior to commencing work in the right-of-way.

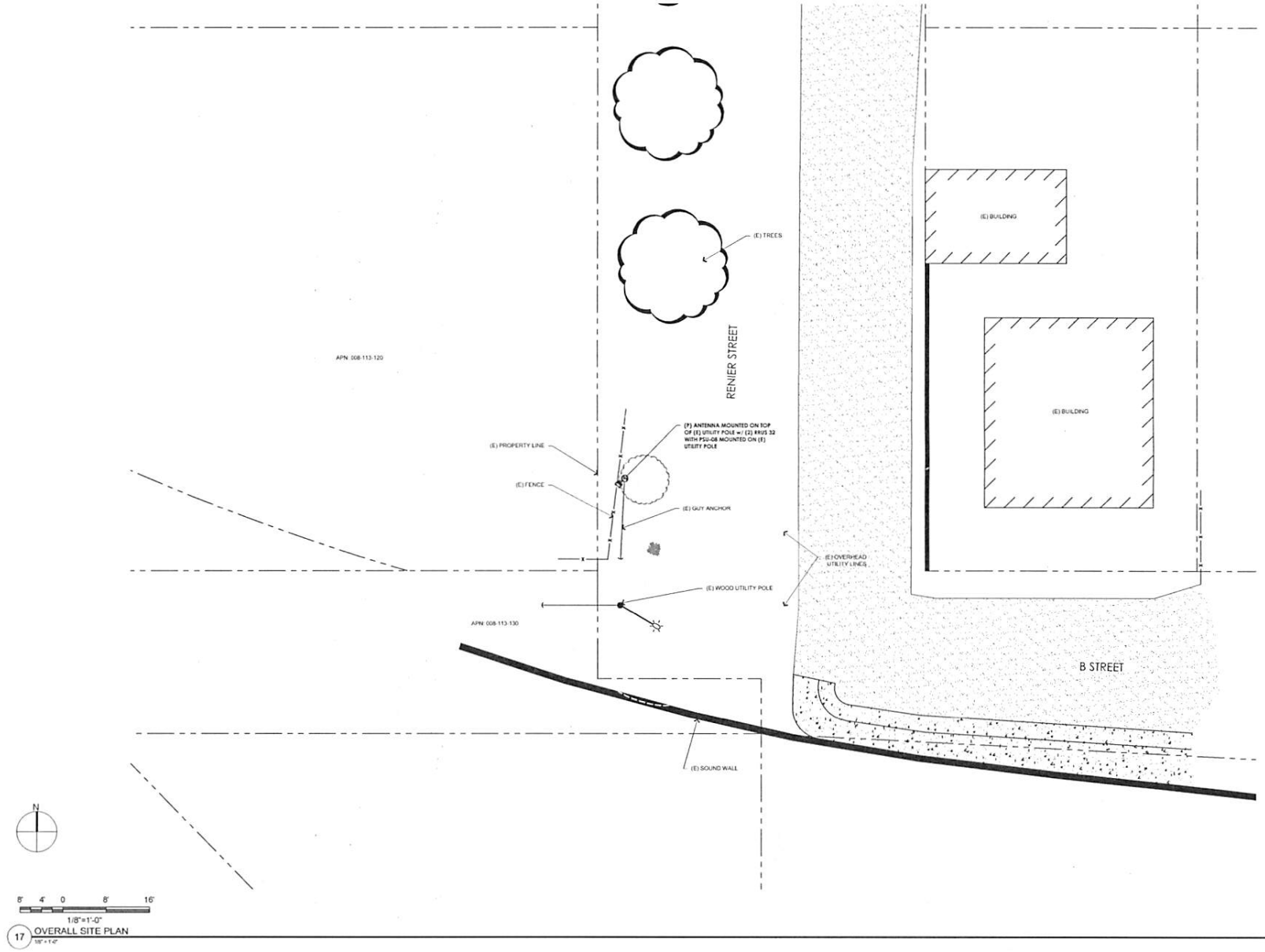
ACC:jlh – ACCCC0150_WJU.DOCX



San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **B**

File Numbers: **PLN2017-00467**



at&t

5001 EXECUTIVE PARKWAY
SAN RAMON, CA 94583

modus-corp.com

246 STOCKTON STREET, 3RD FLOOR
SAN FRANCISCO, CA 94108

ARCHITECTURAL GROUP
Borges

borgesarch.com

1478 STONE POINT DRIVE, SUITE 350
ROSEVILLE CA 95661
916 782 7200 TEL
916 773 3237 FAX

REV	DATE	DESCRIPTION
1	10/16/17	100% CD SUBMITTAL
0	10/09/17	90% CD Submittal

SITE NUMBER:

SFOK1_027

SITE ADDRESS:
ACROSS FROM 305 B STREET
SAN MATEO COUNTY
UNICORPRORATED

STAMP

DRAWN BY: A.L.D PROJECT NO: T-16509-73
CHECK BY: B.K.W

SHEET TITLE

SITE PLAN

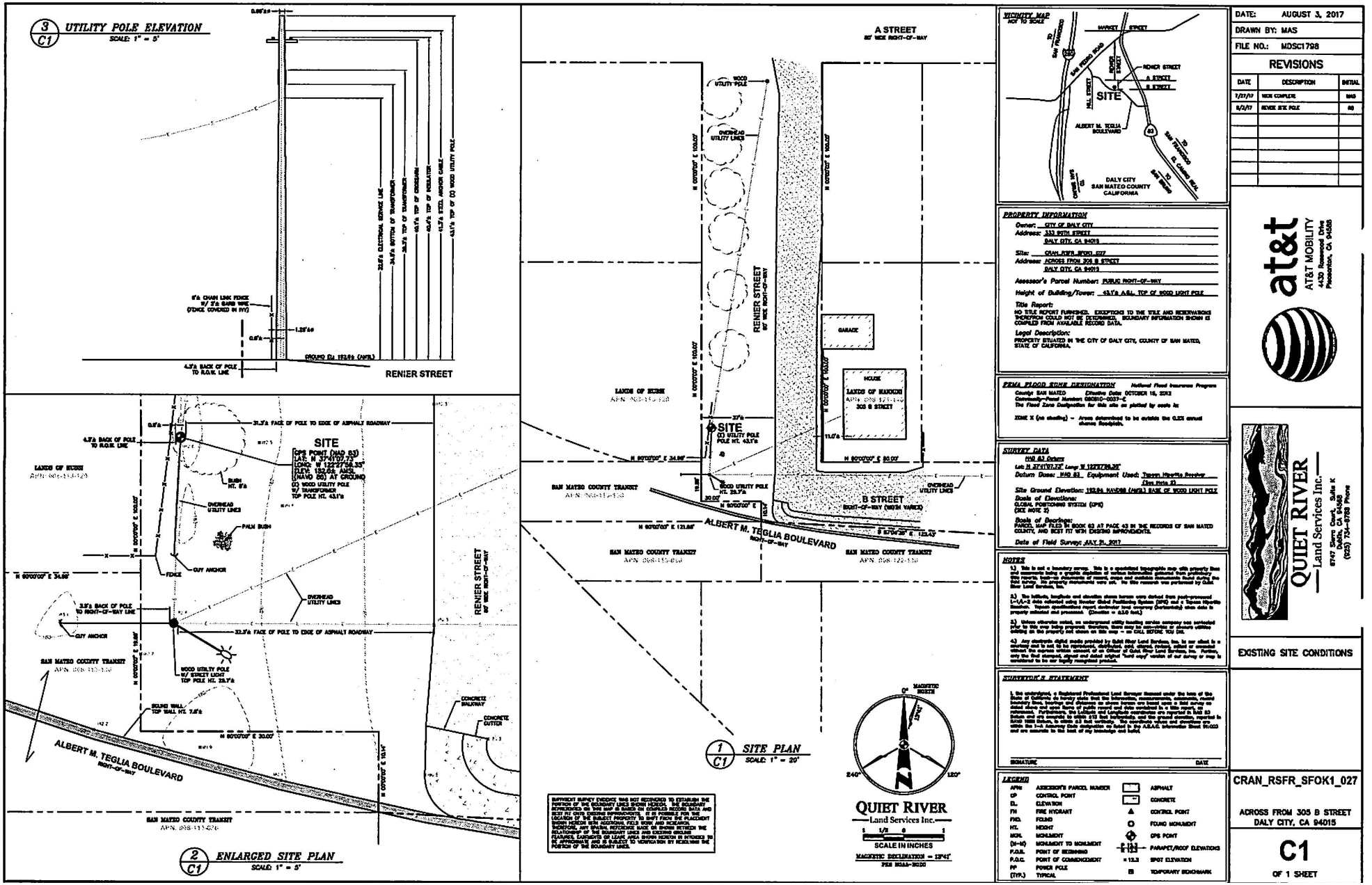
SHEET NO:

A-1

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **C**

File Numbers: **PLN2017-00467**

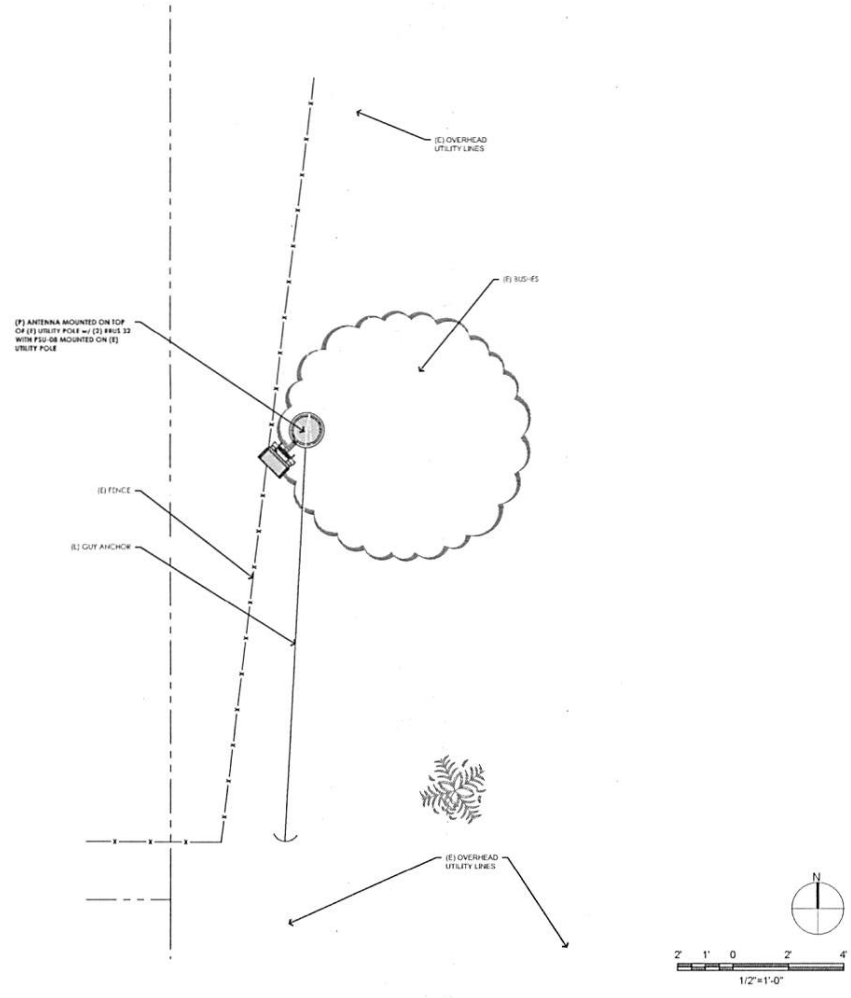


San Mateo County Zoning Hearing Officer Meeting

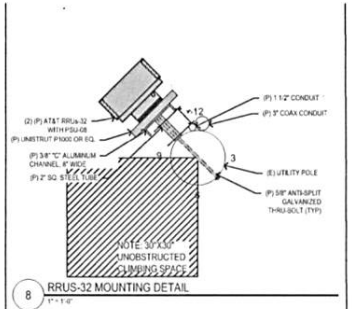
Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless**

Attachment: **C**

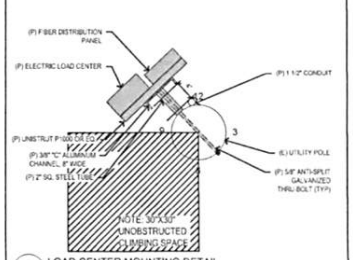
File Numbers: **PLN2017-00467**



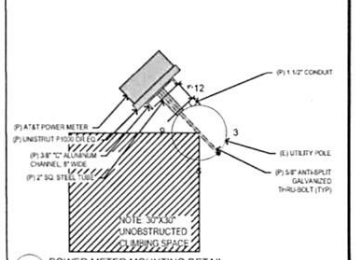
17 ENLARGED SITE PLAN
1/2" = 1'-0"



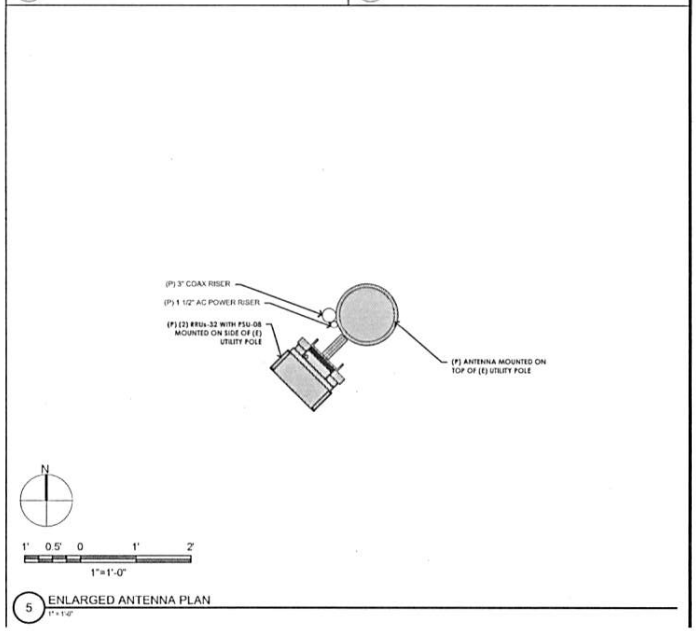
8 RRUS-32 MOUNTING DETAIL
1" = 1'-0"



7 LOAD CENTER MOUNTING DETAIL
1" = 1'-0"



3 POWER METER MOUNTING DETAIL
1" = 1'-0"



5 ENLARGED ANTENNA PLAN
1" = 1'-0"

at&t

5001 EXECUTIVE PARKWAY
SAN RAMON, CA 94583

modus

modus-corp.com

340 STOCKTON STREET, 3RD FLOOR
SAN FRANCISCO, CA 94108

ARCHITECTURAL GROUP
Borges

borgesarch.com

1478 STONE POINT DRIVE, SUITE 350
ROSEVILLE CA 95661
916 782 7200 TEL
916 773 3037 FAX

REV.	DATE	DESCRIPTION
1	10/16/17	100% CD SUBMITTAL
0	10/09/17	90% CD Submittal

SITE NUMBER:

SFOK1_027

SITE ADDRESS:
ACROSS FROM 305 B STREET
SAN MATEO COUNTY
UNICORPRORATED

STAMP

DRAWN BY: A.L.D. PROJECT NO.: T-16609-73
CHECK BY: B.K.W.

