Oakland City Planning Commission STAFF REPORT

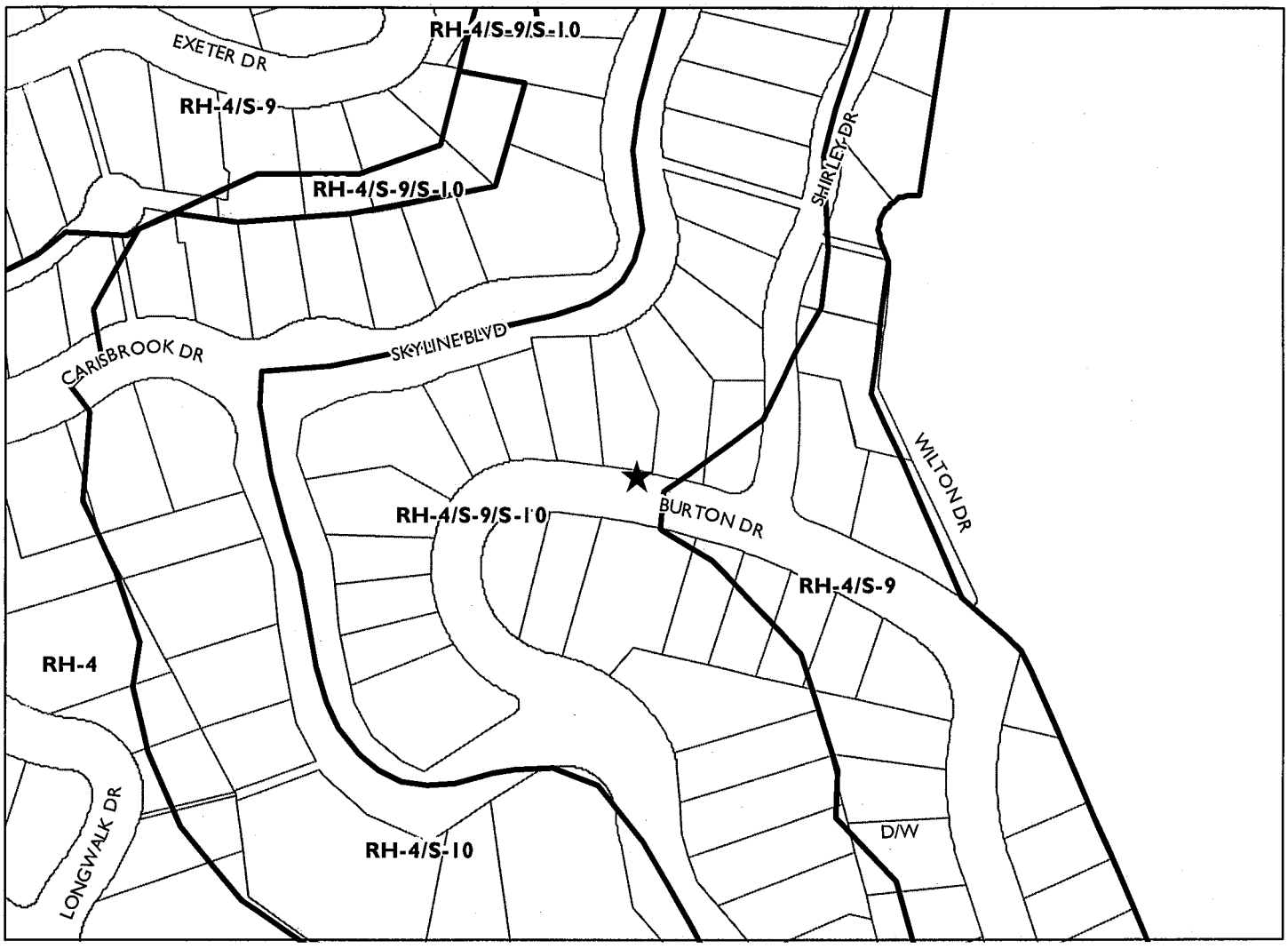
Case File Number: PLN16-089 **June 7, 2017**

Location:	**The Public Right of Way adjacent to 2842 Burton Drive. (See map reverse)**
Assessor's Parcel Numbers:	**Nearest lot adjacent to the project site (048D-7296-032-00)**
Proposal:	To remove and relocate an existing telecommunications facility 24" x 16" antenna attached to an existing PG&E Pole to a new proposed 29' tall metal telecommunications monopole to be located across the street within the public right-of- way; an associated 4'-9" tall x 3'-8" wide ground –mounted equipment cabinet enclosure on a new cement pad located next to the pole will be housing all radio equipment.
Applicant:	Crown Castle
Contact Person/ Phone Number:	Bob Gundermann & Jason Osborn (925) 899-1999
Owner:	City of Oakland
Case File Number:	PLN16-089
Planning Permits Required:	Major Conditional Use Permit and Design Review to install a new Monopole Telecommunications Facility within a residential zone, and Minor Variance to waive the required 1:1 ratio setback for the 29' tall monopole facility to be located from the adjacent residential property line.
General Plan:	Hillside Residential
Zoning:	RH-4/S-10 Zone
Environmental Determination:	Exempt, Section 15303 of the State CEQA Guidelines; New construction or conversion of small structures, Section 15183 of the State CEQA Guidelines; projects consistent with a community plan, General Plan or zoning.
Historic Status:	Not a Potential Designated Historic Property; Survey Rating: N/A
Service Delivery District:	3
City Council District:	4
Date Filed:	April /14/2017
Finality of Decision:	Appealable to City Council within 10 days
For Further Information:	Contact case planner Jason Madani at **(510) 238-4790** or jmadani@oaklandnet.com

SUMMARY

The project applicant (Crown Castle) has submitted a request to remove a telecommunications facility consisting of a 24" x 16" antenna attached to an existing PG&E pole and relocate this equipment to a new 29' tall metal pole to be located across street within the City of Oakland public right-of-way. The proposed project would also include installation of an associated 4'-9"

CITY OF OAKLAND PLANNING COMMISSION



Case File: PLN16089
Applicant: Crown Castle
Address: The Public Right of Way adjacent to 2842 Burton Drive
Zone: RH-4/S-10 Zone

tall x 3'-8" wide ground–mounted equipment cabinet enclosure on a new cement pad located next to the pole to house all radio equipment. Because this installation is a stand-alone telecommunication pole and not a joint-use utility pole, it is considered a Monopole per Section 17.10.900 of the Oakland Planning Code. The required Planning permits include a Major Conditional Use Permit, Regular Non-Residential Design Review, and a Minor Variance to waive the required 1:1 ratio setback from the adjacent residential property line.

Staff believes the project will not have a significant visual impact to the surrounding residential homes in this neighborhood given the topography, a grove of mature tall trees, and the project's location near an adjacent residential garage and a traffic sign. The applicant proposes to allow the traffic sign to be placed on this new pole to reduce pole clutter. The project meets all the required findings listed below for an approval of the project.

BACKGROUND

The existing and proposed telecommunication (telecom) facility is in an area where all joint-utility poles will be removed and the utilities were recently under-grounded pursuant to the City's underground utility program. There are no telecom carriers, other than Crown Castle, that have telecom facilities remaining in this area. This is the last of the necessary replacement solutions to be done as part of the undergrounding program. The proposed replacement facility will have one telecom installation located on it and be used by one telecom carrier (Crown Castle). The proposed telecom antennae cannot be under-grounded due to the engineering aspects of their function, and therefore, the antenna must be located above ground. In addition, the telecom facilities must be sited so as to fill the coverage and capacity requirements of the carrier, which, as the Commission is aware, is sometimes difficult in the hill areas due to intervening topography and heavy vegetation.

