

PLANNING COMMISSION

Agenda Item No.: 6.2
Date: May 25, 2010

CASE NUMBER: PHG 10-0010

APPLICANT: Mark Phillips, M&M Telecom, Inc. (Clearwire)

LOCATION: An approximately 3.20-acre property generally located on the southern side of West Citracado Parkway, east of Interstate 15, addressed as 625 West Citracado Parkway (APN 238-110-43).

TYPE OF PROJECT: Modification to a Master and Precise Development Plan

PROJECT DESCRIPTION: Modification to a previously approved Master and Precise Development Plan for Clearwire Communication to install up to nine wireless communication antennas consisting of six panel antennas and three 15.3-inch-diameter directional antennas behind the existing mechanical screen walls on the roof of the North County Medical Building (Rady Children's Urgent Care Facility) to support their new wireless communication network. The supporting electrical equipment also would be located on the roof.

STAFF RECOMMENDATION: Approval

GENERAL PLAN DESIGNATION/TIER: Planned Commercial; Tier 1- Kit Carson subarea

ZONING: PD-C (Planned Development-Commercial)

BACKGROUND/SUMMARY OF ISSUES:

A Master and Precise Development Plan (Case No. 2004-01-PD) previously was approved by the City Council for the development of a 48,800 SF pediatric medical center (Rady Children's Urgent Care) on the subject property. Clearwire is a subscription based internet service provider, which is 51% owned by Sprint/Nextel. They currently have sites in many states and are proposing a new network in Escondido with approximately 23 sites. Many, but not all of the proposed facilities in Escondido would be co-located or associated with existing Sprint/Nextel sites. Clearwire is requesting to locate a new wireless communication facility consisting of up to nine antennas and support equipment on the roof of the existing Rady medical building. No visible changes to the exterior of the building or to the site are proposed. There currently are no wireless communication facility located on the building or site. The Rady medical facility is zoned Planned Development Commercial and therefore a modification to the Master Plan is necessary to allow a wireless facility to be located on the site.

LEGAL REQUIREMENTS: In 1996, the U.S. Congress added a section to the Communications Act of 1934 to promote the expansion of personal wireless communications service, adding section 332(c)(7). This section preserves local zoning authority over the "placement, construction, and modification" of wireless facilities, while imposing certain federal requirements. Specifically, Section 332(c)(7) requires that state or local government decisions regarding wireless service facilities must not: 1) unreasonably discriminate between one cellular provider and another; or 2) prohibit or have the effect of prohibiting the provision of personal wireless services; or 3) be founded on "the environmental effects of radio frequency (RF) emissions *to the extent that such facilities comply* with the FCC's regulations" (emphasis added).

In summary, once the Commission is satisfied the project's RF emissions are within the federal thresholds, then the review must be based on otherwise applicable local zoning criteria. A denial of a proposed facility must not run afoul of the federal restrictions set forth as 1), 2) and 3) above.

Staff feels the issues are as follows:

1. Whether the design and location of the proposed facility is appropriate for the site and consistent with the Wireless Facility Guidelines.

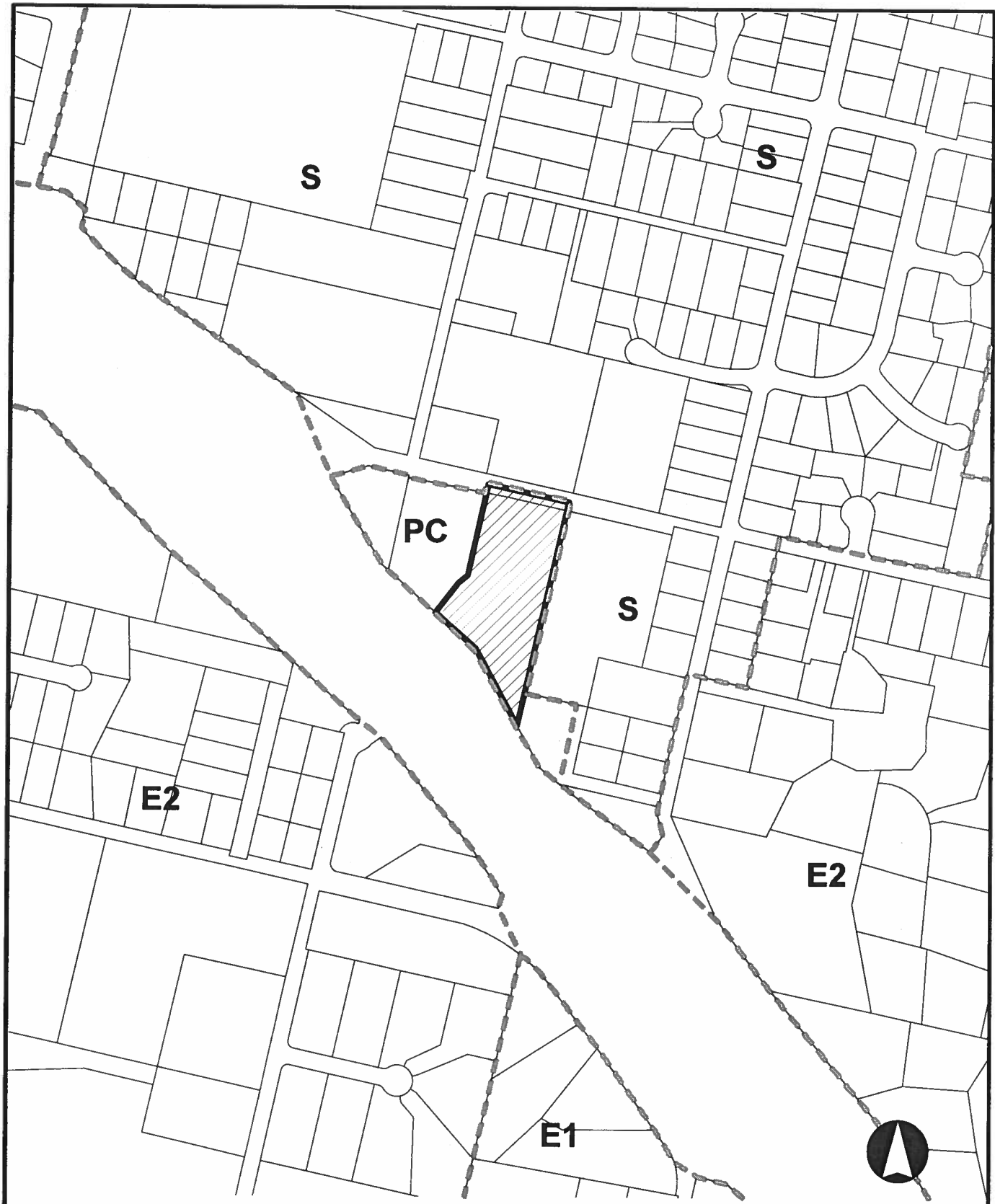
REASONS FOR STAFF RECOMMENDATION:

1. The proposed facility would be consistent with the Communication Antennas Ordinance since it would be located within a commercial building and entirely integrated into the architecture of the existing building. The proposed design would not result in any adverse visual impacts and would be in scale and context with the built environment.
2. Staff feels the proposed facility would not result in a potential health hazards to nearby residents since the Radio Frequency (RF) study prepared for the proposed project indicates the facility would be within maximum permissible exposure (MPE) limits and Federal Communication Commission (FCC) standards.

Respectfully submitted,



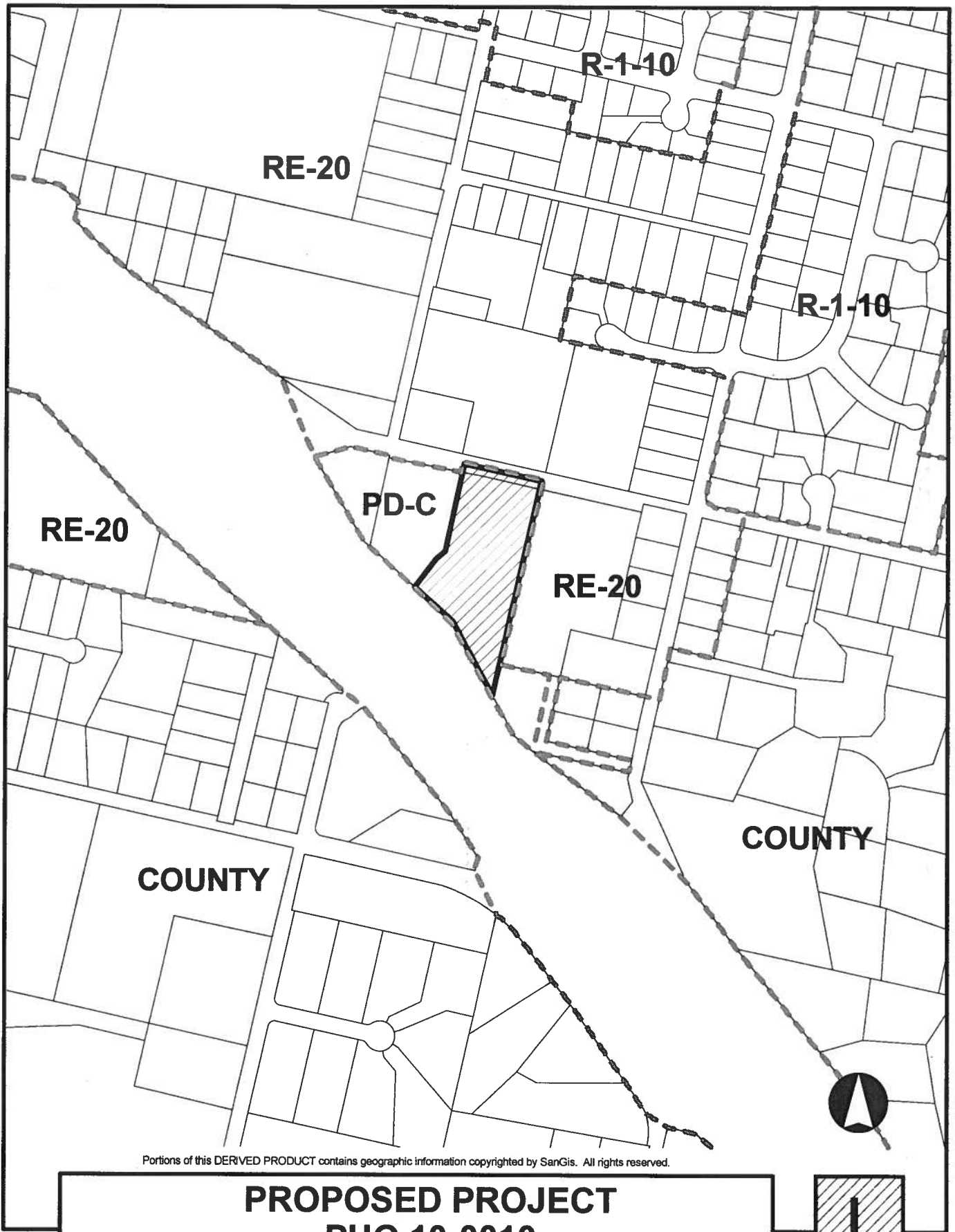
Jay Paul
Associate Planner



Portions of this DERIVED PRODUCT contains geographic information copyrighted by SanGis. All rights reserved.