SHEET TITLE
ENLARGED SITE PLAN & ANTENNA PLAN

SHEET NO.
A-2

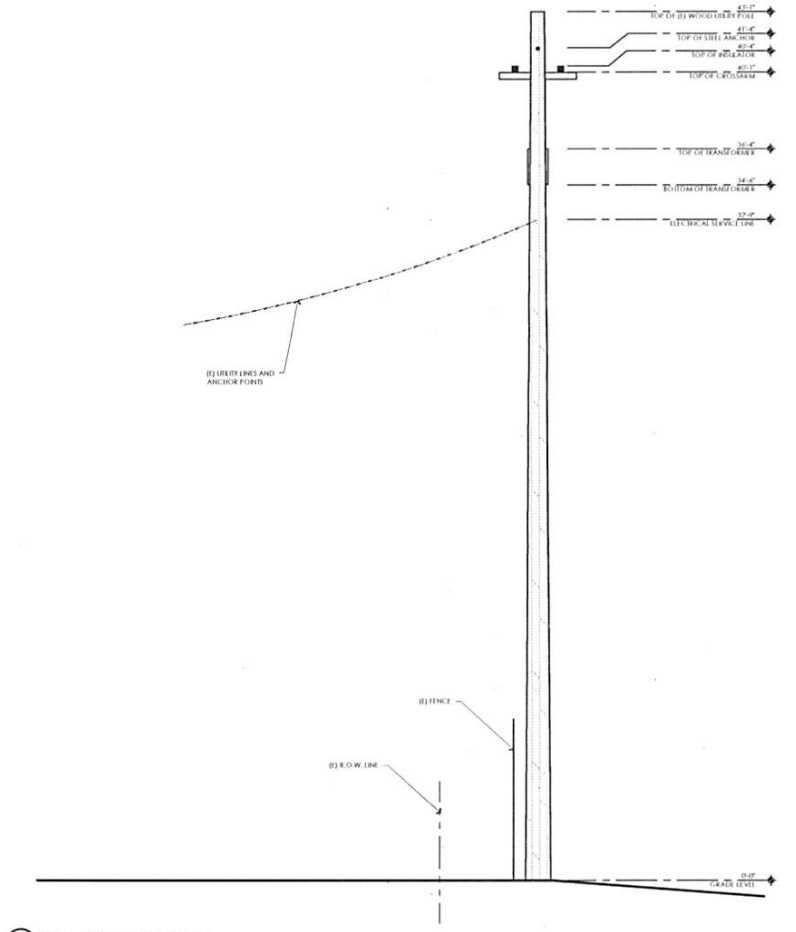
San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **C**

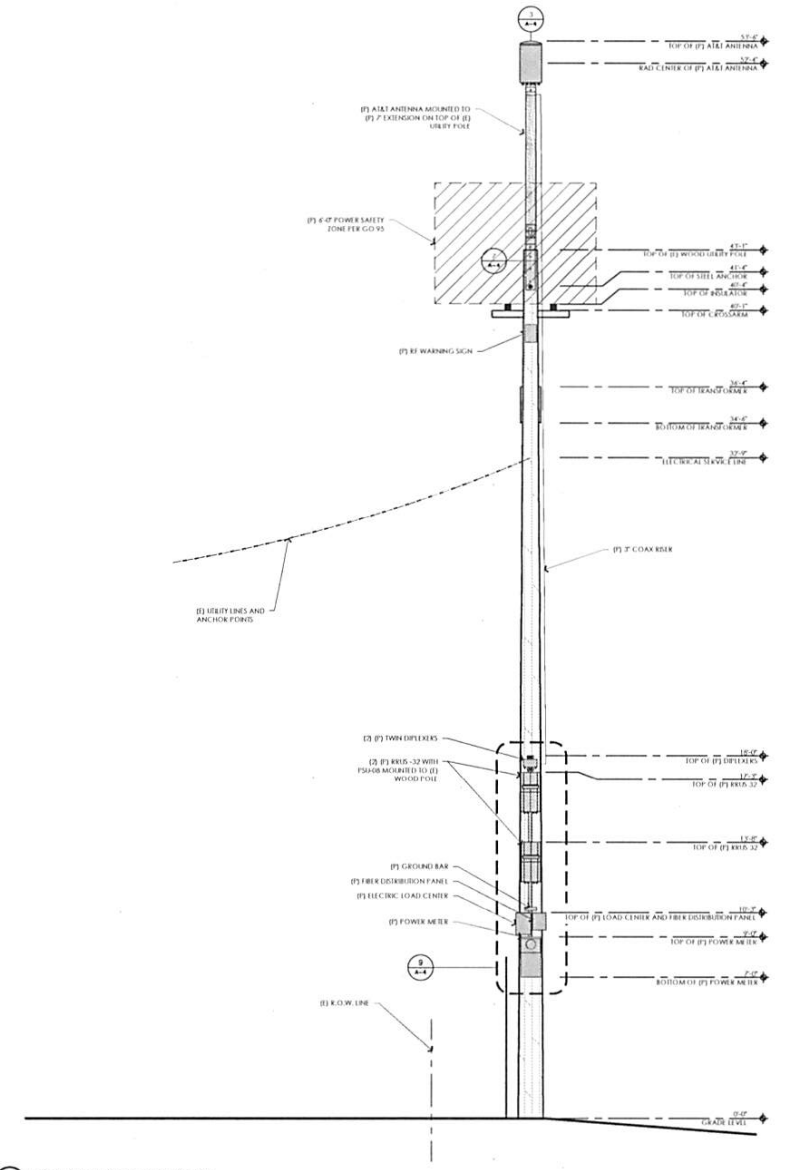
File Numbers: **PLN2017-00467**

NOTES:

1. PAINT RRU SOLAR SHIELD, MOUNTING COMPONENTS & CABLE SWEEP TO MATCH (E) POLE.



17 EXISTING NORTH ELEVATION



9 PROPOSED NORTH ELEVATION

at&t

5001 EXECUTIVE PARKWAY
SAN RAMON, CA 94583

modus-corp.com

246 STOCKTON STREET, 3RD FLOOR
SAN FRANCISCO, CA 94108

ARCHITECTURAL GROUP Borges

borgesarch.com

1478 STONE POINT DRIVE, SUITE 360
ROSEVILLE, CA 95661
916 782 7200 TEL
916 773 3037 FAX

REV	DATE	DESCRIPTION
1	10/16/17	100% CD SUBMITTAL
0	10/09/17	90% CD Submittal

SITE NUMBER:

SFOK1_027

SITE ADDRESS:
ACROSS FROM 305 B STREET
SAN MATEO COUNTY
UNICORPRORATED

STAMP

DRAWN BY: A.L.D. PROJECT NO: T-16509-73

CHECK BY: B.K.W.