As summarized in this report, staff believes this proposal is an appropriate replacement solution for the existing Crown Castle telecom facility attached to a nearby PG&E pole, which will be removed upon completion of this installation. That PG&E pole will be removed after this new installation is approved and built.

TELECOMMUNICATIONS BACKGROUND

Limitations on Local Government Zoning Authority under the Telecommunications Act of 1996

Section 704 of the Telecommunications Act of 1996 (TCA) provides federal standards for the siting of "Personal Wireless Services Facilities." "Personal Wireless Services" include all commercial mobile services (including personal communications services (PCS), cellular radio mobile services, and paging); unlicensed wireless services; and common carrier wireless exchange access services. Under Section 704, local zoning authority over personal wireless services is preserved such that the FCC is prevented from preempting local land use decisions; however, local government zoning decisions are still restricted by several provisions of federal law. Specifically:

- Under Section 253 of the TCA, no state or local regulation or other legal requirement can prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.

- Further, Section 704 of the TCA imposes limitations on what local and state governments can do. Section 704 prohibits any state and local government action which unreasonably discriminates among personal wireless providers. Local governments must ensure that its wireless ordinance does not contain requirements in the form of regulatory terms or fees which may have the "effect" of prohibiting the placement, construction, or modification of personal wireless services.

- Section 704 also preempts any local zoning regulation purporting to regulate the placement, construction and modification of personal wireless service facilities on the basis, either directly or indirectly, on the environmental effects of radio frequency emissions (RF) of such facilities, which otherwise comply with Federal Communications Commission (FCC) standards in this regard. (See 47 U.S.C. Section 332(c)(7)(B)(iv) (1996)). This means that local authorities may not regulate the siting or construction of personal wireless facilities based on RF standards that are more stringent than those promulgated by the FCC.

- Section 704 mandates that local governments act upon personal wireless service facility siting applications to place, construct, or modify a facility within a reasonable time (See 47 U.S.C.332(c)(7)(B)(ii) and FCC Shot Clock ruling setting forth "reasonable time" standards for applications deemed complete).

- Section 704 also mandates that the FCC provide technical support to local governments in order to encourage them to make property, rights-of-way, and easements under their jurisdiction available for the placement of new spectrum-based telecommunications services. This proceeding is currently at the comment stage.

For more information on the FCC's jurisdiction in this area, consult the following:
Competition & Infrastructure Policy Division (CIPD) of the Wireless Telecommunications Bureau, main division number: (202) 418-1310. **https://www.fcc.gov/general/competition-infrastructure-policy-division-wireless-telecommunications-bureau**

PROJECT DESCRIPTION

Pursuant to the City's underground utility program, the applicant Crown Castle is proposing to remove an existing telecom facility (24" x 16" antenna) attached to an existing nearly PG&E pole and relocate it to a new location and pole across the street from 2843 Burton Drive. The proposed metal pole will be 29' tall and located where there is an existing traffic sign. The single 24" x 16" antenna will be concealed within a dome mounted on top of the pole. A 4'-9" tall x 3'-8" wide equipment cabinet will house all the radio equipment and will be mounted on a new cement pad located next to the pole. The pole will resemble a light pole and be painted a moss green. **(See Attachment A)**

PROPERTY DESCRIPTION

The existing PG&E pole is located within the City of Oakland public right-of-way, on the south side adjacent to 2843 Burton Drive. The proposed replacement location is across the street from the original location, within the City of Oakland public right-of-way, on the north side adjacent to a garage for 2838 Burton Drive and next to an existing traffic sign. As previously mentioned, subject to the City's of Oakland Traffic Department approval, that traffic sign will be consolidated onto this new pole.

GENERAL PLAN ANALYSIS

The site is located in a Hillside Residential area under the General Plan's Land Use and Transportation Element (LUTE). The intent of the Hillside Residential area is: "to create, maintain, and enhance neighborhood residential areas that are characterized by detached, single unit structures on hillside lots." The proposal conforms to the intent of the Hillside Residential area given 1) hillside residential customers increasing reliance upon cellular service for phone and internet services; 2) the project is within an area where all utilities were recently under-grounded pursuant to the City's underground utility program; 3) the proposal will maintain the carrier's telecom services and an essential service; and 4) the proposed location is bounded by a vacant lot with mature tall trees within the City of Oakland public right-of- way which will camouflage the pole and not obstruct a scenic view.

The project also meets the following LUTE Policy:

> "Policy N12.4 Undergrounding Utility Lines.
> Electrical, telephone, and related distribution lines should be undergrounded in commercial and residential areas, except where special local conditions such as limited visibility of the poles and wires makes this unneeded. They should also be underground in appropriate institutional, industrial, and other areas, and generally along freeways, scenic routes, and heavily traveled streets. Programs should lead systematically toward the eventual undergrounding of all existing lines in such places. Where significant utility extensions are taking place in these areas, such as in new subdivisions utilities should be installed underground from the start".

Staff, therefore, finds the proposal, as conditioned, to conform to the General Plan and will not adversely affect or detract from the residential characteristics of the neighborhood.

ZONING ANALYSIS

The site is located within the RH-4 Hillside Residential and S-10 Scenic Route Combining Zones. The intent of the RH-4 zone is: "to create, maintain, and enhance areas for single-family dwellings on lots of 6,500 to 8,000 square feet and is typically appropriate in already developed areas of the Oakland Hills." The S-10 zone is intended to create, preserve and enhance areas where hillside terrain, wooded canyons and ridges, and fine vistas or panoramas of Oakland neighboring areas, or the Bay can be seen from the road, and is typically appropriate to roads along or near ridges, or through canyons, of the Oakland Hills which roads have good continuity and relatively infrequent vehicular access from abutting properties. However, the proposed telecommunication structure will not be located on restricted scenic route road.

Telecommunications constitute an Essential Service Civic Activity under the Planning Code. Monopole Telecommunications Facilities in residential zones require a Major Conditional Use Permit, Design Review and, in this case, also a Minor Variance to waive the 1:1 ratio setback requirement from the adjacent residential property line. Given the topography, mature tall trees, and location near an existing traffic sign, the proposed monopole will be camouflaged. Staff finds that the proposal meets the applicable RH-4 and S-10 zoning and City of Oakland Telecommunication regulations. The required Findings are listed and included in staff's evaluation as part of this report.

ENVIRONMENTAL DETERMINATION

The California Environmental Quality Act (CEQA) Guidelines list the projects that qualify as categorical exemptions from environmental review. The proposed project is categorically exempt from the environmental review requirements pursuant to Section 15303, new construction of small structures, and 15183, Projects Consistent with a Community Plan, General Plan or Zoning.

KEY ISSUES AND IMPACTS

Staff believes this proposal is an appropriate replacement solution for the existing facility on Burton Drive, which will be removed upon completion of this proposed new installation.