**PROPOSED PROJECT
PHG 10-0010**





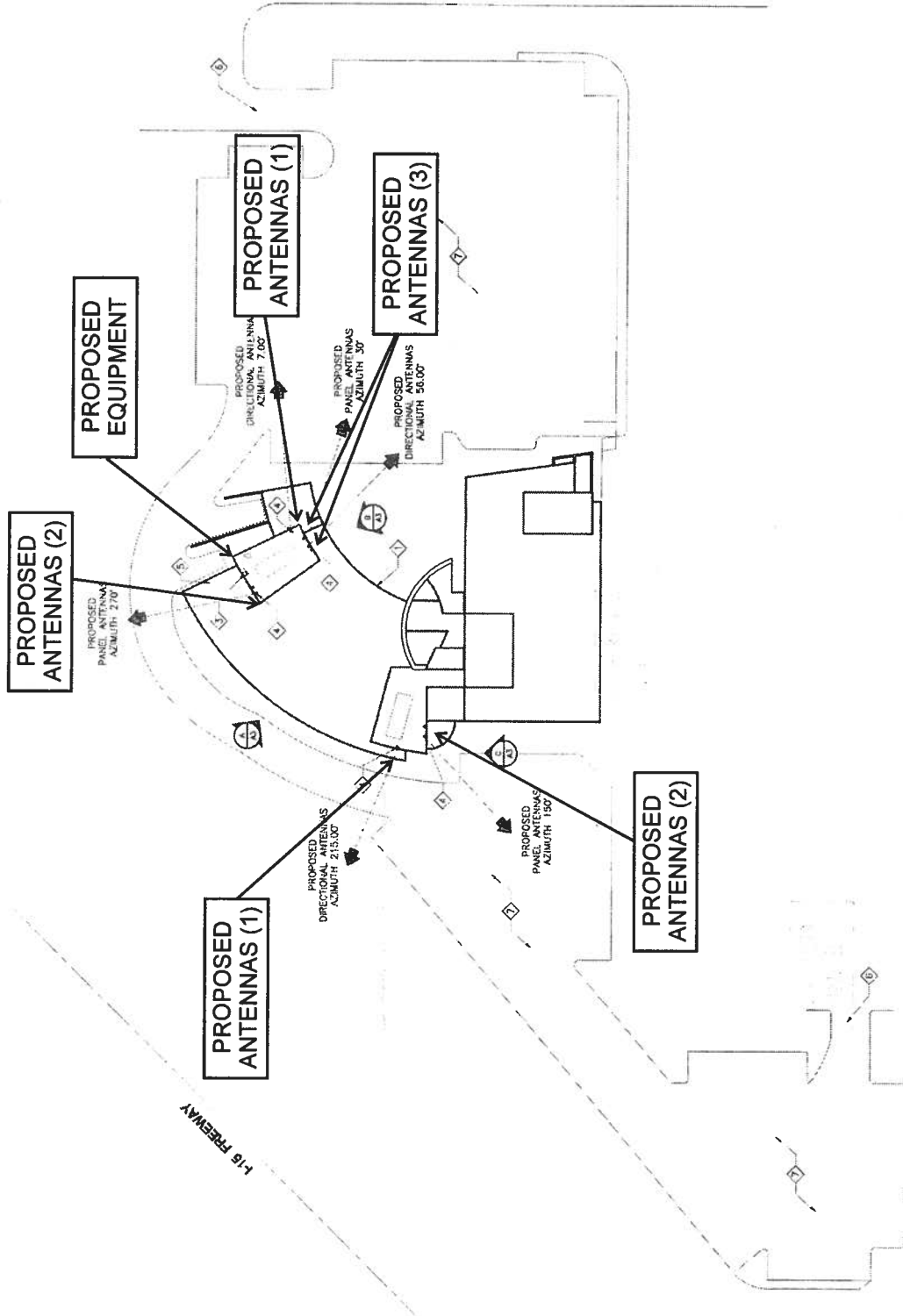
Portions of this DERIVED PRODUCT contains geographic information copyrighted by SanGis. All rights reserved.