SHEET TITLE

ELEVATIONS

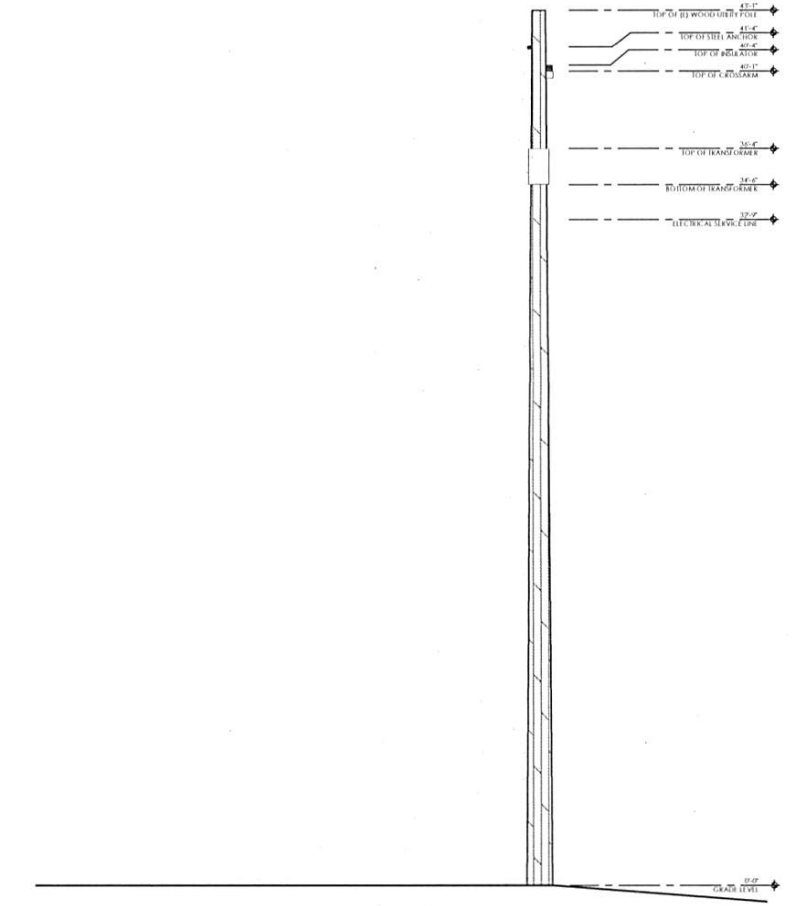
SHEET NO:

A-3.1

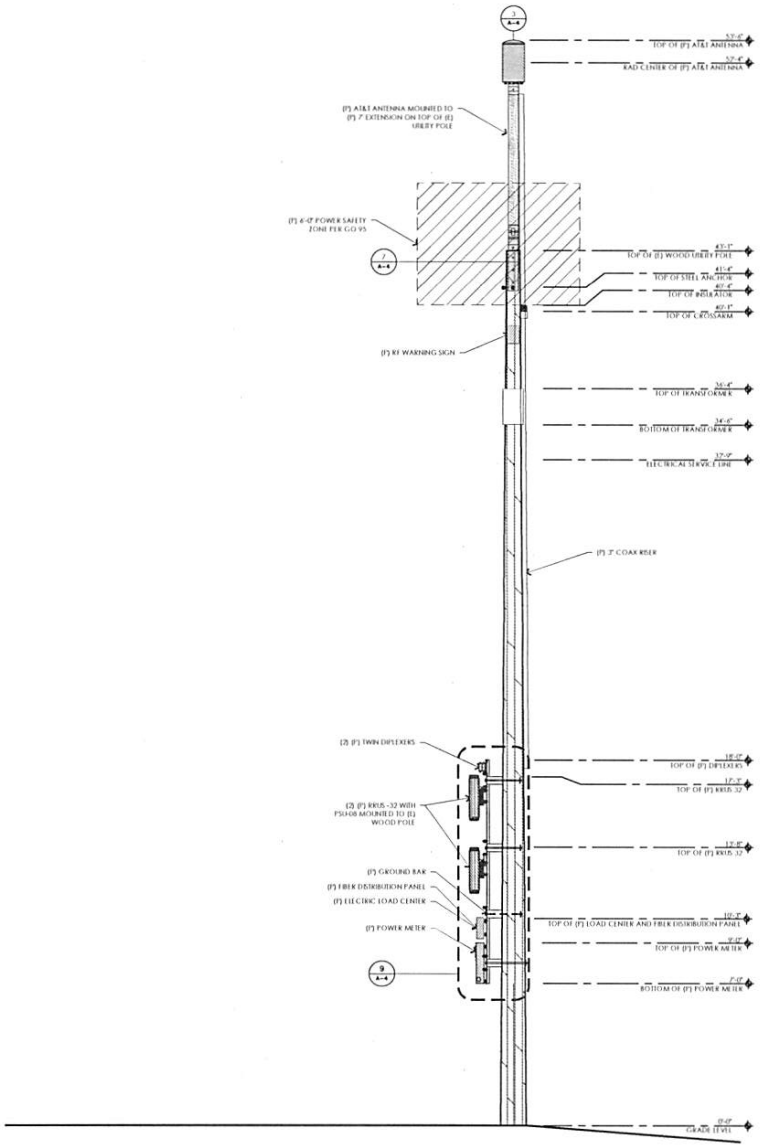
San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **C**

File Numbers: **PLN2017-00467**



17 EXISTING NORTH ELEVATION



9 PROPOSED NORTH ELEVATION

at&t

5001 EXECUTIVE PARKWAY
SAN RAMON, CA 94583

modus-corp.com

240 STOCKTON STREET, 3RD FLOOR
SAN FRANCISCO, CA 94108

ARCHITECTURAL GROUP
Borges

borgesarch.com

1478 STONE POINT DRIVE, SUITE 350
ROSEVILLE CA 95661
916 782 7200 TEL
916 773 3037 FAX

REV	DATE	DESCRIPTION
1	10/16/17	100% CD SUBMITTAL
0	10/09/17	90% CD Submittal

SITE NUMBER:

SFOK1_027

SITE ADDRESS:
ACROSS FROM 305 B STREET
SAN MATEO COUNTY
UNICORPRORATED

STAMP

DRAWN BY: A.L.D. PROJECT NO: T-16509-73
CHECK BY: B.K.W.