1. Project Site

Section 17.128.110 of the City of Oakland Telecommunication Regulations indicate that new wireless facilities shall generally be located on designated properties or facilities in the following order of preference:

A. Co-located on an existing structure or facility with existing wireless antennas.
B. City owned properties or other public or quasi-public facilities.
C. Existing commercial or industrial structures in non-residential zones (excluding all HBX Zones and the D-CE3 and D-C-4 Zones).
D. Existing commercial or industrial structures in residential zones, HBX Zones, or the D-CE-3 or D-CE-4 Zones.
E. Other non-residential uses in residential zones, HBX Zones, or the D-CE-3 or D-CE-4 Zones.
F. Residential uses in non-residential zones. (excluding all HBX Zones and the D-CE-3 and D-CE-4 Zones).
G. Residential uses in residential zones, HBX Zones, or the D-CE-3 or D-CE-4 Zones.

Facilities locating on an A, B or C ranked preference do not require a site alternatives analysis. Facilities proposing to locate on a D through G ranked preference, inclusive, must submit a site alternatives analysis as part of the required application materials.

Since the proposed project involves installation of a new monopole facility with new antennas and associated equipment cabinets on a site within the public right-of-way, the proposed project meets preference (B); hence a site alternatives analysis is not required, although the applicant did provide one.

Alternative Site Analysis:

Crown Castle considered alternative sites on other locations in this area but none of these sites are as desirable from a coverage perspective or from an aesthetics perspective to minimize visual impact. The proposed location is approximately equidistant from other DAS nodes proposed in the surrounding area so that service coverage can be evenly distributed.

Staff has reviewed the applicant's written evidence of an alternative sites analysis (see attachment C) and determined that the site selected conforms to the telecommunication regulation requirements. In addition, staff agrees that no other sites are more suitable.

2. Project Design

Section 17.128.120 of the City of Oakland Telecommunications Regulations indicates that new wireless facilities shall generally be designed in the following order of preference:

A. Building or structure mounted antennas completely concealed from view.
B. Building or structure mounted antennas set back from roof edge, not visible from public right-of way.
C. Building or structure mounted antennas below roof line (facade mount, pole mount) visible from public right-of-way, painted to match existing structure.
D. Building or structure mounted antennas above roof line visible from public right of-way.
E. Monopoles.
F. Towers.

Facilities designed to meet an A or B ranked preference do not require a site design alternatives analysis. Facilities designed to meet a C through F ranked preference, inclusive, must submit a site design alternatives analysis as part of the required application materials. A site design alternatives analysis shall, at a minimum, consist of:

a. Written evidence indicating why each higher preference design alternative cannot be used. Such evidence shall be in sufficient detail that independent verification could be obtained if required by the City of Oakland Zoning Manager. Evidence should indicate if the reason an alternative was rejected was technical (e.g. incorrect height, interference from existing RF sources, inability to cover required area) or for other concerns (e.g. inability to provide utilities, construction or structural impediments).

Planning staff has reviewed and determined that the site selected conforms to all telecommunication regulation requirements. The project has met design criteria (C) since the antennas will be mounted on a 29' tall metal pole resembling a city light pole and is adjacent to the detached garage of a single family residence. The metal pole will be camouflaged partially within the existing mature trees, adjacent to a traffic sign, and painted moss green color to minimize potential visual impacts from public view. The ground mounted equipment cabinet enclosure will match the color of the metal pole. (**See Attachment C**)

3. Project Radio Frequency Emissions Standards

Section 17.128.130 of the City of Oakland Telecommunication Regulations require that the applicant submit the following verifications including requests for modifications to existing facilities:

a. The telecommunications regulations require that the applicant submit written documentation demonstrating that the emission from the proposed project are within the limits set by the Federal Communications Commission. In the document (attachment B) prepared by Jerrold T. Bushberg Health and Medical Physics Consulting, Inc. Registered Professional Engineer, the proposed project was evaluated for compliance with appropriate guidelines limiting human exposure to radio frequency electromagnetic fields. According to the report on the proposal, the project will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, the proposed site will operate within the current acceptable thresholds as established by the Federal government or any such agency that may be subsequently authorized to establish such standards.

b. Prior to final building permit sign off, an RF emissions report indicating that the site is actually operating within the acceptable thresholds as established by the Federal government or any such agency who may be subsequently authorized to establish such standards.

The RF emissions report, states that the proposed project will not cause a significant impact on the environment. Additionally, staff recommends that prior to the final building permit sign off, the applicant submit a certified RF emissions report stating that the facility is operating within acceptable thresholds established by the regulatory federal agency.

CONCLUSION

Oakland neighborhoods have a large and increasing demand for wireless telecommunications service. Utilities will be undergrounded per the City's underground utility program, and there are few viable sites for monopoles or other telecommunications facilities within underground districts. The new proposal would not obstruct private views, or be situated unduly close to windows of the adjacent residence and is camouflaged with the existing mature tall trees. Staff believes that the findings for approval can be made to support the Conditional Use Permit and Design Review and Minor Variance.

RECOMMENDATIONS:

1. Affirm staff's environmental determination

2. Approve Major Conditional Use Permit, and Design Review and Minor Variance application PLN16-089 to the attached findings and conditions of approval.

Prepared by:

Jason Madani
Planner II

Reviewed by:

Scott Miller
Zoning Manager

Approved for forwarding to the
City Planning Commission

Darin Ranelletti, Interim Director
Planning and Building Bureau

ATTACHMENTS:

A. Project Plans & Photo simulations
B. Site Safe RE Compliance Experts RF Emissions Report
C. Site Alternative Analysis and Coverage Maps
D. Correspondence

FINDINGS FOR APPROVAL

FINDINGS FOR APPROVAL:
This proposal meets all the required findings under Section 17.134.050, of the General Use Permit criteria; all the required findings under Section 17.136.050. (B), of the Non-Residential Design Review criteria; all the required findings under Section 17.128.080 (B), of the telecommunication facilities (Monopole) Design Review criteria; and all the required findings under Section 17.128.080. (C), of the telecommunication facilities (Monopole) Conditional Use Permit criteria; and Variance finding 17.148.050 and as set forth below and which are required to approve your application. Required findings are shown in **bold** type; reasons your proposal satisfies them are shown in normal type.

SECTION 17.134.050 – GENERAL USE PERMIT FINDINGS:

A. That the location, size, design, and operating characteristics of the proposed development will be compatible with, and will not adversely affect, the livability or appropriate development of abutting properties and the surrounding neighborhood, with consideration to be given to harmony in scale, bulk, coverage, and density; to the availability of civic facilities and utilities; to harmful effect, if any upon desirable neighborhood character; to the generation of traffic and the capacity of surrounding streets; and to any other relevant impact of the development.

Hillside residential areas are difficult coverage areas for radio frequencies due to mature vegetation and the topography. These neighborhoods also have large and increasing demand for wireless telecommunications service. Utilities are undergrounded, and there are few viable sites for monopoles. The proposed site will not obstruct views from or be situated unduly close to a private viewing location such as a living room of the adjacent residence. The presence of the existing mature tall trees will serve as a camouflaging background when viewed from the street. The siting will not preclude future development of the adjacent existing single family residence parcel. The project is accompanied by a satisfactory radio frequency (RF) emissions report. The Conditions of Approval require that the monopole be painted green to better camouflage it with the adjacent vegetation, and, a satisfactory review by the Public Works Agency prior to submitting for a Building Permit. (see Conditions of Approval #18) The facility will be unmanned and will not create additional vehicular traffic in the area and will not adversely affect the operating characteristics or livability of the hillside area.