**PROPOSED PROJECT
PHG 10-0010**



LOCATION/ZONING

WEST CINTRACADO PARKWAY

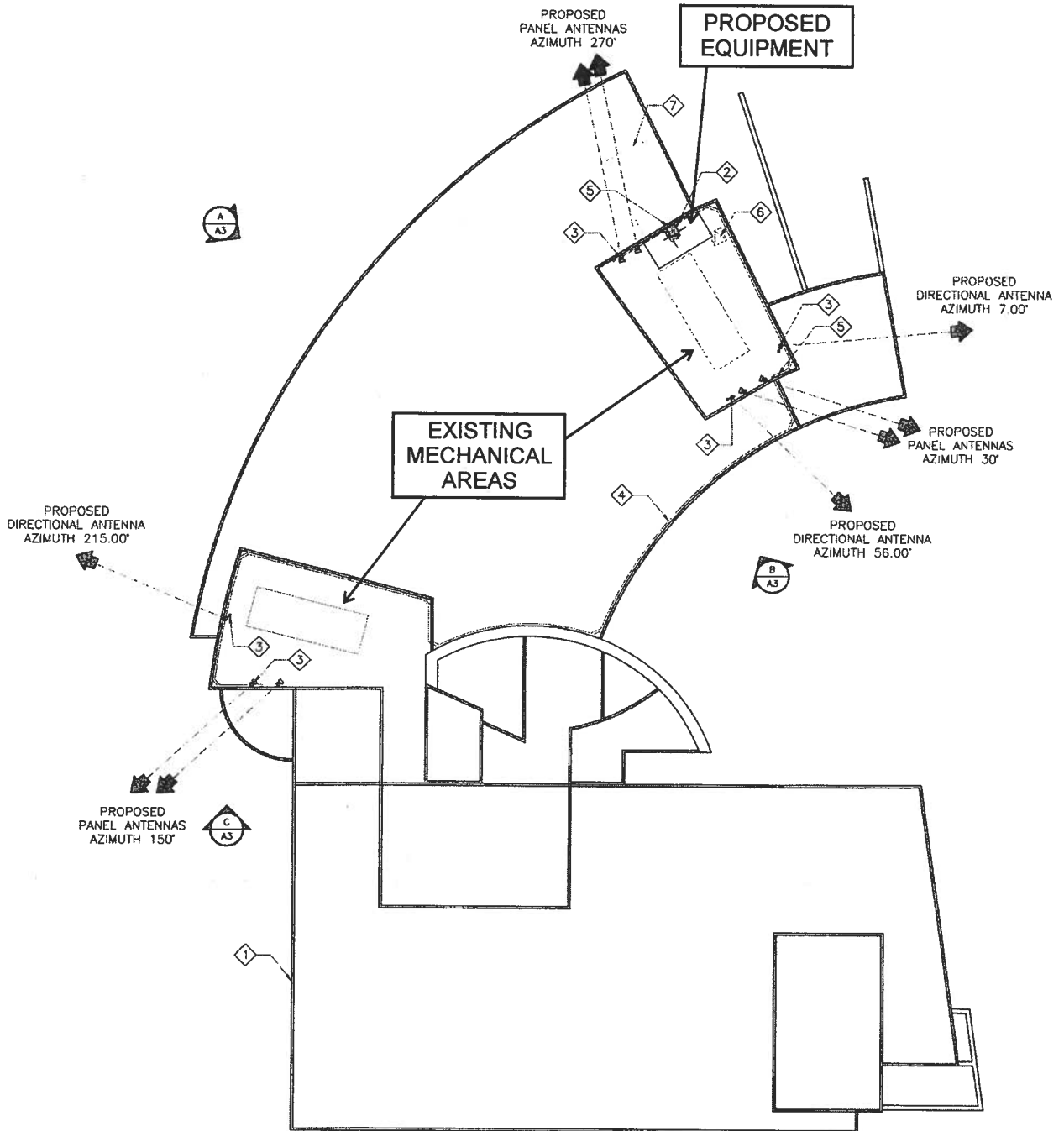


SITE PLAN

**PROPOSED PROJECT
PHG 10-0010**



SITE PLAN

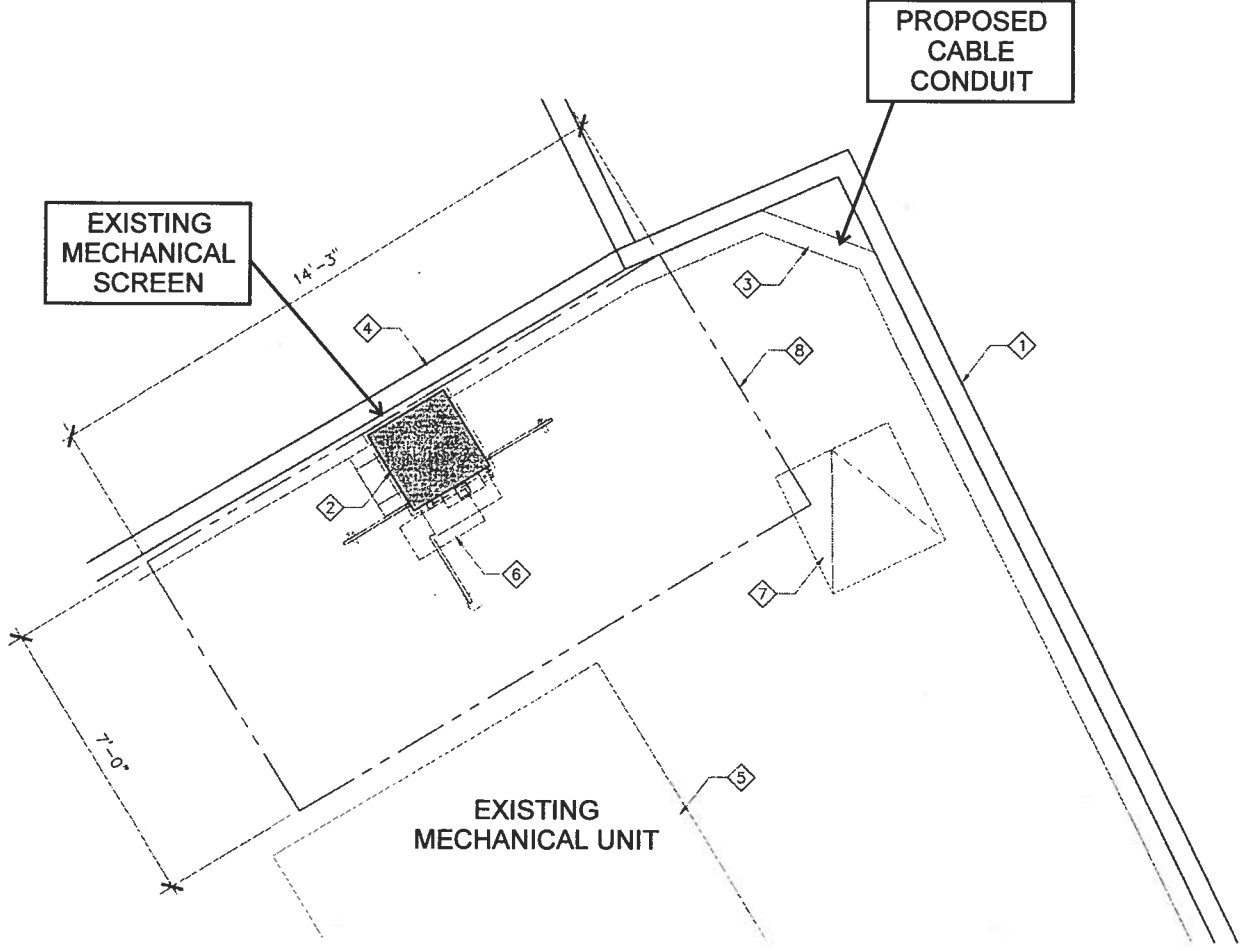


ROOF PLAN 

**PROPOSED PROJECT
PHG 10-0010**



ROOF PLAN

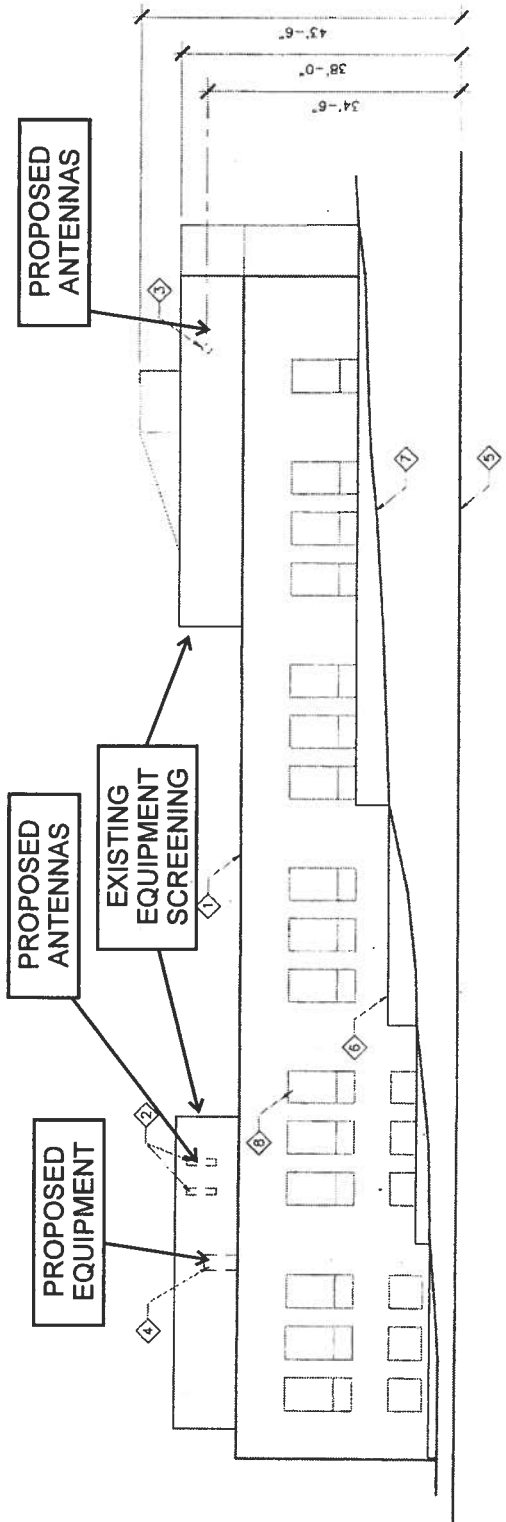


EQUIPMENT PLAN 

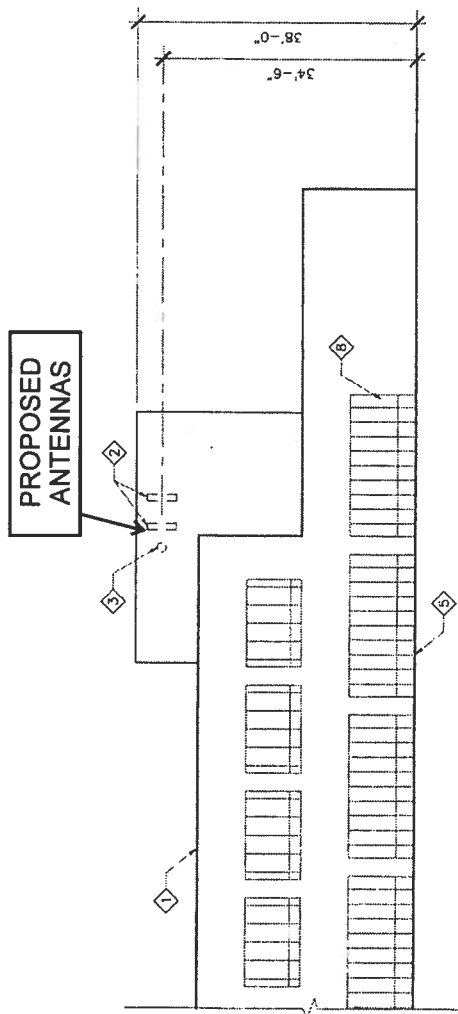
**PROPOSED PROJECT
PHG 10-0010**

DETAILS

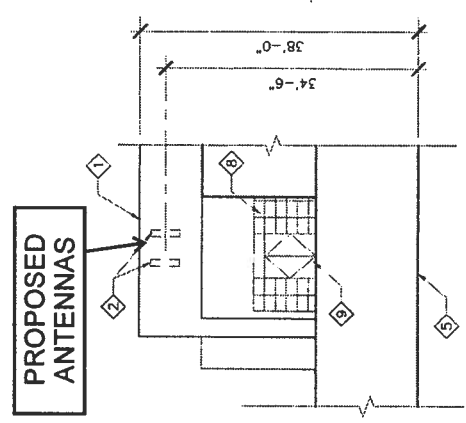
**PROPOSED PROJECT
PHG 10-0010**



EXTERIOR ELEVATION A



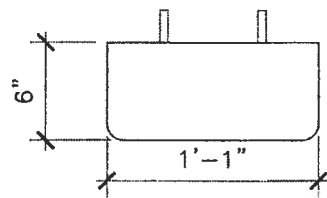
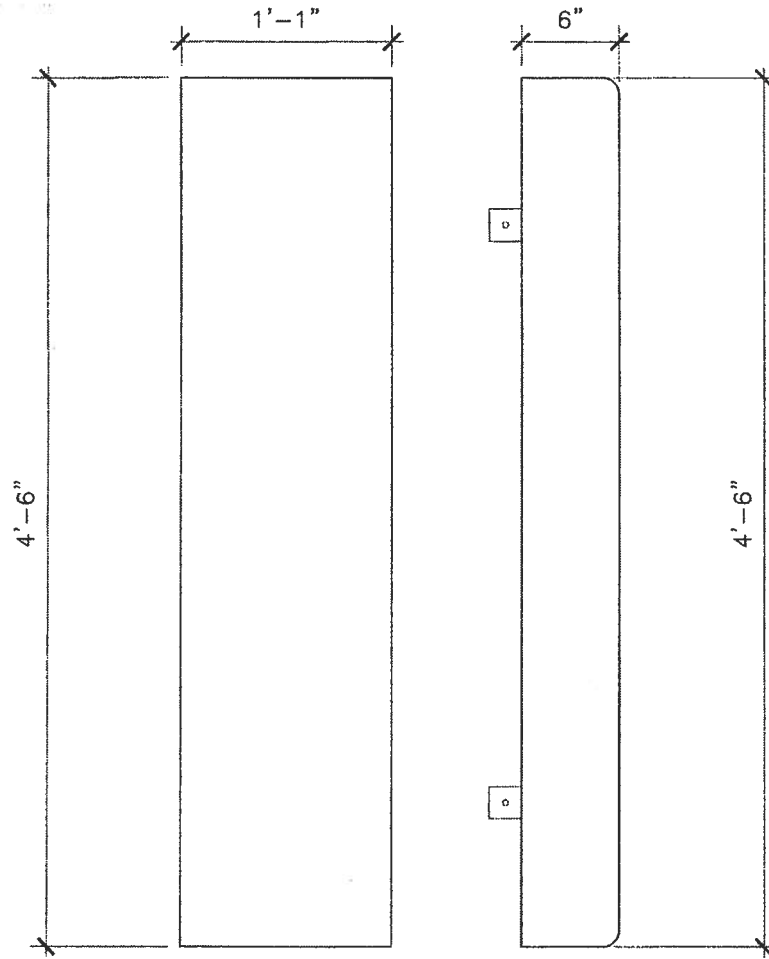
EXTERIOR ELEVATION B