SHEET TITLE

SIDE ELEVATIONS

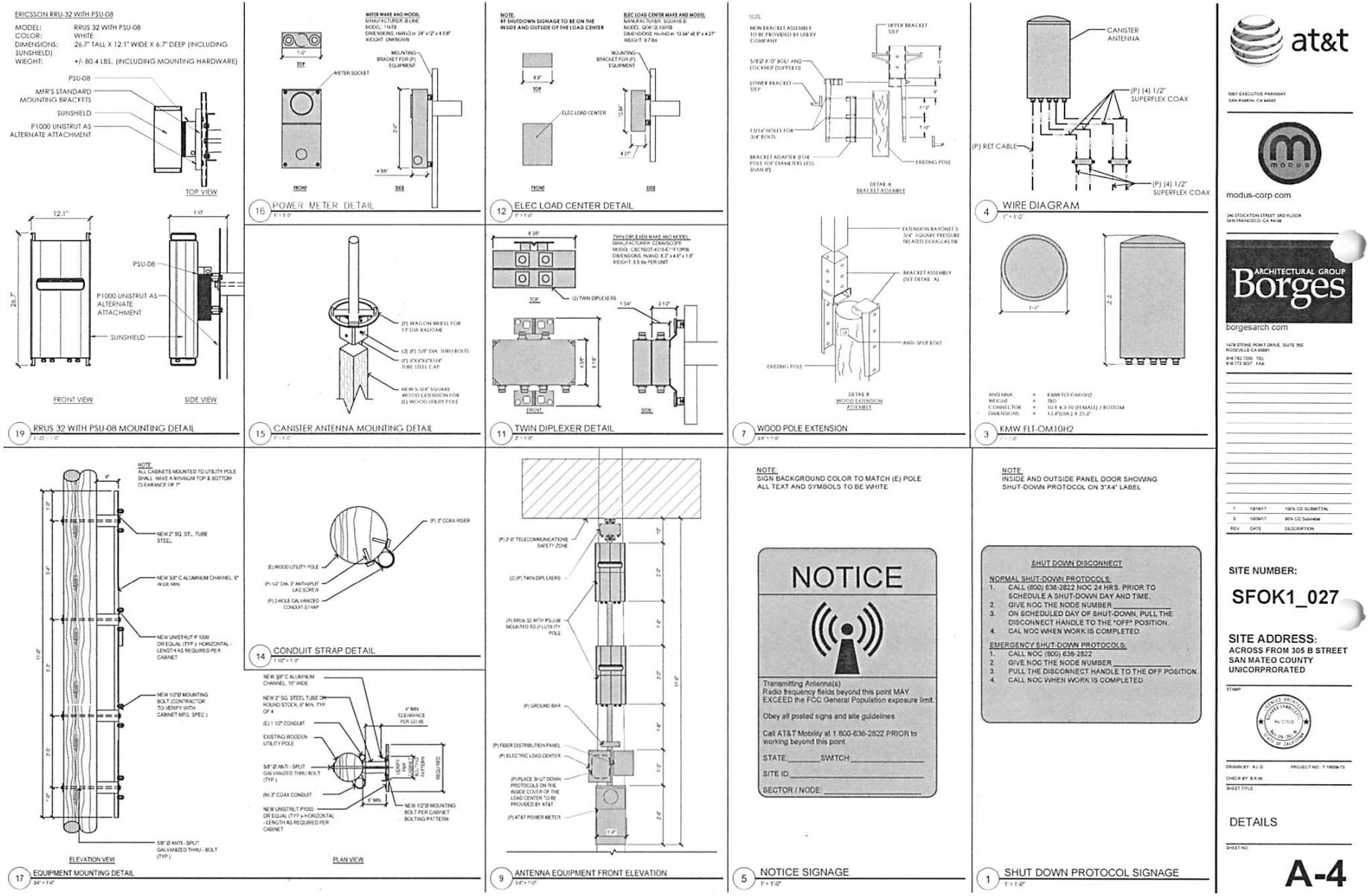
SHEET NO.

A-3.2

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **C**

File Numbers: **PLN2017-00467**



San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless**

Attachment: **C**

File Numbers: **PLN2017-00467**

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 REARRANGEMENT OF FURNISHINGS OR EQUIPMENT, SUCH CHANGES SHALL BE MADE WITHOUT COST, PROVIDING THE CHANGE IS ORDERED BEFORE THE CONDUIT RUNS, ETC., AND WORK DIRECTLY CONNECTED TO THE SAME IS INSTALLED AND NO EXTRA MATERIALS ARE REQUIRED.
3. LIGHTING FIXTURES ARE SHOWN IN THEIR APPROXIMATE LOCATIONS ONLY. COORDINATE THE FIXTURE LOCATION WITH MECHANICAL EQUIPMENT TO AVOID INTERFERENCE.
4. COORDINATE THE WORK OF THIS SECTION WITH THAT OF ALL OTHER TRADES. WHERE CONFLICTS OCCUR, CONSULT WITH THE RESPECTIVE CONTRACTOR AND COME TO AGREEMENT AS TO CHANGES NECESSARY. OBTAIN WRITTEN ACCEPTANCE FROM ENGINEER FOR THE PROPOSED CHANGES BEFORE PROCEEDING.

SHOP DRAWINGS:

1. N/A UNLESS NOTED OTHERWISE.

SUBSTITUTIONS:

1. NO SUBSTITUTIONS ARE ALLOWED

TESTS:

1. BEFORE FINAL ACCEPTANCE OF WORK, THE CONTRACTOR SHALL INSURE THAT ALL EQUIPMENT, SYSTEMS, FIXTURES, ETC., ARE WORKING SATISFACTORILY AND TO THE INTENT OF THE DRAWINGS.

PERMITS:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING OUT AND PAYING FOR ALL REQUIRED PERMITS, INSPECTION AND EXAMINATION WITHOUT ADDITIONAL EXPENSE TO THE OWNER.

GROUNDING:

1. THE CONTRACTOR SHALL PROVIDE A COMPLETE, AND APPROVED GROUNDING SYSTEM INCLUDING ELECTRODES, ELECTRODE CONDUCTOR, BONDING CONDUCTORS, AND EQUIPMENT CONDUCTORS AS REQUIRED BY ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
2. CONDUITS CONNECTED TO EQUIPMENT AND DEVICES SHALL BE METALICALY JOINED TOGETHER TO PROVIDE EFFECTIVE ELECTRICAL CONTINUITY.
3. FEEDERS AND BRANCH CIRCUIT WIRING INSTALLED IN A NONMETALLIC CONDUIT SHALL INCLUDE A CODE SIZED GROUNDING CONDUCTOR HAVING GREEN INSULATION. THE GROUND CONDUCTOR SHALL BE PROPERLY CONNECTED AT BOTH ENDS TO MAINTAIN ELECTRICAL CONTINUITY.
4. REFER TO GROUND BUS DETAILS. PROVIDE NEW GROUND SYSTEM COMPLETE WITH CONDUCTORS, GROUND ROD AND DESCRIBED TERMINATIONS.
5. ALL GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER AND ANNEALED #2 UNLESS NOTED OTHERWISE.
6. ALL NON-DIRECT BURIED TELEPHONE EQUIPMENT GROUND CONDUCTORS SHALL BE #2 STRANDED THHN (GREEN) INSULATION.
7. ALL GROUND CONNECTIONS SHALL BE MADE WITH "HYGROUND" COMPRESSION SYSTEM BURNDY CONNECTORS EXCEPT WHERE NOTED OTHERWISE.
8. PAINT AT ALL GROUND CONNECTIONS SHALL BE REMOVED.
9. GROUNDING SYSTEM RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY THE OWNER FOR FUTURE INSTRUCTION ON METHODS FOR REDUCING THE RESISTANCE VALUE. SUBMIT TEST REPORTS AND FURNISH TO SMART SMR ONE COMPLETE SET OF PRINTS SHOWING "INSTALLED WORK".