B. That the location, design, and site planning of the proposed development will provide a convenient and functional living, working, shopping, or civic environment, and will be as attractive as the nature of the use and its location and setting warrant.

The proposed site will not obstruct views from or be situated unduly close to a private viewing location such as a living room of surrounding residences. In addition, the proposed telecommunication facility will replace an existing traffic speed sign located within the City of Oakland public right-of-way. The presence of mature trees will serve as camouflaging background when viewed from the street. The siting will not preclude future development of the adjacent single family residence parcel. The facility is as attractive as its use and location warrant.

C. That the proposed development will enhance the successful operation of the surrounding area in its basic community functions, or will provide an essential service to the community or region.

Hillside residential areas are difficult coverage areas for radio frequencies due to mature vegetation and the topography. The neighborhoods have large and increasing demand for wireless telecommunications service for phone and internet which is an essential service to the neighborhood. Utilities will be undergrounded and there are few viable sites for monopoles.

D. That the proposal conforms to all applicable design review criteria set forth in the Design Review Procedure of Chapter 17.136 of the Oakland Planning Code.

Design Review is required and findings are made as described in following sections of this attachment.

E. That the proposal conforms in all significant respects with the Oakland General Plan and with any other applicable plan or development control map which has been adopted by the City Council.

The site is located in a Hillside Residential area under the General Plan's Land Use and Transportation Element (LUTE). The intent of the Hillside Residential area is: *"to create, maintain, and enhance residential areas characterized by detached, single unit structures on hillside lots."* Telecommunications constitute an Essential Service Civic Activity under the Planning Code. Given hillside residential customers increasing reliance upon cellular service for phone and internet, and as undergrounding is proposed for the area, a new monopole that is not within a clear view corridor site or precluding development conforms to this intent and to the following LUTE Policy:

> Policy N12.4 Undergrounding Utility Lines.
> Electrical, telephone, and related distribution lines should be undergrounded in commercial and residential areas, except where special local conditions such as limited visibility of the poles and wires makes this unneeded. They should also be underground in appropriate institutional, industrial, and other areas, and generally along freeways, scenic routes, and heavily traveled streets. Programs should lead systematically toward the eventual undergrounding of all existing lines in such places. Where significant utility extensions are taking place in these areas, such as in new subdivisions utilities should be installed underground from the start.

Section 17.128.080(C) CONDITIONAL USE PERMIT (CUP) FINDINGS FOR MONOPOLE FACILITIES

1. The project must meet the special design review criteria listed in subsection B of this section (17.128.080C):

Design Review is required and findings are made as described in following sections of this attachment.

2. Monopoles should not be located any closer than one thousand five hundred (1,500) feet from existing monopoles unless technologically required or visually preferable:

No known monopoles exist within 1,500 feet of the site; nonetheless, this location is technologically required given the lack of viable sites, and, is visually preferable. The proposal is located within the City of Oakland public right-of-way, adjacent to a detached garage of single-family residence parcel and to several large trees.

3. The proposed project must not disrupt the overall community character:

The proposed site design would not obstruct private views, or be situated unduly close to a private viewing location such as a living room of nearby residences. The new location is adjacent to a detached garage of residence and is surrounded with mature tall trees. The siting of new telecommunication facility would not preclude future development of the adjacent existing single family dwelling parcel. The presence of mature tall trees would serve as camouflaging background when viewed from the street. Hillside residential areas have large and increasing demand for wireless telecommunications service for phone and internet. Utilities will be undergrounded and there are few viable sites for monopoles in the area. Conditions of Approval will ensure that the monopole is painted a green color to better camouflage it with adjacent trees, and a satisfactory review by the Public Works Agency prior to submitting for a Building Permit. (Condition of Approval #18)

4. <u>If a Major Conditional Use Permit is required</u>, the Planning Director or the Planning Commission may request independent expert review regarding site location, collocation and facility configuration. Any party may request that the Planning Commission consider making such request for independent expert review.

a. If there is any objection to the appointment of an independent expert engineer, the applicant must notify the Planning Director within ten days of the Commission request. The Commission will hear arguments regarding the need for the independent expert and the applicant's objection to having one appointed. The Commission will rule as to whether an independent expert should be appointed.

b. Should the Commission appoint an independent expert, the Commission will direct the Planning Director to pick an expert from a panel of licensed engineers, a list of which will be compiled, updated and maintained by the Planning Department.

c. No expert on the panel will be allowed to review any materials or investigate any application without first signing an agreement under penalty of perjury that the expert will keep confidential any and all information learned during the investigation of the application. No personnel currently employed by a telecommunication company are eligible for inclusion on the list.

d. An applicant may elect to keep confidential any proprietary information during the expert's investigation. However, if an applicant does so elect to keep confidential various items of proprietary information, that applicant may not introduce the confidential proprietary information for the first time before the Commission in support of the application.

e. The Commission shall require that the independent expert prepare the report in a timely fashion so that it will be available to the public prior to any public hearing on the application.

f. Should the Commission appoint an independent expert, the expert's fees will be paid by the applicant through the application fee, imposed by the city.

The Planning Director has not made such a request. This is, however, an option available to the Planning Commission.

FINDINGS

17.136.050(B) – NONRESIDENTIAL DESIGN REVIEW CRITERIA:

1. That the proposal will help achieve or maintain a group of facilities which are well related to one another and which, when taken together, will result in a well-composed design, with consideration given to site, landscape, bulk, height, arrangement, texture, materials, colors, and appurtenances; the relation of these factors to other facilities in the vicinity; and the relation of the proposal to the total setting as seen from key points in the surrounding area. Only elements of design which have some significant relationship to outside appearance shall be considered, except as otherwise provided in Section 17.136.060;

The proposed project will help achieve consistency in design because the proposal will look like other City of Oakland utility light poles. The project involves installation of a new 29' tall metal pole as a telecommunication monopole facility located in the public right-of-way; installation one 24" x 16" antenna concealed within a dome mounted on top of the pole; an associated equipment cabinet 4'-9" tall x 3'-8" wide will be housing all radio equipment on a new cement pad located next to the pole. The presence of mature tall trees will serve as a camouflaging background when viewed from the street. The pole and equipment cabinet will be painted a green color.

2. That the proposed design will be of a quality and character which harmonizes with, and serves to protect the value of, private and public investments in the area;

The design is appropriate and compatible with current zoning and General Plan Land Use designations. The antennas will be located on a 29' tall monopole designed to look like a city light pole set in a wooded area and will have minimal visual impacts as seen from the roadway.

3. That the proposed design conforms in all significant respects with the Oakland General Plan and with any applicable design review guidelines or criteria, district plan, or development control map which have been adopted by the Planning Commission or City Council.

The site is located in a Hillside Residential area under the General Plan's Land Use and Transportation Element (LUTE). The intent of the Hillside Residential area is: *"to create, maintain, and enhance residential areas characterized by detached, single unit structures."* Telecommunications constitute an Essential Service Civic Activity under the Planning Code. Given hillside residential customers increasing reliance upon cellular service for phone and internet, and as undergrounding districts will be implemented in certain districts over time, the proposal for a monopole that is not on a clear view corridor and is located to the adjacent detached garage of the residence and is distance from main living area of the existing homes within subject site or precluding development conforms to this Intent and to the following LUTE Policy:

Policy N12.4 Undergrounding Utility Lines.
Electrical, telephone, and related distribution lines should be undergrounded in commercial and residential areas, except where special local conditions such as limited visibility of the poles and wires makes this unneeded. They should also be underground in appropriate institutional, industrial, and other areas, and generally along freeways, scenic routes, and heavily traveled streets. Programs should lead systematically toward the eventual undergrounding of all existing lines in such places.