EXTERIOR ELEVATION C



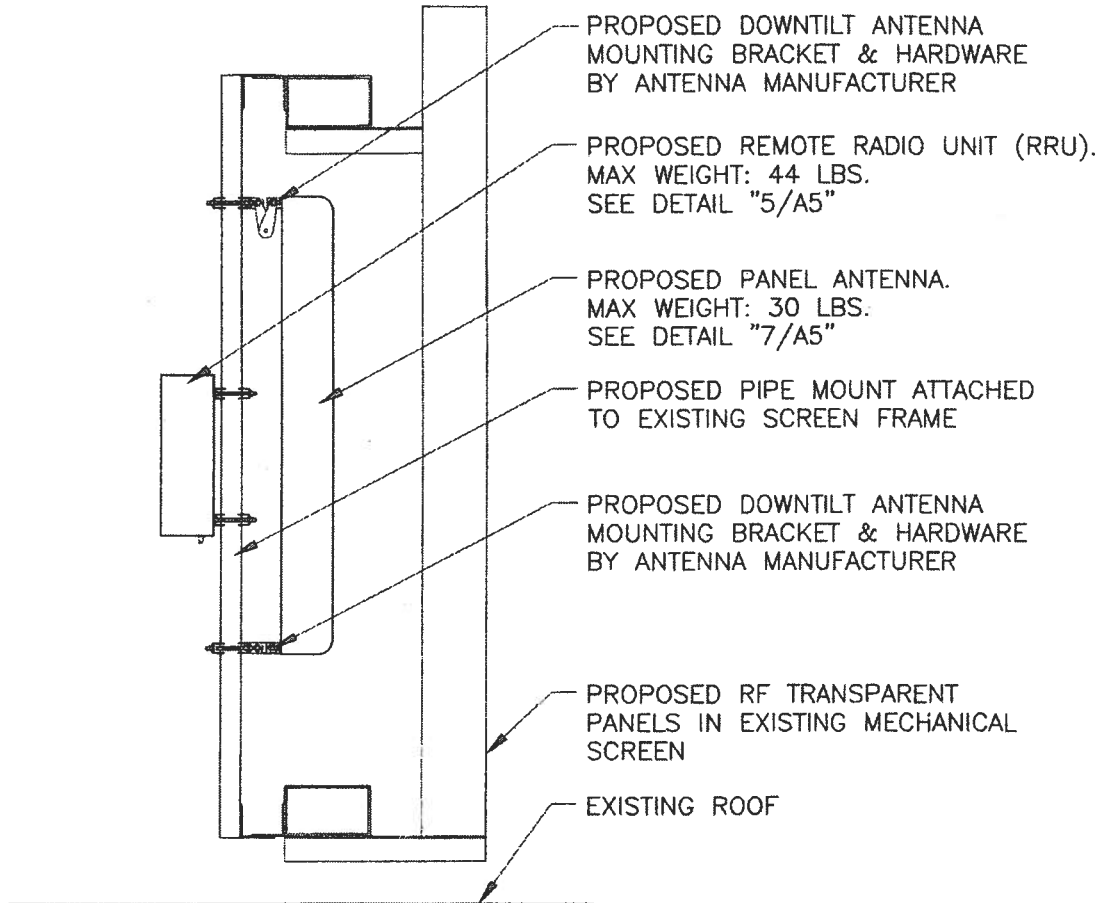
ELEVATIONS



PANEL ANTENNA

**PROPOSED PROJECT
PHG 10-0010**

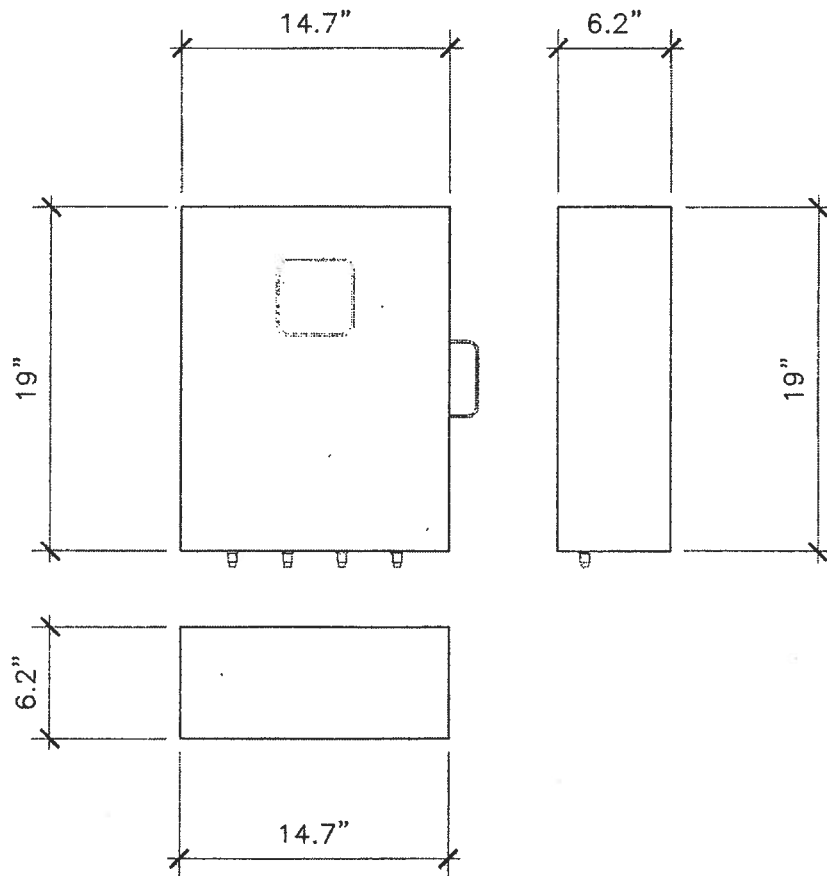
DETAILS



ANTENNA & RRU MOUNTING DETAIL

**PROPOSED PROJECT
PHG 10-0010**

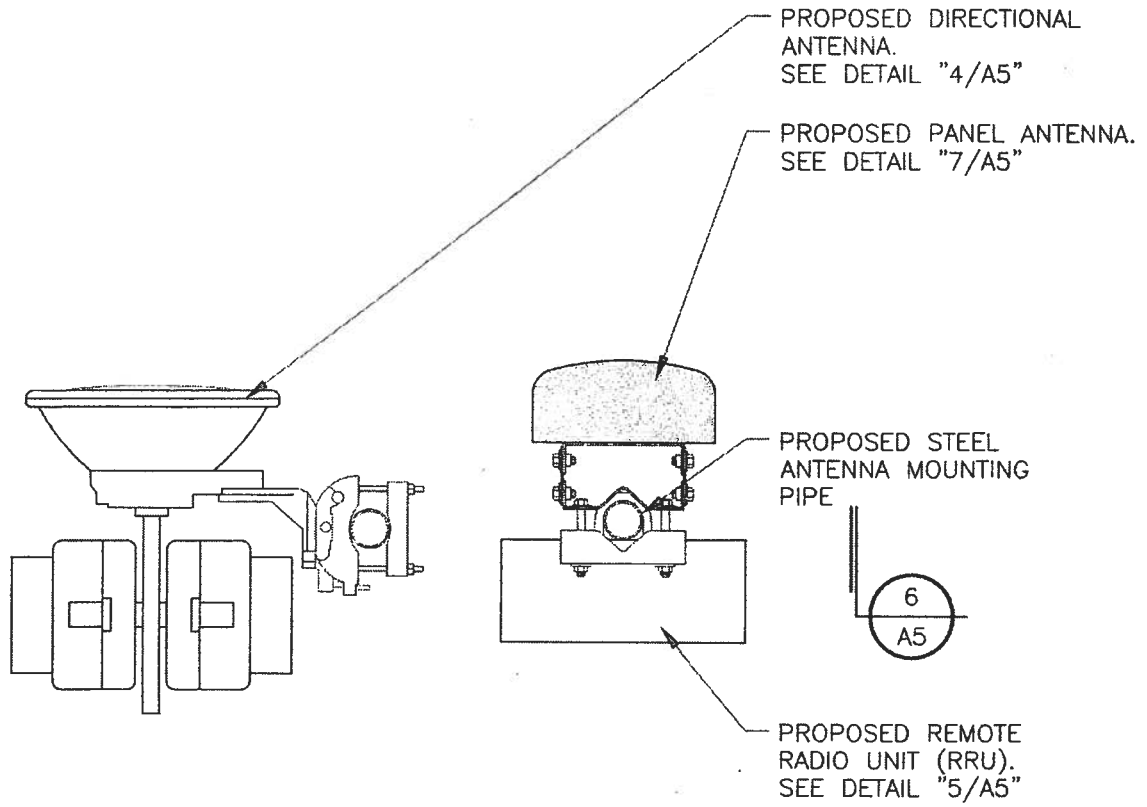
DETAILS



REMOTE RADIO UNIT (RRU)