UTILITY SERVICE:

1. TELEPHONE AND ELECTRICAL METERING FACILITIES SHALL CONFORM TO THE REQUIREMENTS OF THE SERVING UTILITY COMPANIES. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND REQUIREMENTS. SERVICE INFORMATION WILL BE FURNISHED BY THE SERVING UTILITIES.
2. CONFORM TO ALL REQUIREMENTS OF THE SERVING UTILITY COMPANIES.

PRODUCTS:

1. ALL MATERIALS SHALL BE NEW, CONFORMING WITH NEC, ANSI, NEMA, AND THEY SHALL BE U.L. LISTED AND LABELED.
2. CONDUIT:
   - A) RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS, IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAPPED WRAPPED WITH HUNTS WRAP PROCESS NO. 3.
   - B) ELECTRICAL METALLIC TUBING SHALL U.L. LABEL. FITTINGS SHALL BE COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
   - C) FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE. SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT EXCESS OF SIX FEET IN LENGTH SHALL HAVE FULL SIZE GROUND WIRE.
   - D) CONDUIT RUNS MAY BE SURFACE MOUNTED IN CEILING OR WALLS UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH ARCHITECT PRIOR TO INSTALLING.
   - E) ALL UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 24" BELOW GRADE
   - F) ALL CONDUIT ONLY (C.O.) SHALL HAVE PULL ROPE.
   - G) CONDUITS RUN ON ROOFS SHALL BE INSTALLED ON 4x4 REDWOOD SLEEPERS, 6'-0" ON CENTER, SET IN NON-HARDENING MASTIC.
3. ALL WIRE AND CABLE SHALL BE COPPER, 600 VOLT, #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. CONDUCTORS #10 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED. TYPE THHN INSULATION USED UNLESS CONDUCTORS INSTALLED IN CONDUIT EXPOSED TO WEATHER, IN WHICH CASE TYPE THWN INSULATION SHALL BE USED.
4. PROVIDE GALVANIZED COATED STEEL BOXES AND ACCESSORIES SIZED PER CODE TO ACCOMMODATE ALL DEVICES AND WIRING.
5. DUPLEX RECEPTACLES SHALL BE SPECIFICATION GRADE WITH WHITE FINISH (UNLESS NOTED BY ENGINEER), 20 AMP, 125 VOLT, THREE WIRE GROUNDING TYPE, NEMA 5-20R. MOUNT RECEPTACLE AT +12" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED ON DRAWINGS OR IN DETAILS. WEATHERPROOF RECEPTACLES SHALL BE GROUND FAULT INTERRUPTER TYPE WITH SIERRA #WPD-8 LIFT COVERPLATES.
6. TOGGLE SWITCHES SHALL BE 20 AMP, 120 VOLT AC, SPECIFICATION GRADE WHITE (UNLESS NOTED OTHERWISE) FINISH. MOUNT SWITCHES AT +48" ABOVE FINISHED FLOOR.
7. PANELBOARDS SHALL BE DEAD FRONT SAFETY TYPE WITH ANTI-BURN SOLDERLESS COMPRESSION APPROVED FOR COPPER CONDUCTORS, COPPER BUS BARS, FULL SIZED NEUTRAL BUS, GROUND BUS AND EQUIPPED WITH QUICK-MAKE QUICK-BREAK BOLT-IN TYPE THERMAL MAGNETIC CIRCUIT BREAKERS. MOUNT TOP OF THE PANELBOARDS AT 6'-3" ABOVE FINISHED FLOOR. PROVIDE TYPE WRITTEN CIRCUIT DIRECTORY.
8. ALL CIRCUIT BREAKERS, MAGNETIC STARTERS AND OTHER ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED.
9. GROUND RODS SHALL BE COPPER CLAD STEEL, 5/8" ROUND AND 10' LONG, COPPERWELD OR APPROVED EQUAL.

INSTALLATION:

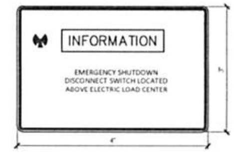
1. PROVIDE SUPPORTING DEVICES FOR ALL ELECTRICAL EQUIPMENT, FIXTURES, BOXES, PANEL, ETC., SUPPORT LUMINARIES FROM UNDERSIDE OF STRUCTURAL CEILING. EQUIPMENT SHALL BE BRACED TO WITHSTAND HORIZONTAL FORCES IN ACCORDANCE WITH STATE AND LOCAL CODE REQUIREMENTS. PROVIDE PRIOR ALIGNMENT AND LEVELING OF ALL DEVICES AND FIXTURES.
2. CUTTING, PATCHING, CHASES, OPENINGS: PROVIDE LAYOUT IN ADVANCE TO ELIMINATE UNNECESSARY CUTTING OR DRILLING OF WALLS, FLOORS CEILINGS, AND ROOFS. ANY DAMAGE TO BUILDING STRUCTURE OR EQUIPMENT SHALL BE REPAIRED BY THE CONTRACTOR. OBTAIN PERMISSION FROM THE ENGINEER BEFORE CORING.
3. IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC., IT MUST BE CLEARLY UNDERSTOOD THAT TENDONS AND/OR REINFORCING STEEL WILL NOT BE DRILLED INTO, CUT OR DAMAED UNDER THE CIRCUMSTANCES.
4. LOCATION OF TENDONS AND/OR REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE, MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT VIA X-RAY OR OTHER DEVICES THAT CAN ACCURATELY LOCATE THE REINFORCING AND/OR STEEL TENDONS.
5. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH THE REQUIREMENTS OF THE C.B.C.

PROJECT CLOSEOUT:

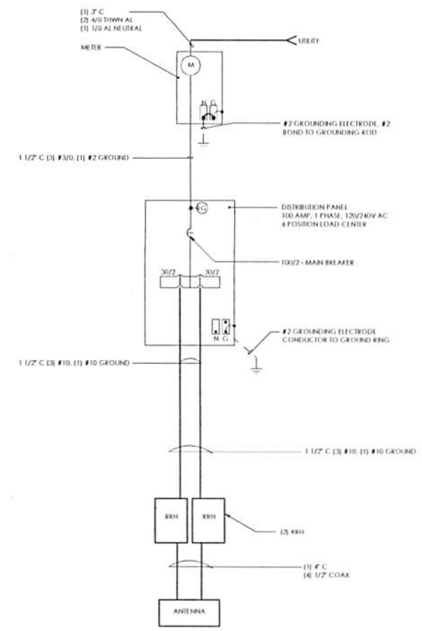
1. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL POTENTIAL GROUNDING TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. CLEAN PREMISES OF ALLS DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.
2. PROVIDE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
3. ALL BROCHURES, OPERATING MANUALS, CATALOG, SHOP DRAWINGS, ETC., SHALL BE TURNED OVER TO OWNER AT JOB COMPLETION.