Where significant utility extensions are taking place in these areas, such as in new subdivisions utilities should be installed underground from the start.

17.128.080(B) DESIGN REVIEW CRITERIA FOR MONOPOLE FACILITIES

1. Collocation is to be encouraged when it will decrease visual impact and collocation is to be discouraged when it will increase negative visual impact:

The proposal is to relocate an existing joint pole telecommunication facility to a new facility where no adjacent poles exist to offer collocation due to the undergrounding program.

2. Monopoles should not be sited to create visual clutter or negatively affect specific views:

The monopole is sited so that no scenic view obstruction will occur, and will be painted a green color to better camouflage it with adjacent trees. Given the topography, and the location of metal pole, the project will have minimal visual impacts in the hillside area.

3. Monopoles shall be screened from the public view wherever possible:

The monopole will be visible from a minimal number of vantage points in the immediate area. However, it will essentially have the appearance of a city light pole.

4. The equipment shelter or cabinet must be concealed from public view or made compatible with the architecture of the surrounding structures or placed underground. The shelter or cabinet must be regularly maintained:

Equipment will be ground mounted and painted along with the pole as camouflage. The equipment will be placed and secured such that it will not be accessed by the public and will be maintained by Crown Castle Company.

5. Site location and development shall preserve the preexisting character of the surrounding buildings and land uses and the zone district as much as possible. Wireless communication towers shall be integrated through location and design to blend in with the existing characteristics of the site to the extent practical. Existing on-site vegetation shall be preserved or improved, and disturbance of the existing topography shall be minimized, unless such disturbance would result in less visual impact of the site to the surrounding area:

The site is not located close to primary living space of existing homes. It is located within the public right-of-way adjacent to a detached garage of existing residence with a grove of mature tall trees and will be painted green color to blend in with the existing vegetation. Based on the location of site, the proposed monopole will not result in a significant visual impact and will blend in with the existing characteristics of the site.

6. That all reasonable means of reducing public access to the antennas and equipment has been made, including, but not limited to, placement in or on buildings or structures, fencing, anti-climbing measures and anti-tampering devices:

The antennas will be mounted to a monopole and will not be accessible to the public due to its location. The equipment cabinet will be secured such that it is only accessible to maintenance workers and not to the public.

VARIANCE PROCEDURE/FINDINGS REQUIRED (OMC SEC. 17.148.050(A))

1. That strict compliance with the specified regulation would result in practical difficulty or unnecessary hardship inconsistent with the purposes of the zoning regulations, due to unique physical or topographic circumstances or conditions of design; or, as an alternative in the case of a minor variance, that such strict compliance would preclude an effective design solution improving livability, operational efficiency, or appearance.

Zoning regulation 17.128.080(A) (3) requires: "When a monopole is in a residential zone or adjacent to a residential use, it must be set back from the nearest residential lot line a distance at least equal to its total height of the pole".

The proposed monopole facility is 29' tall and located in close proximity (to the adjacent front property line of a residential lot (approximately 7'). Therefore, the project requires a Minor Variance. The purposes of the requirement are to create a "fall zone" between a monopole facility and a residence and to avoid a looming effect and view obstruction. Strict compliance would preclude an effective design solution improving livability and operational efficiency.

Staff feels that this variance is justified for the following reasons: The proposed 29' tall monopole is located within the public right-of-way adjacent to the front portion of an existing residential down-sloped parcel. Future home expansion would be located at a much lower elevation and would be surrounded by mature tall trees. As result, the proposal will not have significant impacts on the future development of an existing hillside residential property. In addition, the construction of the monopole will satisfy engineering and construction standards to ensure it would not fall. Finally, the proposal is located adjacent to a garage and further from the residence and will not be looming or affect views. Hillside residential areas have large and increasing demand for wireless telecommunications service for phone and internet. Utilities are undergrounded and there are few viable sites for monopoles within this vicinity.

2. That strict compliance with the regulations would deprive the applicant of privileges enjoyed by owners of similarly zoned property; or, as an alternative in the case of a minor variance, that such strict compliance would preclude an effective design solution fulfilling the basic intent of the applicable regulation.

Other existing poles in the hillside area do not meet the 1:1 height/setback ratio requirement. The design will not obstruct views or create a looming effect. The design solution would maintain adequate service but also be relatively camouflaged.

3. That the variance, if granted, will not adversely affect the character, livability, or appropriate development of abutting properties or the surrounding area, and will not be detrimental to the public welfare or contrary to adopted plans or development policy.

The monopole will be subject to building permits, will maintain and enhance service without overhead lines. The proposal will be relatively camouflaged by the existing vegetation on the site and painted a green color to match this vegetation and will not adversely affect the character of the area. The proposal is located adjacent to a garage and will not affect the livability, or appropriate development of abutting properties or the surrounding area

4. That the variance will not constitute a grant of special privilege inconsistent with limitations imposed on similarly zoned properties or inconsistent with the purposes of the zoning regulations.

The Variance will not constitute a grant of special privilege. Other nonconformities and variances to the regulation exist or have been granted.

5. That the elements of the proposal requiring the variance (e.g., elements such as buildings, walls, fences, driveways, garages and carports, etc.) conform with the regular design review criteria set forth in the design review procedure at Section 17.136.050.

Design Review is required and the findings have been made as described in previous findings and staff report.

6. That the proposal conforms in all significant respects with the Oakland General Plan and with any other applicable guidelines or criteria, district plan, or development control map which have been adopted by the Planning Commission or City Council.

The proposal conforms to the General Plan as described in a previous findings and staff report.

STANDARD CONDITIONS OF APPROVAL:

1. Approved Use

The project shall be constructed and operated in accordance with the authorized use as described in the approved application materials **PLN16-089**, and the plans dated **April 7, 2017** submitted on **April 14, 2017**, as amended by the following conditions of approval and mitigation measures, if applicable ("Conditions of Approval" or "Conditions").

2. Effective Date, Expiration, Extensions and Extinguishment

This Approval shall become effective immediately, unless the Approval is appealable, in which case the Approval shall become effective in ten calendar days unless an appeal is filed. Unless a different termination date is prescribed, this Approval shall expire **two years** from the Approval date, or from the date of the final decision in the event of an appeal, unless within such period all necessary permits for construction or alteration have been issued, or the authorized activities have commenced in the case of a permit not involving construction or alteration. Upon written request and payment of appropriate fees submitted no later than the expiration date of this Approval, the Director of City Planning or designee may grant a one-year extension of this date, with additional extensions subject to approval by the approving body. Expiration of any necessary building permit or other construction-related permit for this project may invalidate this Approval if said Approval has also expired. If litigation is filed challenging this Approval, or its implementation, then the time period stated above for obtaining necessary permits for construction or alteration and/or commencement of authorized activities is automatically extended for the duration of the litigation.