**PROPOSED PROJECT
PHG 10-0010**

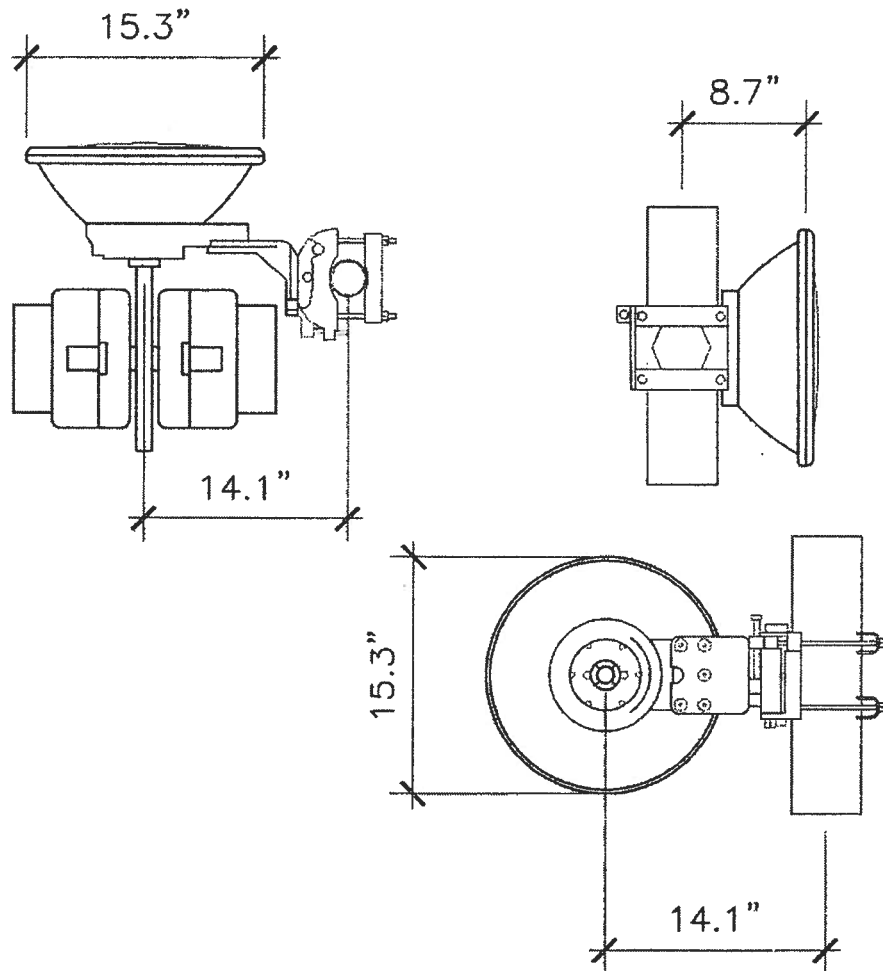
DETAILS



ANTENNA PLAN VIEW

**PROPOSED PROJECT
PHG 10-0010**

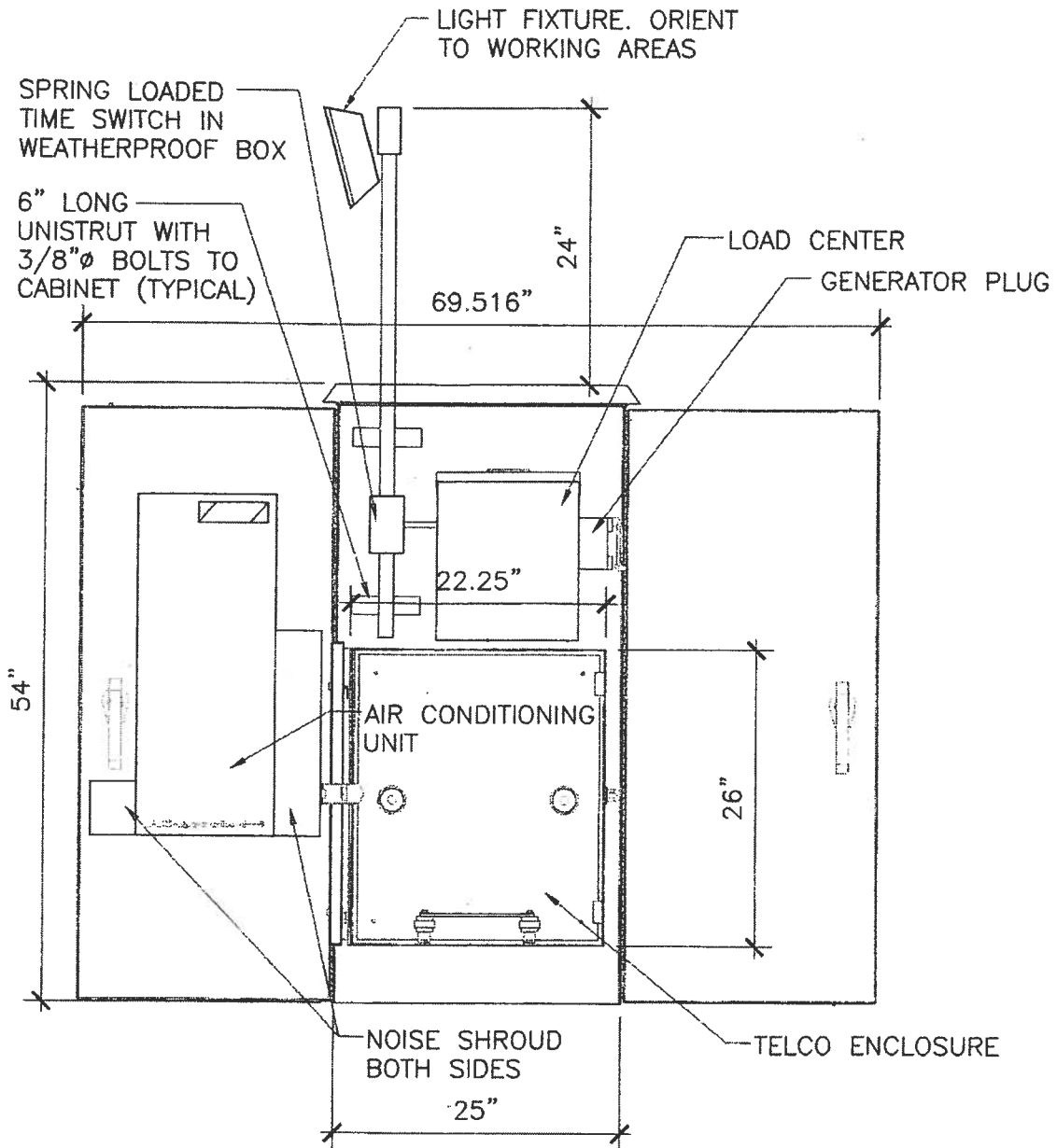
DETAILS



DIRECTIONAL ANTENNA

**PROPOSED PROJECT
PHG 10-0010**

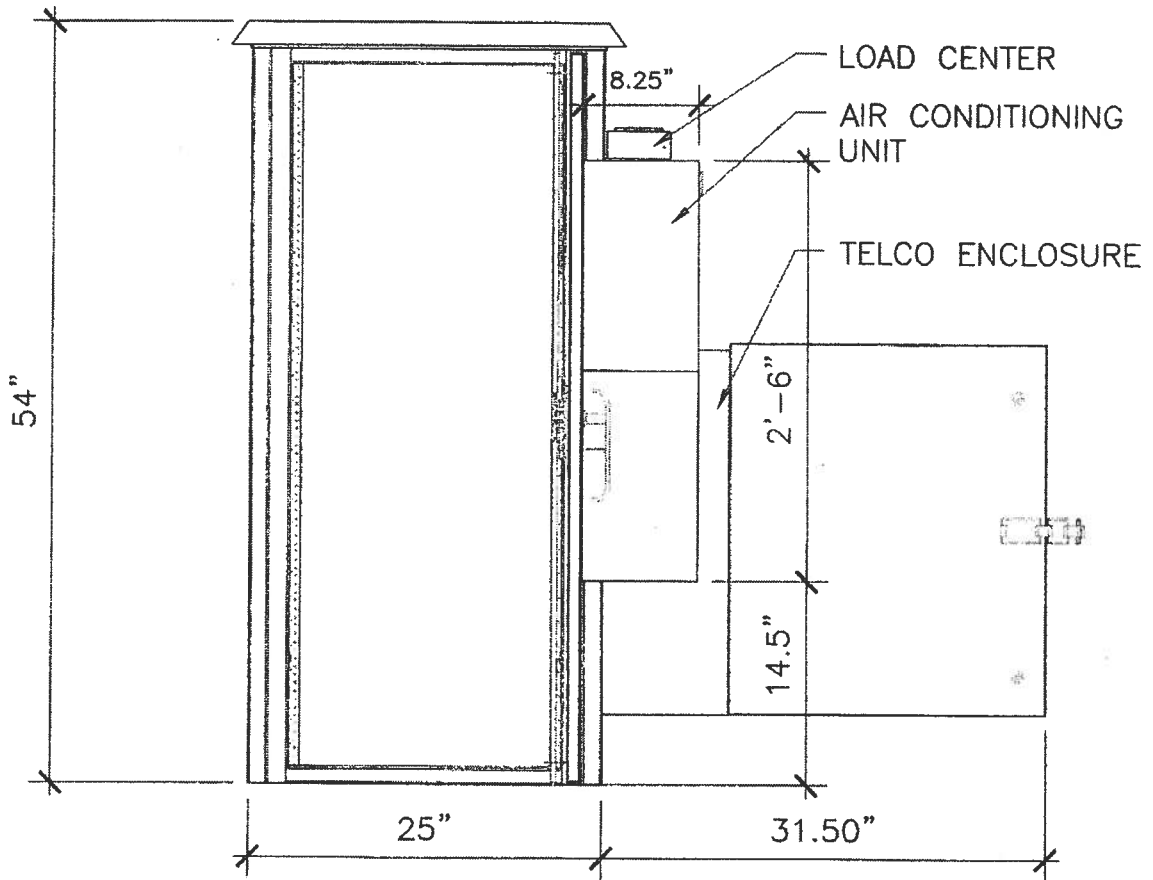
DETAILS



RIGHT SIDE VIEW
 EQUIPMENT CABINET

PROPOSED PROJECT
PHG 10-0010

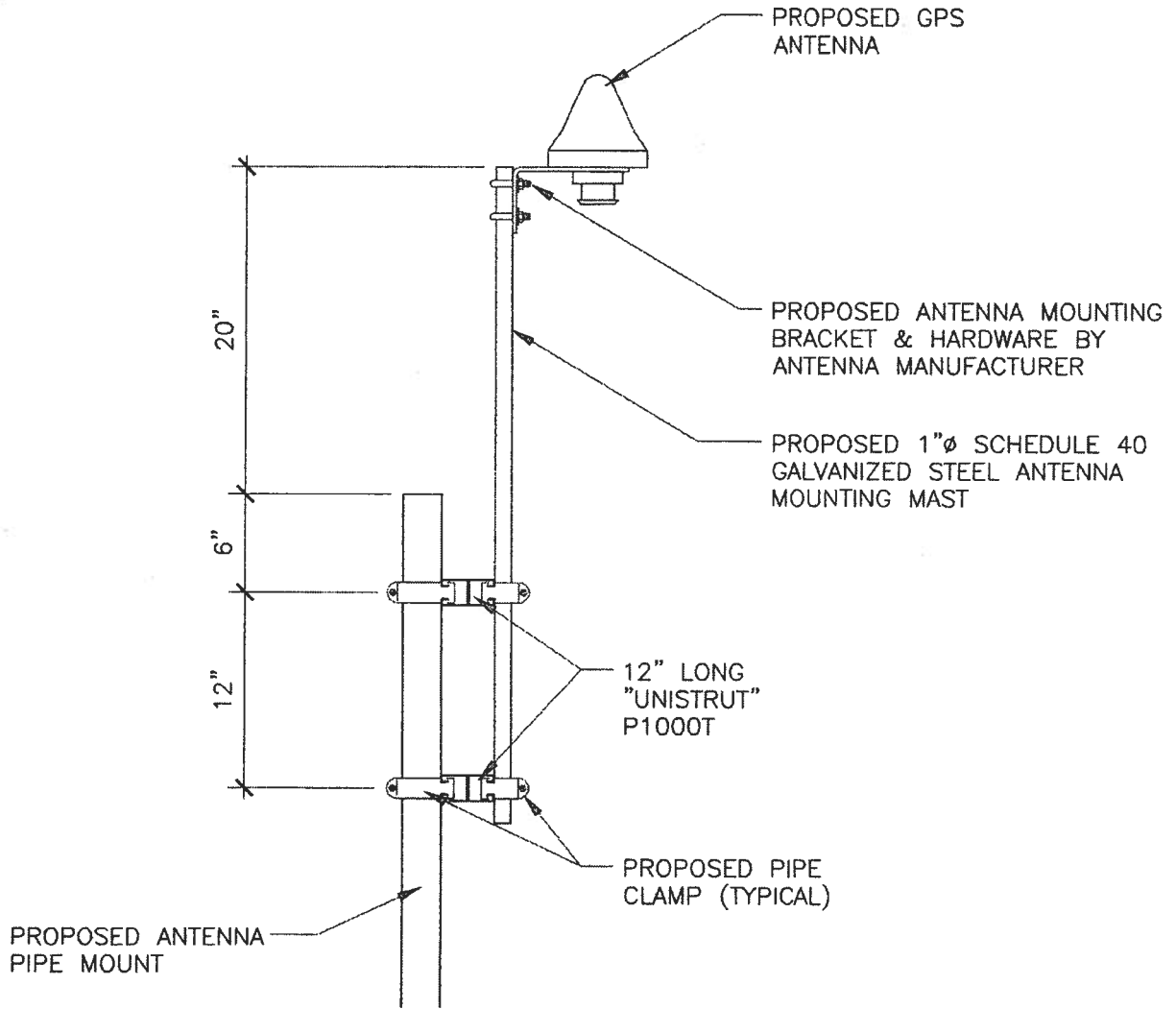
DETAILS



REAR VIEW
EQUIPMENT CABINET

**PROPOSED PROJECT
PHG 10-0010**

DETAILS



GPS ANTENNA

**PROPOSED PROJECT
PHG 10-0010**

DETAILS

ANALYSIS

A. LAND USE COMPATIBILITY/SURROUNDING ZONING

NORTH - RE-20 (Residential Estate, 20,000 SF min. lot size) / An existing farm/produce stand and vacant property existing to the north across Citracado Parkway.

SOUTH - Interstate 15 is located immediately to the south and County zoned residential property is located further to the southeast.

EAST - RE-20 zoning (Residential Estate, 20,000 SF min. lot size) / An existing church facility is located to the east of the property. There are two wireless facilities located on the church site (T-Mobile and AT&T). Single-family homes are located to the southeast.

WEST - PD-C zoning and Interstate 15 / (Planned Development Commercial) / The Acacia Animal Hospital is located immediately west of the site.

B. ENVIRONMENTAL STATUS

1. The proposal is exempt from the requirements of the California Environmental Quality Act (CEQA) in conformance with Section 15303, "New Construction or Conversion of Small Structures" and a Notice of Exemption was prepared for the proposed project. In staff's opinion, the request does not have the potential for causing a significant effect on the environment due to the relatively small size of the facility; is within a secured location, and the proposed facility would be located on the roof of an existing commercial/office building behind existing mechanical equipment screening.
2. In staff's opinion, no significant issues remain unresolved through compliance with code requirements and the recommended conditions of approval. Staff feels the proposed facility would not result in a potential health hazards to nearby residents since the Radio Frequency (RF) study prepared for the proposed project indicates the facility would be within maximum permissible exposure (MPE) limits and Federal Communication Commission (FCC) standards.

C. GENERAL PLAN ANALYSIS:

General Plan - The requested Modification to the Planned Development is consistent with the Planned Commercial designation of the General Plan since the Communication Antennas Ordinance encourages wireless facilities to locate within commercial or industrial zones. The project is in conformance with relevant General Plan criteria and underlying Planned Commercial zone standards, as detailed in various sections of the staff report. The proposed project would be integrated into the existing architecture of the building and would be a completely stealthy design.

D. PROJECT ANALYSIS

Appropriateness of the Proposed Design and Whether the Proposed Wireless Facility Would Be in Conformance with the Communication Antennas Ordinance

Clearwire is proposing to install a new wireless communication facility on the roof of the existing Rady two-story medical building. The proposed facility consists of up to nine antennas (6 rectangular and 3 round directional) and corresponding radio equipment located within two fully screened rooftop mechanical areas. The new facility generally would not be visible to any nearby surrounding views. Portions of the existing mechanical screen walls would be replaced with new RF transparent materials that would be blended into the walls and colored and textured to match the exterior stucco walls.

The Communication Antennas Ordinance encourages the use of commercial and industrial properties whenever possible, and discourages communication facilities within residential zones. The proposed facility would be consistent with the Communications antennas Ordinance since the proposed site is zoned Planned Development Commercial and developed with an office building; the project is completely stealthy; and the proposed facility would not result in any visual or compatibility impacts with surrounding uses.

Conformance with FCC Emission Requirements

Operation of the facility would generate electromagnetic emissions (RF radiation). A RF study was prepared for the project by AIM Wireless Solutions to determine whether the proposed communication facility complies with the FCC Radio Frequency Safety guidelines. The study assumes a worst case scenario at maximum capacity, and compares the figures to existing standards. The analysis indicated the anticipated MPE limits on the roof or ground from the proposed Clearwire facility by itself is approximately 25.9% of FCC limits. The cumulative level from all of the carriers (on the adjacent school site) is less than 27.53% which would be in compliance with applicable FCC's General Population MPE Limits. A copy of the study has been attached with this report.

SUPPLEMENT TO STAFF REPORT/DETAILS OF REQUEST

A. PHYSICAL CHARACTERISTICS

The project site consists of approximately 3.20 acres of commercial zoned property and is developed with a 48,800 SF, two-story medical building, paved parking and ornamental landscaping. The property fronts onto and takes access from Citracado Parkway, which is designated as a Collector Road (84' R-O-W). Citracado Parkway has been improved to its ultimate width across the project frontage. The property is situated at a higher elevation than Citracado Parkway, with landscaped slopes along the project frontage.

B. SUPPLEMENTAL DETAILS OF REQUEST

1. Property Size: 3.20 acres
2. Building Size: 48,400 SF
3. Building Height: Two story, with varying roof heights from approx. 17.5', 22', 30' and 36' (including rooftop mechanical screens)
4. Building Colors: Exterior stucco ranging from off-white, tans, purple and sage/green
5. Panels: Total of 9 which includes 6 rectangular panel (4.5" H x 1.1' W) antennas and 3, 15.3"-diameter round directional antennas
6. Screening: Antenna panels and mechanical equipment to be located behind existing stucco mechanical screening. New RF transparent panels to be installed in the existing mechanical screening and textured/colored to match existing building.
7. Power Density: Clearwire – 25.9% of the FCC General Public Limit for Maximum Public Exposure (MPE). Cumulative from all nearby carriers is less than 27.53%.
8. Equipment: One additional equipment rack to be installed on the roof of the building behind existing mechanical screening.
9. Hours of Operation
Wireless Facility: 24 hours, unmanned

EXHIBIT "A"
FINDINGS OF FACT
PHG 10-0010

Conditional Use Permit

1. Granting this Modification to the Master and Precise Development Plan to allow a personal wireless communication facility on the subject property would not conflict with Commercial policies and would be based on sound principles of land use since the site is zoned for Planned Commercial uses and developed with a medical office building. The Wireless Facilities Guidelines encourages wireless facilities to locate within commercial or industrial zones. The proposed development generally is in response to services required by the community and the facility would enhance communication services in the city without posing a health threat to the surrounding area. The proposed panels and support equipment would be integrated into the architecture of an existing office building which would avoid potential visual impacts in conformance with the Communication Antennas Ordinance. The facility would not result in a potential health hazard to nearby residents since the facility would be within MPE (maximum permissible exposure) limits as indicated in the radio frequency analysis prepared for the project by AIM Wireless Solutions. Therefore, the proposed facility would be in compliance with the City's Wireless Facility Guidelines, as discussed in the Planning Commission staff report.
2. The proposed personal wireless communication facility would be located within the Planned Development-Commercial zone. Personal wireless communication facilities are allowed within Planned Commercial zones subject to the approval of a Modification to the Master Development Plan. The proposed facility would not result in a substantial alteration of the present or planned land use since the new facilities are small in scale and the antennas and support equipment would be appropriately integrated into existing facilities. Wireless facilities are encouraged to locate within commercial or industrial zoned areas. The proposal would not cause deterioration of bordering land uses since the antennas would be fully screened (stealthy design) and the location, number and size of the panels have been designed to integrate into the design and scale of the existing facility. Therefore, the proposed project would not result in any adverse impacts. The proposed personal wireless communication facility also would not be hazardous to the health of nearby residents since the radio frequency (RF) analysis prepared for the project concluded the maximum operation levels of radiation for the facility would be within the MPE (Maximum Permissible Exposure) limit established by FCC requirements.
3. The proposed Modification to the Master and Precise Development Plan has been considered in relationship to its effect on the community, and the request would be in compliance with the General Plan Policies and the Wireless Facility Guidelines, and would not result in a negative impact to the adjacent neighborhood for the reasons stated above and detailed in the Planning Commission staff report and radio frequency analysis.
4. The proposal is exempt from the requirements of the California Environmental Quality Act (CEQA) in conformance with Section 15303, "New Construction or Conversion of Small Structures" and a Notice of Exemption was prepared for the proposed project. In staff's opinion, the request does not have the potential for causing a significant effect on the environment due to the relatively small size of the facility; is within a secured location; the proposed facility would be located on the roof of an existing commercial/office building behind existing mechanical equipment screening; and the maximum operation levels of radiation for the facility would be within the MPE (Maximum Permissible Exposure) limit established by FCC requirements.