GROUNDING NOTES:

1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION REQUIREMENTS AND CONSTRUCTION ACCORDING TO SITE CONDITIONS.
2. ALL GROUNDING CONDUCTORS: #2 AWG SOLID BARE TINNED COPPER WIRE UNLESS OTHERWISE NOTED.
3. GROUND BAR LOCATED IN BASE OF EQUIPMENT WILL BE PROVIDED, FURNISHED AND INSTALLED BY THE VENDOR.
4. ALL BELOW GRADE CONNECTIONS: EXOTHERMIC WELD TYPE, ABOVE GRADE CONNECTIONS: EXOTHERMIC WELD TYPE.
5. GROUND RING SHALL BE LOCATED A MINIMUM OF 24" BELOW GRADE OR 6" MINIMUM BELOW THE FROST LINE.
6. INSTALL GROUND CONDUCTORS AND GROUND ROD MINIMUM OF 1'-0" FROM EQUIPMENT CONCRETE SLAB, SPREAD FOOTING, OR FENCE.
7. EXOTHERMIC WELD GROUND CONNECTION TO FENCE POST; TREAT WITH A COLD GALVANIZED SPRAY.
8. GROUND BARS:
   - A) EQUIPMENT GROUND BUS BAR (EGB) LOCATED AT THE BOTTOM OF ANTENNA POLE/MAST FOR MAKING GROUNDING JUMPER CONNECTIONS TO COAX FEEDER CABLES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. JUMPERS (FURNISHED BY OWNERS) SHALL BE INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR.
9. ALL GROUNDING INSTALLATIONS AND CONNECTIONS SHALL BE MADE BY ELECTRICAL CONTRACTOR.
10. OBSERVE N.E.C. AND LOCAL UTILITY REQUIREMENTS FOR ELECTRICAL SERVICE GROUNDING.
11. GROUNDING ATTACHMENT TO TOWER SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS OR AT GROUNDING POINTS PROVIDED (2 MINIMUM).
12. IF EQUIPMENT IS IN A C.L. FENCE ENCLOSURE, GROUND ONLY CORNER POSTS AND SUPPORT POSTS OF GATE. IF CHAIN LINK LID IS USED, THEN GROUND LID ALSO.
13. GROUNDING AT PPC CABINET SHALL BE VERTICALLY INSTALLED.
14. ALL GROUNDING FOR ANTENNAS SHALL BE CONNECTED SO THAT IT WILL BY-PASS MAIN BUSS BAR.
15. ALL EMT RUNS SHALL BE GROUNDED AND HAVE A BUSHING. NO PVC ABOVE GROUND.
16. USE SEPARATE HOLES FOR GROUNDING AT BUSS BAR. NO "DOUBLE-UP" OF LUGS.
17. POWER AND TELCO CABINETS SHALL BE GROUNDED (BONDED) TOGETHER.
18. NO LB'S ALLOWED ON GROUNDING.
19. PROVIDE STAINLESS STEEL CLAMP AND BRASS TAGS ON COAX AT ANTENNAS AND DOGHOUSE.



4 SHUTDOWN DISCONNECT SIGNAGE
NOT TO SCALE



5 ELECTRICAL NOTES
NTS

at&t

5001 EXECUTIVE PARKWAY
SAN RAMON, CA 94583

modus-corp.com

240 STOCKTON STREET, 3RD FLOOR
SAN FRANCISCO, CA 94108

ARCHITECTURAL G Borges

borgesarch.com

1478 STONE POINT DRIVE, SUITE 350
ROSEVILLE CA 95661
916 782 7200 TEL
916 773 5037 FAX

REV	DATE	DESCRIPTION
1	10/16/17	100% CD SUBMITTAL
0	10/09/17	90% CD Submittal

SITE NUMBER:

SFOK1_027

SITE ADDRESS:
ACROSS FROM 305 B STREET
SAN MATEO COUNTY
UNICORPRORATED

STAMP

DRAWN BY: A.L.D PROJECT NO: T-16509-73
CHECK BY: B.K.W

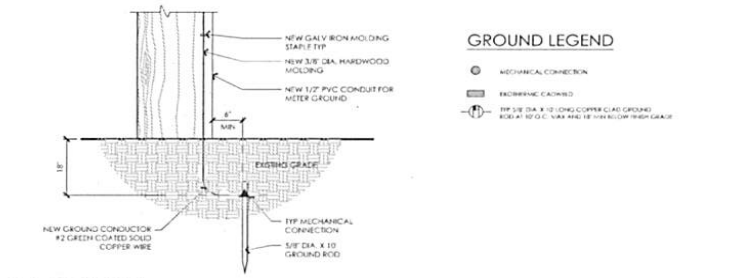
SHEET TITLE
SINGLE LINE DIAGRAM AND NOTES

SHEET NO
E-1

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **C**

File Numbers: **PLN2017-00467**



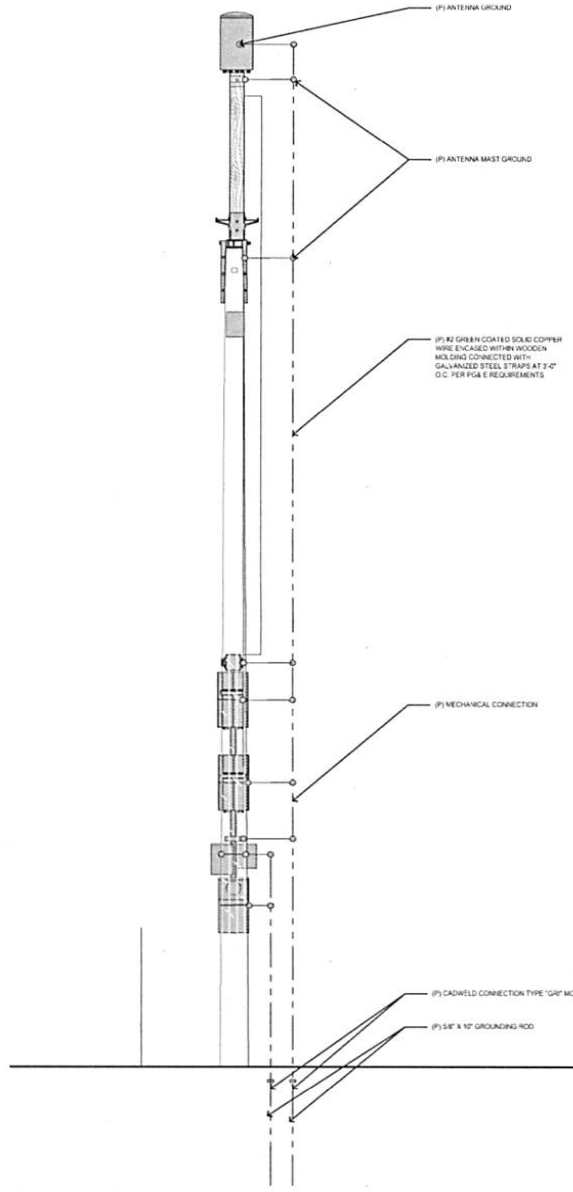
15 GROUND DETAIL

GROUND LEGEND

MECHANICAL CONNECTION

EXOTHERMIC CADWELD

TYP 5/8" DIA. X 10'-0" LONG COPPER CLAD GROUND ROD AT 10'-0" O.C. MIN. AND TIE VIA BCW TINNED GRADE



5 GROUNDING PLAN

at&t

5001 EXECUTIVE PARKWAY
SAN RAMON, CA 94583

modus-corp.com

240 STOCKTON STREET, 3RD FLOOR
SAN FRANCISCO, CA 94108

ARCHITECTURAL GROUP
Borges

borgesarch.com

1478 STONE POINT DRIVE, SUITE 350
ROSEVILLE CA 95661
916 782 7200 TEL
916 773 3037 FAX

REV	DATE	DESCRIPTION
1	10/16/17	100% CD SUBMITTAL
0	10/06/17	90% CD Submittal

SITE NUMBER:

SFOK1_027

SITE ADDRESS:
ACROSS FROM 305 B STREET
SAN MATEO COUNTY
UNICORPRORATED

STAMP

DRAWN BY: A.L.D. PROJECT NO: T-16509-73

CHECK BY: B.K.W.