3. Compliance with Other Requirements

The project applicant shall comply with all other applicable federal, state, regional, and local laws/codes, requirements, regulations, and guidelines, including but not limited to those imposed by the City's Bureau of Building, Fire Marshal, and Public Works Department. Compliance with other applicable requirements may require changes to the approved use and/or plans. These changes shall be processed in accordance with the procedures contained in Condition #4.

4. Minor and Major Changes

a. Minor changes to the approved project, plans, Conditions, facilities, or use may be approved administratively by the Director of City Planning

b. Major changes to the approved project, plans, Conditions, facilities, or use shall be reviewed by the Director of City Planning to determine whether such changes require submittal and approval of a revision to the Approval by the original approving body or a new independent permit/approval. Major revisions shall be reviewed in accordance with the procedures required for the original permit/approval. A new independent permit/approval shall be reviewed in accordance with the procedures required for the new permit/approval. Specifically, the height of the pole is relatively consistent with the height of nearby light poles and this was an important factor as to why approval is granted. Any modifications to the monopole, including an increase in height or addition of any equipment, could compromise this consistency. Changes to the height of the pole are considered a Major Change and would require a new or revised application, and decision by the Planning Commission.

5. Compliance with Conditions of Approval

a. The project applicant and property owner, including successors, (collectively referred to hereafter as the "project applicant" or "applicant") shall be responsible for compliance with all the Conditions of Approval and any recommendations contained in any submitted and approved technical report at his/her sole cost and expense, subject to review and approval by the City of Oakland.

b. The City of Oakland reserves the right at any time during construction to require certification by a licensed professional at the project applicant's expense that the as-built project conforms to all applicable requirements, including but not limited to, approved maximum heights and minimum setbacks. Failure to construct the project in accordance with the Approval may result in remedial reconstruction, permit revocation, permit modification, stop work, permit suspension, or other corrective action.

c. Violation of any term, Condition, or project description relating to the Approval is unlawful, prohibited, and a violation of the Oakland Municipal Code. The City of Oakland reserves the right to initiate civil and/or criminal enforcement and/or abatement proceedings, or after notice and public hearing, to revoke the Approval or alter these Conditions if it is found that there is violation of any of the Conditions or the provisions of the Planning Code or Municipal Code, or the project operates as or causes a public nuisance. This provision is not intended to, nor does it, limit in any manner whatsoever the ability of the City to take appropriate enforcement actions. The project applicant shall be responsible for paying fees in accordance with the City's Master Fee Schedule for inspections conducted by the City or a City-designated third-party to investigate alleged violations of the Approval or Conditions.

6. Signed Copy of the Approval/Conditions

A copy of the Approval letter and Conditions shall be signed by the project applicant, attached to each set of permit plans submitted to the appropriate City agency for the project, and made available for review at the project job site at all times.

7. Blight/Nuisances

The project site shall be kept in a blight/nuisance-free condition. Any existing blight or nuisance shall be abated within 60 days of approval, unless an earlier date is specified elsewhere.

8. Indemnification

a. To the maximum extent permitted by law, the project applicant shall defend (with counsel acceptable to the City), indemnify, and hold harmless the City of Oakland, the Oakland City Council, the Oakland Redevelopment Successor Agency, the Oakland City Planning Commission, and their respective agents, officers, employees, and volunteers (hereafter collectively called "City") from any liability, damages, claim, judgment, loss (direct or indirect), action, causes of action, or proceeding (including legal costs, attorneys' fees, expert witness or consultant fees, City Attorney or staff time, expenses or costs) (collectively called "Action") against the City to attack, set aside, void or annul this Approval or implementation of this Approval. The City may elect, in its sole discretion, to participate in the defense of said Action and the project applicant shall reimburse the City for its reasonable legal costs and attorneys' fees.

b. Within ten (10) calendar days of the filing of any Action as specified in subsection (a) above, the project applicant shall execute a Joint Defense Letter of Agreement with the City, acceptable to the Office of the City Attorney, which memorializes the above obligations. These obligations and the Joint Defense Letter of Agreement shall survive termination, extinguishment, or invalidation of the

Approval. Failure to timely execute the Letter of Agreement does not relieve the project applicant of any of the obligations contained in this Condition or other requirements or Conditions of Approval that may be imposed by the City.

9. Severability

The Approval would not have been granted but for the applicability and validity of each and every one of the specified Conditions, and if one or more of such Conditions is found to be invalid by a court of competent jurisdiction this Approval would not have been granted without requiring other valid Conditions consistent with achieving the same purpose and intent of such Approval.

PROJECT SPECIFIC CONDTIONS:

10. Construction Activity in the Public Right-of-Way

a. Obstruction Permit Required

Requirement: The project applicant shall obtain an obstruction permit from the City prior to placing any temporary construction-related obstruction in the public right-of-way, including City streets and sidewalks.

When Required: Prior to approval of construction-related permit

Initial Approval: Bureau of Building

Monitoring/Inspection: Bureau of Building

b. Traffic Control Plan Required

Requirement: In the event of obstructions to vehicle or bicycle travel lanes, the project applicant shall submit a Traffic Control Plan to the City for review and approval prior to obtaining an obstruction permit. The project applicant shall submit evidence of City approval of the Traffic Control Plan with the application for an obstruction permit. The Traffic Control Plan shall contain a set of comprehensive traffic control measures for auto, transit, bicycle, and pedestrian detours, including detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. The project applicant shall implement the approved Plan during construction.

When Required: Prior to approval of construction-related permit

Initial Approval Public Works Department, Transportation Services Division

Monitoring/Inspection: Bureau of Building

c. Repair of City Streets

Requirement: The project applicant shall repair any damage to the public right-of way, including streets and sidewalks caused by project construction at his/her expense within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to approval of the final inspection of the construction-related permit. All damage that is a threat to public health or safety shall be repaired immediately.

When Required: Prior to building permit final

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

11. Radio Frequency Emissions

Prior to the final building permit sign off.

The applicant shall submit a certified RF emissions report stating the facility is operating within the acceptable standards established by the regulatory Federal Communications Commission.

12. Operational

Ongoing.

Noise levels from the activity, property, or any mechanical equipment on site shall comply with the performance standards of Section 17.120 of the Oakland Planning Code and Section 8.18 of the Oakland Municipal Code. If noise levels exceed these standards, the activity causing the noise shall be abated until appropriate noise reduction measures have been installed and compliance verified by the Planning and Zoning Division and Building Services.

13. Equipment cabinets

Prior to building permit Issuances.

The applicant shall submit revised elevations showing associated equipment cabinets are concealed within a single equipment box that is painted to match the utility pole, to the Oakland Planning Department for review and approval.

14. Radio Frequency Emissions

Prior to the final building permit sign off

The applicant shall submit a certified RF emissions report stating the facility is operating within the acceptable standards established by the regulatory Federal Communications Commission.

15. Public Works Review

Prior to submitting a building permit application

The plans shall receive a satisfactory review from the Public Works Agency, incorporating any required modifications.

16. Revised Plan

Prior to issuance of building permit.

Revised detail site plan to scale shall be submitted for review and approved by the Planning Bureau.

17. Height limitation

Ongoing

The Planning Bureau recommended approval, and the City Planning Commission approved a monopole height of 29'.

18. Pole Color

Prior to a building permit final

The pole shall be painted a dark green color to match and blend in with the mature trees and vegetation around the proposed location.