EXHIBIT "B"

CONDITIONS OF APPROVAL PHG 10-0010

General

1. All construction shall comply with all applicable requirements of the Escondido Zoning Code and requirements of the Planning Department, Director of Building, and the Fire Chief.
2. Access for use of heavy fire fighting equipment as required by the Fire Chief shall be provided to the job site at the start of any construction and maintained until all construction is complete. Also, there shall be no stockpiling of combustible materials, and there shall be no foundation inspections given until on-site fire hydrants with adequate fire flow are in service to the satisfaction of the Fire Marshal.
3. Appropriate access shall be provided to the project site, to the satisfaction of the Fire Department.
4. The legal description attached to the application has been provided by the applicant and neither the City of Escondido nor any of its employees assume responsibility for the accuracy of said legal description.
5. All requirements of the Public Partnership Program, Ordinance No. 86-70 shall be satisfied prior to building permit issuance. The ordinance requires that a public art fee be added at the time of the building permit issuance for the purpose of participating in the City Public Art Program
6. Prior to or concurrent with the issuance of building permits, the appropriate development fees and Citywide Facility fees shall be paid in accordance with the prevailing fee schedule in effect at the time of building permit issuance, to the satisfaction of the Director of Planning and Building.
7. Prior to obtaining building permits, the applicant shall demonstrate compliance with the requirements of the Citywide Facilities Plan, to the satisfaction of the Planning Division and Engineering Department.
8. All exterior lighting shall conform to the requirements of Article 1072, Outdoor Lighting (Ordinance No. 86-75).
9. As proposed, the design, color and materials of the proposed facilities shall be in accordance with the staff report, exhibits and the project's Details of Request, including the following to the satisfaction of the Planning Division. The proposed antennas, support poles and brackets, mechanical equipment, lights and other infrastructures shall be located behind and below the height of the adjacent roof parapets and/or mechanical equipment screens. The new RF screens shall be designed to blend in with existing exterior building materials, colors and textures.
10. All proposed signage associated with the project must comply with the City of Escondido Sign Ordinance (Ord. 92-47) and the exhibits included in the staff report(s), to the satisfaction of the Planning Division. Appropriate signs providing notice, caution or warning, and other necessary markings, shall be placed at the main site access point(s) and other locations, as may be required, in order to alert maintenance or other workers approaching the antennas to the presence of RF transmissions and to take precautions to avoid exposures in excess of FCC limits. The requirement for the appropriate signage/notice shall be indicated on the building plans.
11. Clearwire or any subsequent operator/lease holder of the wireless facility agrees to investigate any complaints related to possible interference with electronic equipment in the surrounding area to determine the cause of the interference. Any interference shall be resolved in a timely manner to the satisfaction of the Director of Community Development. If the facility is determined to be the cause of the electronic interference, Clearwire shall solve the problem in a timely manner to the satisfaction of the complainant and the Director of Community Development. In addition, any interference with public safety communications shall be corrected immediately, to the satisfaction of the City of Escondido.
12. Any sublease of the subject area or co-location of any new facilities not identified by this use permit shall require approval of the City of Escondido.
13. All project generated noise shall conform to the City's Noise Ordinance (Ordinance 90-08).

14. If requested by the City of Escondido, Clearwire, or any subsequent operator/lease holder of the facilities shall permit co-location of other wireless providers on its facility (subject to City of Escondido Approval) if it can be demonstrated that there would be no adverse effect on the existing facilities/operations.
15. Clearwire shall select an independent third party consultant to conduct actual power density measurements of the facility within 90 days after installation and under full operation of the facility. The results of the study shall be submitted to the Director of Community Development so that the theoretical power density study can be compared to the actual output to ensure compliance with FCC requirements.
16. Clearwire Wireless or any subsequent operator/lease holder of the wireless facility shall be responsible for all on-going maintenance of the facility, including the antennas and supporting equipment to ensure the condition of the facility does not appear weathered.
17. All communication facilities on the site shall be promptly removed upon non use of the facilities, to the satisfaction of the Planning Division and Building Department.
18. Any permanent, temporary or stand-by emergency generators must be in conformance with the City's Ordinance and regulations regarding electric generating facilities.
19. All new utilities and utility runs shall be underground.
20. No additional antennas or expansion of this facility shall be permitted without a modification of the Master and Precise Plan modification and a public hearing before the Planning Commission. Minor changes within the approved size and design parameters may be permitted by the Director of Community Development.
21. The Master and Precise Plan modification shall be null and void if not utilized within twelve months of the effective date of approval, as determined by the Planning Division.
22. This Master and Precise Plan modification only is for the installation of Clearwire equipment on the existing facility. The number of antennas approved by this Planned Development Modification shall be used solely for Clearwire and not transferred or subleased to any other carriers unless approved by the City. No other additional carriers shall be allowed to be placed on the existing wireless communication facility, unless a new Conditional Use Permit is approved by the City.
23. This item may be referred back to the Planning Commission upon recommendation of the Director of Community Development for review and possible revocation or modification of the Master and Precise Plan modification upon receipt of nuisance complaints regarding the facility or non-compliance with the Conditions of Approval.
24. A copy of these Conditions of Approval shall be submitted with the submittal of the building plans indicating compliance with all of the Conditions and Details of Request and exhibits contained in the Planning Commission staff report.
25. An inspection by the Planning Division will be required prior to operation of the project. Everything should be installed prior to calling for an inspection, although preliminary inspections may be requested. Contact the project planner at (760) 839-4671 to arrange a final inspection.
26. The City of Escondido hereby notifies the applicant that the County Clerk's Office requires a documentary handling fee of \$50.00 in order to file a Notice of Exemption for the project (environmental determination for the project). The applicant shall remit to the City of Escondido Planning Division, within two working days of the final approval of the project (the final approval being the hearing date of the Planning Commission or City Council, if applicable) a check payable to the "San Diego County Clerk" in the amount of \$50.00. In accordance with California Environmental Quality Act (CEQA) section 15062, the filing of a Notice of Exemption and the posting with the County Clerk starts a 35 day statute of limitations period on legal challenges to the agency's decision that the project is exempt from CEQA. Failure to submit the required fee within the specified time noted above will result in the Notice of Exemption not being filed with the County Clerk, and a 180 day statute of limitations will apply.



CITY OF ESCONDIDO
PLANNING DIVISION
201 NORTH BROADWAY
ESCONDIDO, CA 92025-2798
(760) 839-4671

Notice of Exemption

To: San Diego County Recorder's Office
Attn: Linda Kesian
P.O. Box 121750
San Diego, CA 92112-1750

From: City of Escondido
201 North Broadway
Escondido, CA 92025

Project Title/Case No.: PHG 10-0010 (Clearwire – Rady Medical Building)

Project Location - Specific: An approximately 3.20-acre property generally located on the southern side of West Citracado Parkway, east of Interstate 15, addressed as 625 West Citracado Parkway (APN 238-110-43).

Project Location - City: Escondido, **Project Location - County:** San Diego

Description of Project: Modification to a previously approved Master and Precise Development Plan for Clearwire Communication to install up to nine wireless communication antennas consisting of six panel antennas and three 15.3-inch-diameter directional antennas behind the existing mechanical screen walls on the roof of the North County Medical Building (Rady Children’s Urgent Care Facility) to support their new wireless communication network. The supporting electrical equipment also would be located on the roof.

Name of Public Agency Approving Project: City of Escondido

Name of Person or Agency Carrying Out Project:

Name Mark Phillips, M&M Telecom Telephone (619) 379-4373

Address 2014 Granada Ave, San Diego, CA 92104

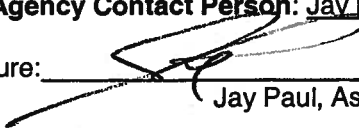
Private entity School district Local public agency State agency Other special district

Exempt Status: Categorical Exemption. Section 15303, “New Small Facilities or Structures.”

Reasons why project is exempt:

1. The facility would be consistent with the Wireless Facility Guidelines since it would be fully integrated into the architecture of an existing commercial/office building and situated behind existing rooftop mechanical screens. The proposed facility would not result in any noise impacts to existing residences or adjacent properties, or displace any required parking.
2. The site is within an area that currently is developed with commercial/office structures. The size of the proposed facility is relatively small and no physical expansion to the existing building is proposed. No grading or removal of native vegetation is proposed or required.
3. The proposed facility would not be hazardous to the health of nearby residents or the general public since the facility would be within maximum permissible exposure (MPE) limits and Federal Communication Commission (FCC) standards.
4. All service and access to the proposed wireless facility are available and would be in conformance with local standards.

Lead Agency Contact Person: Jay Paul, Planning Division Area Code/Telephone/Extension (760) 839-4537

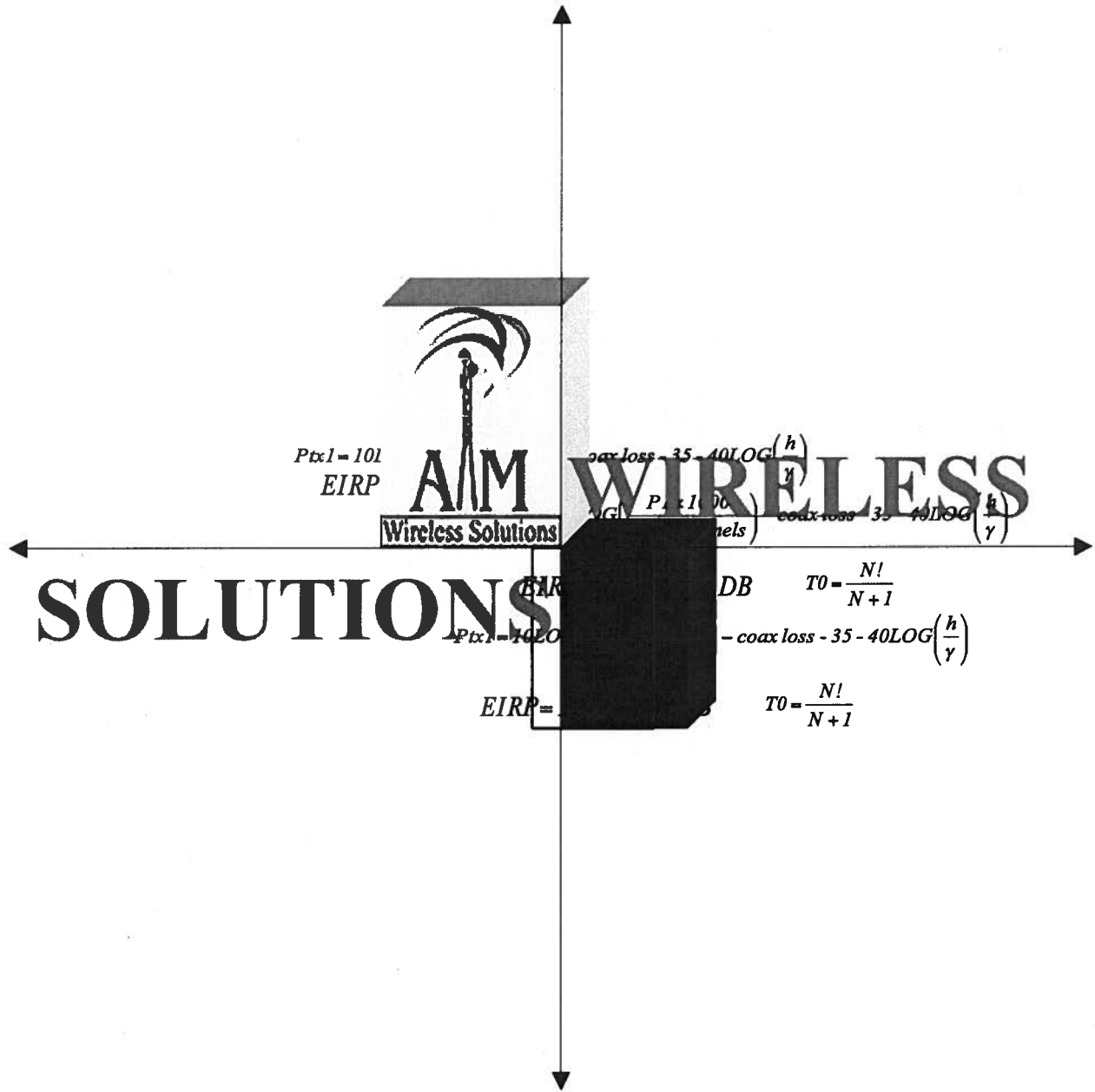
Signature: 
Jay Paul, Associate Planner

May 10, 2010
Date

Signed by Lead Agency

Date received for filing at OPR: N/A

Signed by Applicant



MPE Report
 Client: Clearwire
 Site: North County Medical, (CA-SDG5593)
 Date: Wednesday, May 19, 2010