SHEET TITLE

POLE GROUND AND DETAILS

SHEET NO:

E-2

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **C**

File Numbers: **PLN2017-00467**

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **D**

File Numbers: **PLN2017-00467**

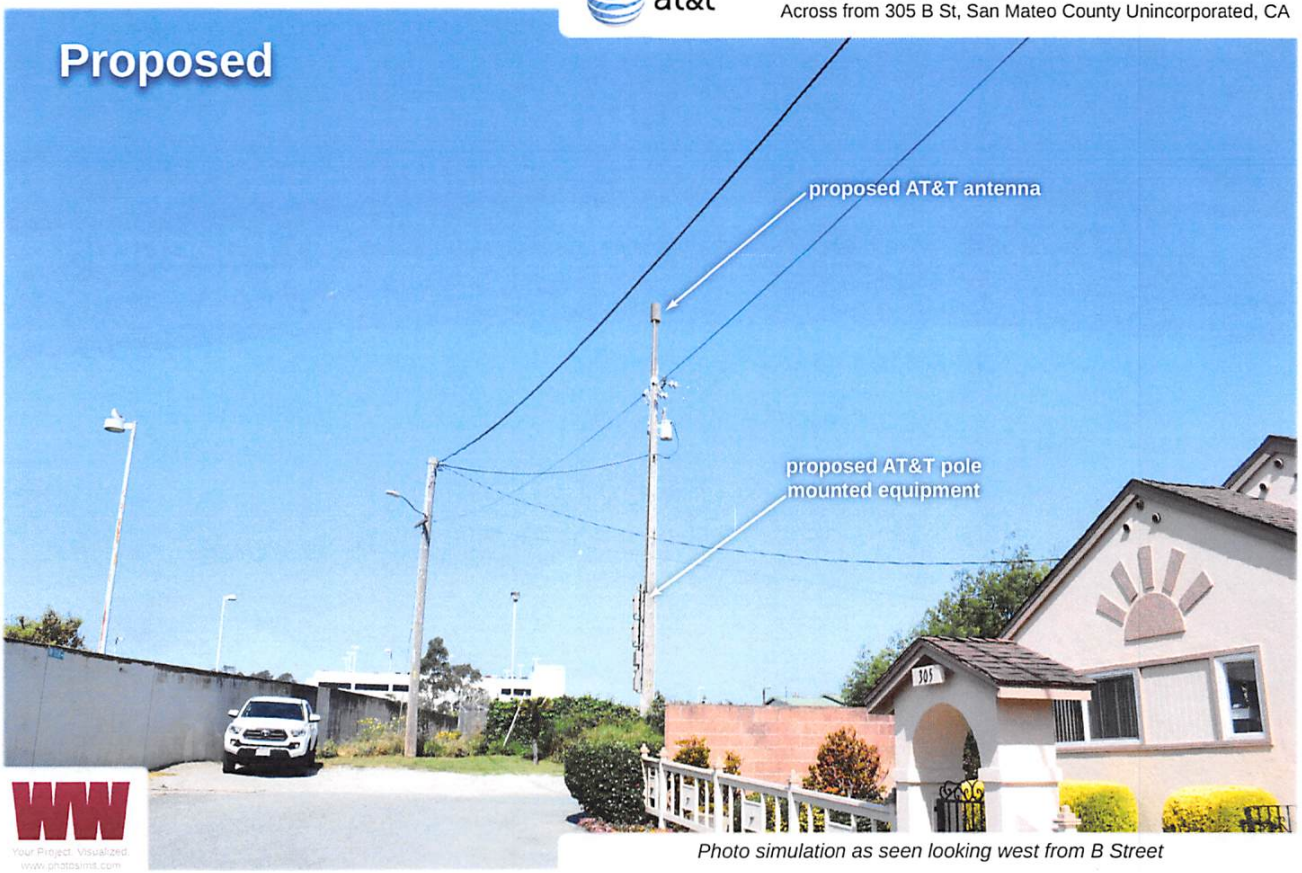


Photo simulation as seen looking west from B Street

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **E**

File Numbers: **PLN2017-00467**

at&t

CRAN_RSFR_SFOK1_027
Across from 305 B St, San Mateo County Unincorporated, CA

Photo simulation as seen looking south from A Street

San Mateo County Zoning Hearing Officer Meeting

Owner/Applicant: **PG&E/Modus-Corp. for AT&T Wireless** Attachment: **E**

File Numbers: **PLN2017-00467**

AT&T Mobility • Proposed DAS Node (Site No. SFOK1-027)
305 B Street • Daly City, 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. SFOK1-027 to be added to the AT&T distributed antenna system ("DAS") in Daly City, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

AT&T proposes to install an omnidirectional antenna on a utility pole sited in the public right-of-way at 305 B Street in Daly City. 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^2	1.00 mW/cm^2
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

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 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 Borges Architectural Group, dated October 9, 2017, it is proposed to install one Galtronics Model P6480i, 2-foot tall, omnidirectional cylindrical antenna, on an extension above the top of a utility pole sited in the public right-of-way about 65 feet west of the single-story residence located at 305 B Street in Daly City. The antenna would employ no downtilt, and would be mounted at an effective height of about 49 feet above ground. The maximum effective radiated power in any direction would be 1,240 watts, representing simultaneous operation of 660 watts for AWS and 580 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 0.0047 mW/cm^2, which is 0.47% of the applicable public exposure limit. The maximum calculated level at any nearby building is 0.92% 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 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. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all authorized personnel who have access to the antenna. No access within 5 feet at the same height as the antenna, such as might occur during certain maintenance activities at the top of the pole, should be allowed while the node is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that an explanatory sign* be posted at the antenna and/or on the pole below the antenna, readily visible from any angle of approach to persons who might need to work within that distance.

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, at 305 B Street in Daly City, 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.

Authorship

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

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

October 27, 2017

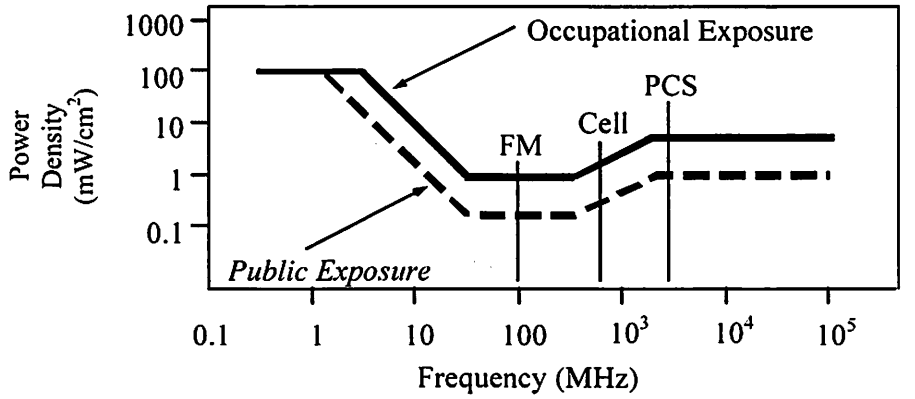
* Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health 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.

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 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^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 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
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 = 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.