19. Traffic Sign consolidation onto new pole

Prior to submitting a building permit application

The proposed traffic sign consolidation onto new pole is subject to the City of Oakland Department of Traffic approval. The applicant shall present the proposal to consolidate the sign to DOT for review and shall be responsible for sign installation if approved.

NOTE:

A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

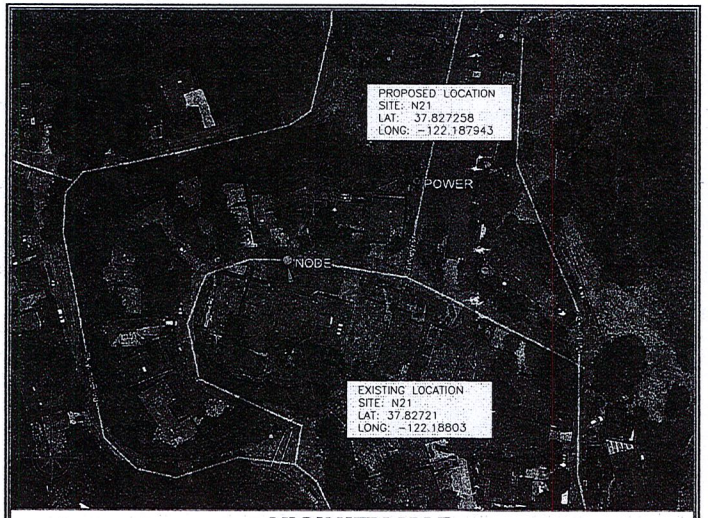
SIGNATURE:

CROWN CASTLE

Attachment A

NODE N21 RELOCATION
PIEDMONT PINES RULE20 UNDERGROUNDING PH. 1
2842 BURTON DR.
OAKLAND, CA 94720

Attachment A



VICINITY MAP

DIG ALERT
1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

TICKET # _____

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	0
2	SITE OVERVIEW	0
3	EXISTING NODE PHOTO & PROPOSED NODE PHOTO SIM	0
4	POLE & EQUIPMENT PROFILE	0
5	ENCLOSURE AND MOUNTING HARDWARE	0
6	EQUIPMENT SPECIFICATIONS	0

SHEET INDEX

ATERIALS SHALL BE PERFORMED AND INSTALLED IN H THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. ANSI/EIA-222-F LIFE SAFETY CODE NFPA-101-1990
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	CROWN CASTLE
PROJECT:	NODE N21 RELOCATION PIEDMONT PINES RULE20 UNDERGROUNDING PH. 1
NODE:	N21 (OAKLAND HILLS)
LATITUDE:	37.827258
LONGITUDE:	-122.187943
STREET ADDRESS:	2838 BURTON DR.
CITY, STATE:	OAKLAND, CA 94720
POLE# :	
POLE TYPE:	(N) STEEL POLE
RAD CENTER / ANTENNA HEIGHT:	28'-0" 29'-0"
ANTENNA TYPE:	84010510 (KATHREIN SCALA)
AZIMUTH FOR ANTENNA:	N/A
POWER TO POLE:	UNDERGROUND SECONDARY
POLE ACCESS:	STREET ACCESS
POLE OWNER:	CROWN CASTLE
POLE LOCATION & DESCRIPTION:	NOT AVAILABLE

PROJECT SUMMARY

THE PROJECT CONSISTS OF THE INSTALLATION OF A STEEL POLE, FOUNDATION, ANTENNA, AND MISC. PASSIVE EQUIPMENT WHICH WILL BE OWNED, OPERATED AND MAINTAINED BY CROWN CASTLE.

PROJECT DESCRIPTION

INSTALL STEEL POLE AND FOUNDATION IN ACCORDANCE WITH WITH CONSTRUCTION SPECIFICATIONS.

INSTALL (N) ABOVE GROUND CABINET WITH (N) FOUNDATION.

INSTALL OMNI ANTENNA AND ALL ASSOCIATED BRACKETS ON POLE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.

INSTALL NEW UNDERGROUND FIBER AND POWER CONDUIT EXTENSION OFF EXISTING UNDERGROUND FACILITIES.

PROJECT SCOPE

DO NOT SCALE DRAWINGS

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

GENERAL CONTRACTOR NOTES

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

4/7/2017

PERMIT SUBMISSION:

REV.	DATE	DESCRIPTION	BY
1	3/16/2016	CREATE DRAWING	A
2	3/6/2017	MOVE NEW LOCATION	A
3	4/7/2017	ADDED SCALE	Z

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

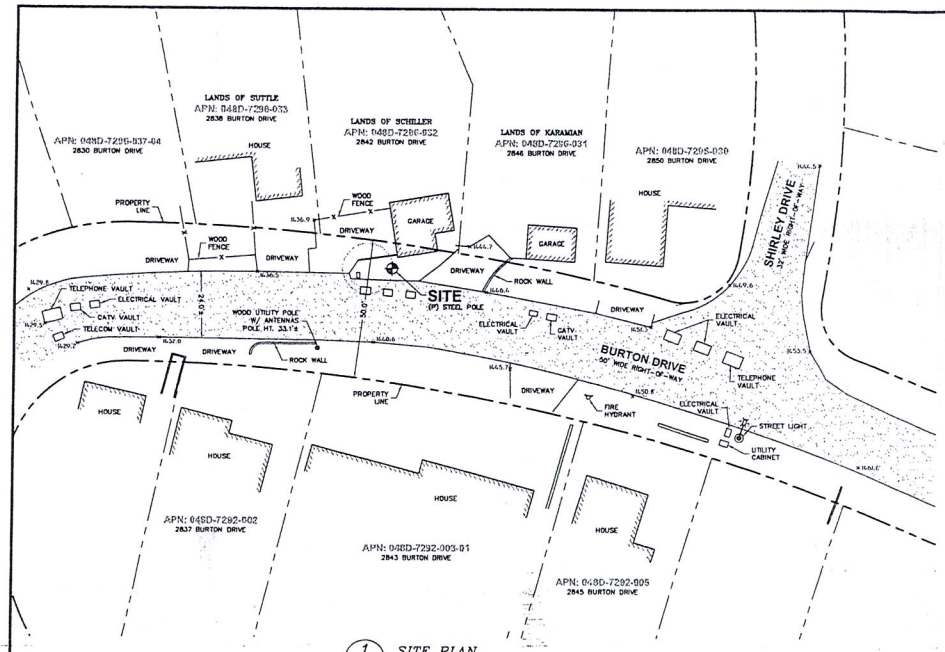
COMMENTS:

SHEET TITLE:

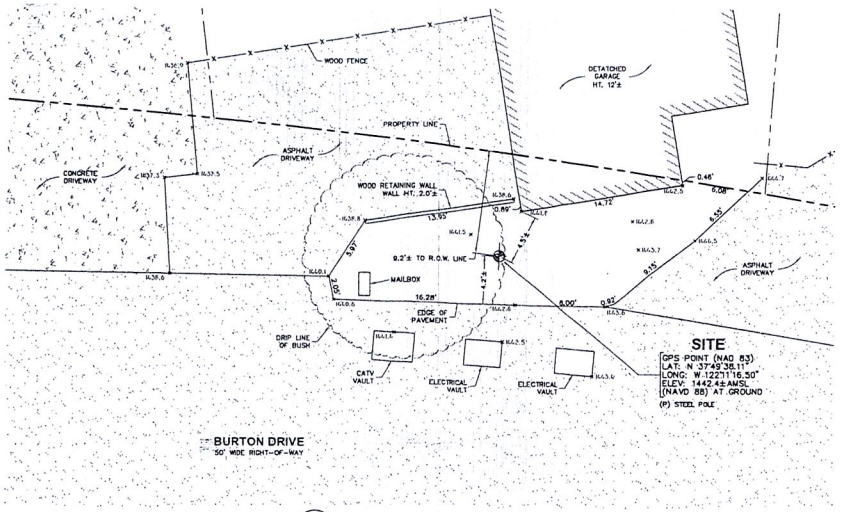
CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
TITLE SHEET