Contents

1. Objective.....	2
2. Introduction	2
3. Evaluation & Computer Modeling.....	2
3.1. Site Description	3
3.2. Antenna System	3
3.3. Carrier Frequency Information.....	3
4. General Population/Uncontrolled Exposure Results:	4
5. Occupational/Controlled Exposure Results:.....	4
6. Study Findings	5
6.1. Reference to Jerrold T. Bushberg Study:.....	5
6.2. Sign Display	5
7. Conclusion	6
8. Appendix I: Methods of calculations based on OET 65 document	7
Exposure Limits:.....	7
Power Density Calculations:	7
1. Towers.....	7
2. Roof tops.....	10
9. Contact Information	14

1. Objective

This report has been prepared on behalf of Clearwire. Clearwire is proposing communication equipment at North County Medical located at 625 West Citracado parkway, Escondido, CA 92025. The study will evaluate the effect of the base station for compliance with the appropriate limiting human exposure to radio frequency (RF) electromagnetic fields. The study took the following criteria into consideration:

Analysis	Description
Antenna Patterns	Yes
Measured Antenna Isolation Data	No, Empirical data used

2. Introduction

The Federal Communication Commission (FCC) requires the evaluation of RF emissions for possible significant impact on the environment. In 1997, the FCC adopted the human exposure limits for field strength and power density recommended in: Report No. 86, "Biological effects and Exposure Criteria for Radio frequency Electromagnetic Fields", published in 1986, and in OET Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", published in 1997. Separate limits apply for occupational and public exposure conditions. Generally, the public limits are five times more restrictive than occupational limits. The table below shows the summary for the exposure limits.

Table 1 Human exposure summary

Band	Frequency (MHz)	Occupation/Controlled (mW/cm ²)	Population/Uncontrolled (mW/cm ²)
Cellular	870	2.9	0.58
SMR	851	2.84	0.567
PCS	1930	5	1
WIMAX	>2400	5	1

3. Evaluation & Computer Modeling

The MPE analysis consists of evaluating the RF transmitter power being emitted from each active antenna at the communications site. Power density calculations are performed based on where a human (observer) would be located at the site. The power density values are then converted to MPE percentages and each antenna's MPE percentages are summed together to provide a composite MPE percentage for each observer location. Refer to Appendix I for detailed calculations.

AIM MPE software was used to predict the limits of exposure. Figure 1 below shows the methodology AIM MPE followed to generate the final output depicts the Occupational or Controlled Environment MPE analysis. The color zones in figures 2 and 3 indicate the maximum permissible exposure percentage a person would experience while in these zones.

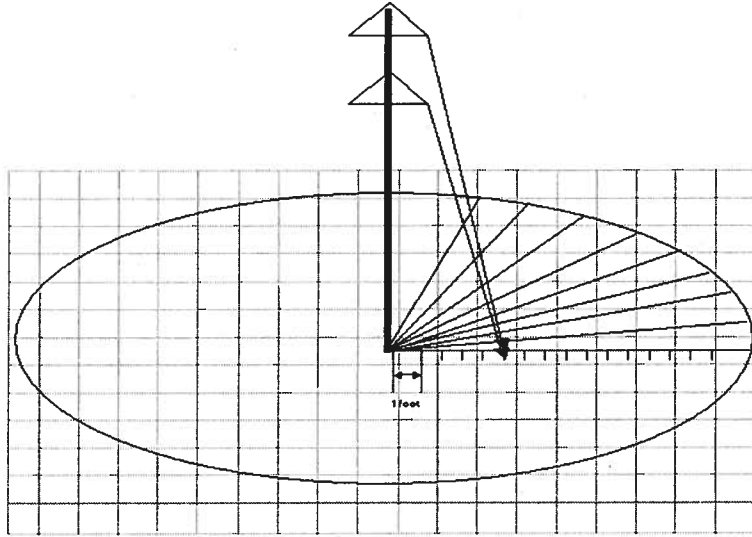


Figure 1. AIM Wireless methodology in calculating MPE

3.1. Site Description

Site name: North County Medical (CA-SDG5593)
 Site description: Maximum Permissible Emission for a Rooftop structure
 Address: 625 West Citracado parkway, Escondido, CA 92025
 Latitude: 33-05-27.23 N
 Longitude: 117-04-45.84 W

3.2. Antenna System

Carrier	Antenna Manufacturer	Antenna Model	Height-AGL (ft)	Azimuth-TN	Antenna Length (ft)	Power at Antenna (W)
Clearwire	Kathrein	840 10054	39 ft	30, 150, 270	3.5 ft	10 W
Clearwire-Microwave	Andrew	VHKP_2	38 ft	7, 56, 215	2 ft	1 W

3.3. Carrier Frequency Information

Carrier	Frequency Ranges (MHz)
Clearwire	2496-2502, 2602-2614, 2618-2673.5
Clearwire-Microwave	23 GHz

4. General Population/Uncontrolled Exposure Results:

The analysis represents exposure limits to an individual who does not know that there is a potential for RF energy exposure and does not know how to control or limit this exposure. For FCC purposes, this applies to human exposure to RF fields where general public is exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public always fall under this category when exposure is not employment-related. Figure 2 below shows the percentage of total power limits for maximum permissible exposure. Areas that exceed the limits are thematically shown. Refer to the Appendix-I for the detailed limits.

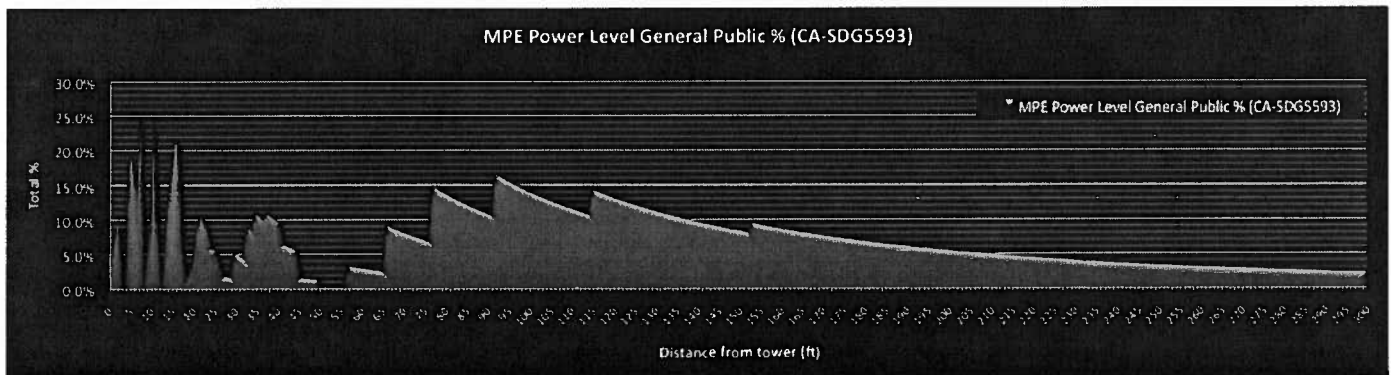


Figure 2 General public graphical representation distance vs. total % of Public Maximum Permissible Exposure

5. Occupational/Controlled Exposure Results:

The analysis represents exposure limits to an individual who should know that there is a potential for RF energy exposure and knows how to control or limit this exposure. For FCC purposes, this applies to human exposure to RF fields where a person is exposed as a consequence of his/her employment and in which the person who is exposed has been made fully aware of the potential for exposure and can exercise control over his/her exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Figure 3 below shows the percentage of total power for maximum permissible exposure. Areas that exceed the limits are thematically shown. Refer to Appendix-I for the detailed limits.

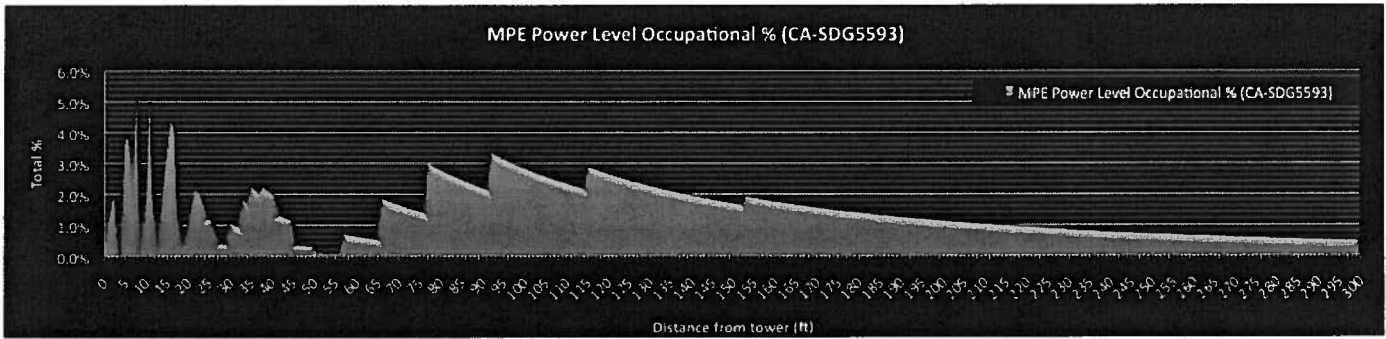


Figure 3 Occupational/controlled graphical representation distance vs. total % of Occupational Maximum Permissible Exposure

6. Study Findings

The maximum ambient RF level anywhere at the rooftop due to the proposed Clearwire operation by itself is calculated to be 0.259 mW/cm^2 , which is 25.9% of the applicable public limit. Note that the maximum received power on the ground from all carriers is less than 25.9%. For worst-case scenario analysis, a reflection factor of (2.56) is used for the analysis.

6.1. Reference to Jerrold T. Bushberg Study¹:

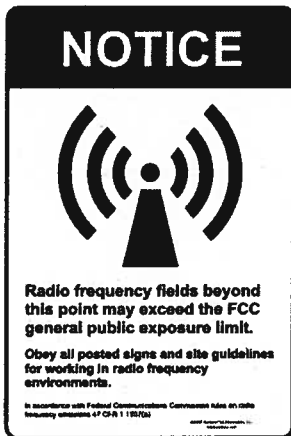
In reference to Dr. Bushberg study for site located at 615 West Citracado parkway, Escondido, CA 92025, the maximum public cumulative % from all carries at this site was found to be 1.63 %. Using Google earth and Mapinfo, the distance between the 2 sites is greater than 35 ft. This distance is greater than the distance between the antennas located at this site. And therefore, the 1.63 % is the maximum level that may contribute to the current site understudy proposed by Clearwire.

The maximum ambient RF Level anywhere at the rooftop from the proposed Clearwire operation and adjacent building located at 615 West Citracado Parkway, Escondido, CA 92025 is calculated by adding the perenages of power from both sides is $25.9 + 1.63 = 27.53 \%$

6.2. Sign Display

The following signs may be placed at the base of the Monopalm and/or at the site's entrance.

¹ Study for site located at 625 West Citracado parkway, Escondido, CA 92025 was conducted by Dr. Jerrold T. Bushberg on January 4th, 2006



Sign 1 Placement at Site entrance and/or base of Monopalm

7. Conclusion

Based on the information and analysis above, it is our professional opinion that the base station proposed by Clearwire at 625 West Citracado parkway, Escondido, CA 92025 will comply with the prevailing standards of limiting public exposure to radio frequency energy, and therefore, will not cause an impact on the environment. The highest calculated level in publicly accessible areas does not exceed the prevailing standards allow for exposure of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

8. Appendix I: Methods of calculations based on OET 65 document

Exposure Limits:

Table 2 Limits of Occupational Exposure

Limits of Occupation/Controlled Exposure (mw/cm ²)		
Frequency (f)	Power density (S _{m1})	Time (minutes)
.3-3	100	6
3-30	900/f ²	6
30-300	1.0	6
300-1500	F /300	6
1500-100000	5	6

Table 3 Limits of General Public Exposure

Limits of General Population/Uncontrolled Exposure (mw/cm ²)		
Frequency (f)	Power density (S _{m2})	Time (minutes)
.3-1.34	100	30
1.34-30	180/f ²	30
30-300	0.2	30
300-1500	F /1500	30
1500-100000	1	30

Power Density Calculations:

1. Towers

Determine if near field, transitional field or far field:

$$R < R_{nf} = \frac{D^2}{4\lambda}$$

Where: R_{nf} = extent of near-field (ft)
 D = maximum dimension of antenna (diameter if circular) in ft
 λ = wavelength (ft) = 186,000 x 5280/frequency (MHz)
 R = distance from antenna (ft)

$$R > R_{ff} = \frac{0.6D^2}{\lambda}$$

Where: R_{ff} = extent of far-field (ft)
 D = maximum dimension of antenna (diameter if circular) in ft
 λ = wavelength (ft)
 R = distance from antenna

$$R_{nf} < R_{tt} < R_{ff}$$

Where: R_{tt} = transitional field
 R_{ff} = extent of far-field
 R_{nf} = extent of near-field

Near Field:

Equation 1

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \quad (\text{no reflection factor})$$

Equation 2

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times F1 \quad (\text{with reflection factor})$$

Where: S_{nf} = near field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses (mW)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

ϕ_{bw} = beam width of the antenna in degrees

R = distance from antenna (ft)

h = aperture height of the antenna (ft)

Rfact = Reflection factor, if indicated it is 2.56. If not indicated, it is 1

Far Field

Equation 3

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times 1000mw \quad (\text{no reflection})$$

Equation 4

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times F1 \times 1000mw \quad (\text{with reflection})$$

Where: S_{ff} = far field power density
 P_{net} = net power input to the antenna after losses

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

R = distance from antenna (ft)

G = Antenna gain

F1 = reflection factor (2.56)

Transitional Field

Equation 5

$$S_t = \frac{S_{nf} R_{nf}}{R}$$

Where: S_{nf} = Near field power (mW)
 S_t = power density (mW/cm²)
 R_{nf} = extent of near-field, calculated above (ft)
 R = distance to point of interest (ft)

Power Summation

For S_1, S_2, \dots, S_n

Perform power density excluding the new carrier. If results exceed the maximum by 5% or more, site is not previously in compliance with FCC. If not, then perform the study with the new located carrier and compare the results with the specified limits in the above table.

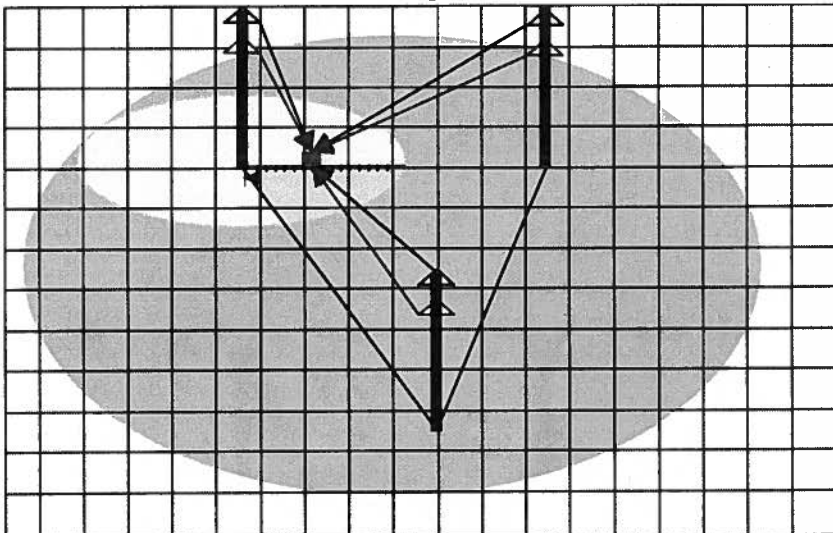
Equation 6

$$\text{Total Power density Occupational/Controlled} = P_{STC} = \sum \left(\frac{S_1}{S_{m1}} + \frac{S_2}{S_{m1}} + \dots + \frac{S_n}{S_{m1}} \right) \times 100$$

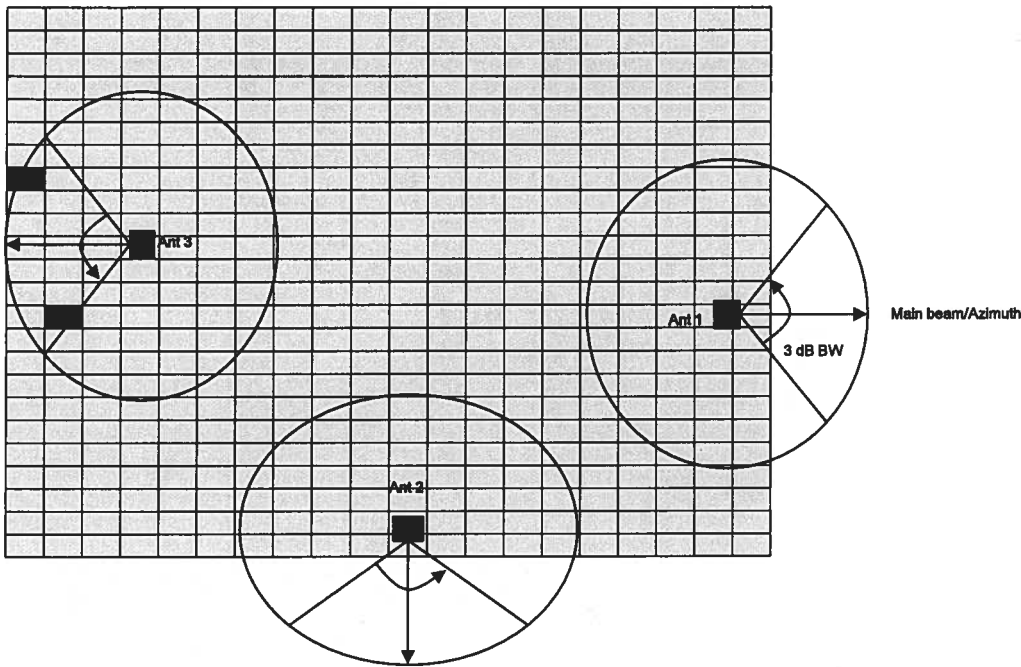
Equation 7

$$\text{Total Power density General/uncontrolled} = P_{STU} = \sum \left(\frac{S_1}{S_{m2}} + \frac{S_2}{S_{m2}} + \dots + \frac{S_n}{S_{m2}} \right) \times 100$$

Where: S_1, S_2, \dots, S_n = calculated power density
 S_{m1} = Occupational/controlled limits specified in table 2
 S_{m2} = General/unoccupational limits specified in table 3



2. Roof tops



Determine if near field, transitional field or far field:

$$R < R_{nf} = \frac{D^2}{4\lambda}$$

Where: R_{nf} = extent of near-field
 D = maximum dimension of antenna (diameter if circular)
 λ = wavelength
 R = distance from antenna

$$R > R_{ff} = \frac{0.6D^2}{\lambda}$$

Where: R_{ff} = extent of far-field
 D = maximum dimension of antenna (diameter if circular)
 λ = wavelength
 R = distance from antenna

$$R_{nf} < R_{tt} < R_{ff}$$

Where: R_{tt} = transitional field
 R_{ff} = extent of far-field

Figure 1 Rooftop grid for calculations

R_{nf} = extent of near-field

Near Field:

1) Within the 3dB Beamwidth (BW)

If the bin (square for calculations) is partially within the 3dB BW, then the square is within the 3dB BW.

Equation 8

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \quad (\text{no reflection factor})$$

Equation 9

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times F1 \quad (\text{with reflection factor})$$

Where: S_{nf} = near field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses (dBm)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

ϕ_{bw} = beam width of the antenna in degrees

R = distance from antenna (ft)

h = aperture height of the antenna (ft)

F1 = reflection factor (2.56)

2) Outside the 3dB BW

Equation 10

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times CF_{MPE} \times 10^{\frac{G-FTB}{10}} \quad (\text{no reflection factor})$$

Equation 11

$$S_{nf} = \left(\frac{180}{\phi_{bw}} \right) \frac{P_{net}}{\pi R h} \times 1000mw \times CF_{MPE} \times F1 \times 10^{\frac{G-FTB}{10}} \quad (\text{with reflection factor})$$

Where: S_{nf} = near field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses. (mW)

$$P_{net} = P \times 10^{\frac{coaxloss}{10}} \times 10^{\frac{insertionloss}{10}}$$

ϕ_{bw} = beam width of the antenna in degrees

FTB = Front to back ratio (dB)

R = distance from antenna (ft)

h = aperture height of the antenna (ft)

F1 = reflection factor (2.56)

Far Field

1) Within the 3dB BW:

If the bin (square for calculations) is partially within the 3dB BW, then the square is within the 3dB BW.

Equation 12

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times 1000 \text{mW} \times CF_{MPE} \quad (\text{no reflection})$$

Equation 13

$$S_{ff} = \frac{P \times 10^{\frac{G}{10}}}{4\pi R^2} \times F1 \times 1000 \text{mW} \times CF_{MPE} \quad (\text{with reflection})$$

Where: S_{ff} = far field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses (mW)

$$P_{net} = P \times 10^{\frac{\text{coaxloss}}{10}} \times 10^{\frac{\text{insertionloss}}{10}}$$

R = distance from antenna (ft)

G = Maximum antenna gain (dB)

F1 = reflection factor (2.56)

CF_{MPE} = MPE correction factor and set to 0.7

Outside the 3dB BW:

Equation 14

$$S_{ff} = \frac{P \times 10^{\frac{G-FTB}{10}}}{4\pi R^2} \times 1000 \text{mW} \times CF_{MPE} \quad (\text{no reflection})$$

Equation 15

$$S_{ff} = \frac{P \times 10^{\frac{G-FTB}{10}}}{4\pi R^2} \times F1 \times 1000 \text{mW} \times CF_{MPE} \quad (\text{with reflection})$$

Where: S_{ff} = far field power density (mW/cm²)
 P_{net} = net power input to the antenna after losses

$$P_{net} = P \times 10^{\frac{\text{coaxloss}}{10}} \times 10^{\frac{\text{insertionloss}}{10}}$$

R = distance from antenna (ft)

FTB = Front to back ratio (dB)

G = Maximum antenna gain (dB)

F1 = reflection factor (2.56)

CF_{MPE} = MPE correction factor and set to 0.7

Transitional Field

Equation 16

$$S_t = \frac{S_{nf} R_{nf}}{R}$$

Where:
S_{nf} = Near field power (mW)
S_t = power density (mW/cm²)
R_{nf} = extent of near-field, calculated above (ft)
R = distance from antenna (ft)

Power Summation

For S₁, S₂.....S_n

Perform power density excluding the new carrier. If results exceed the maximum by 5% or more, site is not in compliance with FCC, if not, then perform the study with the new located carrier and compare the results with the specified limits in the above table.

Equation 17

$$\text{Total Power density Occupational/Controlled} = P_{STC} = \sum \left(\frac{S_1}{S_{m1}} + \frac{S_2}{S_{m1}} + \dots \frac{S_n}{S_{m1}} \right) \times 100$$

Equation 18

$$\text{Total Power density General/uncontrolled} = P_{STU} = \sum \left(\frac{S_1}{S_{m2}} + \frac{S_2}{S_{m2}} + \dots \frac{S_n}{S_{m2}} \right) \times 100$$

Where:
S₁, S₂...S_n = calculated power density (mW/cm²)
S_{m1} = Occupational/controlled limits specified in the above table (mW/cm²)
S_{m2} = General/unoccupational limits specified in the table above (mW/cm²)

9. Contact Information

Engineer

Ahmad Malkawi

Ahmad Malkawi

Contact Phone number

847-874-3003

Email Address

amalkawi@aimws.com

Fax

847-307-8312