SHEET NUMBER: 1 REVISION: 3

1 OF 6

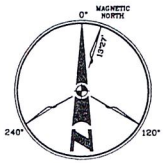


1 / C1 SITE PLAN
SCALE: 1" = 20'



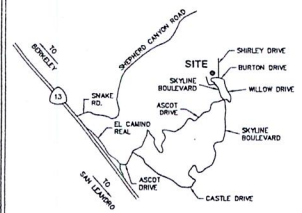
2 / C1 ENLARGED SITE PLAN
SCALE: 1" = 5'

SUFFICIENT SURVEY EVIDENCE WAS NOT RECOVERED TO ESTABLISH THE POSITION OF THE BOUNDARY LINES SHOWN HEREON. THE BOUNDARY REPRESENTED ON THIS MAP IS BASED ON COMPILED RECORD DATA AND BEST FIT ONTO EXISTING IMPROVEMENTS. IT IS POSSIBLE FOR THE LOCATION OF THE SUBJECT PROPERTY TO SHIFT FROM THE PLACEMENT SHOWN HEREON WITH ADDITIONAL FIELD WORK AND RESEARCH. THERE IS NO SPATIAL REFERENCE MADE OR SHOWN BETWEEN THE RELATIONSHIP OF THE SUBJECT PROPERTY AND EXISTING GROUND FEATURES. EASEMENTS OF LEASE LINES SHOWN HEREON ARE INTENDED TO BE APPROXIMATE AND IS SUBJECT TO VERIFICATION BY RESOLVING THE POSITION OF THE BOUNDARY LINES.



QUIET RIVER
Land Services Inc.
1 1/2 0 1
SCALE IN INCHES
MAGNETIC DECLINATION = 13°27'
PER NOAA-NGDC

VICINITY MAP
NOT TO SCALE



PROPERTY INFORMATION

Owner: CITY OF OAKLAND PUBLIC RIGHT-OF-WAY
Address: 1 FRANK H. OGAWA PLAZA
OAKLAND, CA 94612

Site: NODE N21
Address: 2838 BURTON DRIVE
OAKLAND, CA 94720

Assessor's Parcel Number: PUBLIC RIGHT-OF-WAY

Height of Building/Tower: N/A

Title Report:
NO TITLE REPORT FURNISHED. EXCEPTIONS TO THE TITLE AND RESERVATIONS THEREFROM COULD NOT BE DETERMINED. BOUNDARY INFORMATION SHOWN IS COMPILED FROM AVAILABLE RECORD DATA.

Legal Description:
PROPERTY SITUATED IN THE CITY OF OAKLAND, COUNTY OF ALAMEDA, STATE OF CALIFORNIA.

FEMA FLOOD ZONE DESIGNATION
National Flood Insurance Program

County: ALAMEDA Effective Date: AUGUST 3, 2009
Community-Panel Number: 060010-0080-G
The Flood Zone Designation for this site as plotted by scale is:

ZONE X (no shading) – Areas determined to be outside the 0.2% annual chance floodplain.

SURVEY DATA

NAD 83 Datum:
Lat: N 37°49'38.11" Long: W 122°11'16.50"
Datum Base: NAD 83 Equipment Used: Topcon Hiperlite Receiver (See Note 2)
Site Ground Elevation: 1442.4± AMSL (NAVD 88) AT SITE LOCATION
Basis of Elevations:
GLOBAL POSITIONING SYSTEM (GPS)
(SEE NOTE 2)
Basis of Bearings:
SPCS3 CALIFORNIA COORDIANTES ZONE III AND BEST FIT WITH EXISTING IMPROVEMENTS
Date of Field Survey: SEPTEMBER 29, 2016

NOTES

1.) This is not a boundary survey. This is a specialized topographic map with property lines and monuments being a graphic depiction of various information gathered from preliminary title reports, back-up documents of record, maps and available monuments found during the field survey. No property monuments were set. No title research was performed by Quiet River Land Services, Inc.

2.) The latitude, longitude and elevation shown hereon were derived from post-processed L1/L2 GPS data collected using Navstar Global Positioning System (GPS) and a Topcon Hiperlite Receiver. Topcon specifications report decimeter level accuracy (horizontally) when data is properly collected and processed. (Elevation = ±3.0 feet.)

3.) Unless otherwise noted, no underground utility locating service company was contacted prior to this map being prepared; therefore, there may be non-visible or obscure utilities existing on the property not shown on this map – see CALL BEFORE YOU DIG.

4.) Any electronic digital media provided by Quiet River Land Services, Inc. to our client is a courtesy and is not to be reproduced, distributed, sold, altered, revised, edited or amended without the express written consent of an Officer of Quiet River Land Services, Inc. Further, only the final stamped, signed and dated original "hard copy" version of our survey or map is considered to be our legally recognized product.

SURVEYOR'S STATEMENT

I, the undersigned, a Registered Professional Land Surveyor licensed under the laws of the State of California do hereby state that the information, measurements, easements, record boundary lines, bearings and distances as shown hereon are based upon a field survey as noted above and upon items of public record and data contained in a title report, as referenced. Furthermore, the Latitude and Longitude coordinates are reported in NAD 83 Datum and are accurate to within ±15 feet horizontally, and the ground elevation, reported in NAVD 1988 Datum, is within ±3 feet vertically. The coordinate values and elevations are based on the 1-A Accuracy Code designation as listed in the A.S.A.C. Information Sheet #1.003 and are accurate to the best of my knowledge and belief.

SIGNATURE DATE

LEGEND

APN:	ASSESSOR'S PARCEL NUMBER		ASPHALT
CP	CONTROL POINT		CONCRETE
EL.	ELEVATION		CONTROL POINT
FH	FIRE HYDRANT		FOUND MONUMENT
FND.	FOUND		GPS POINT
HT.	HEIGHT	P 15.3 / R 12.3	PARAPET/ROOF ELEVATIONS
(E)	EXISTING	+ 12.3	SPOT ELEVATION
(M-M)	MONUMENT TO MONUMENT		TEMPORARY BENCHMARK
P.O.B.	POINT OF BEGINNING		
P.O.C.	POINT OF COMMENCEMENT		
PP	POWER POLE		
(TYP.)	TYPICAL		

DATE:	NOVEMBER 7, 2016
DRAWN BY:	RO
FILE NO.:	HPCM1601

REVISIONS

DATE	DESCRIPTION	INITIAL
10/14/16	100% ISSUE	RO
11/7/16	CLIENT REDLINES	RO

CROWN CASTLE

QUIET RIVER
Land Services Inc.
11501 Dublin Boulevard, Suite 200
Dublin, CA 94568
(925) 734-6788 Phone

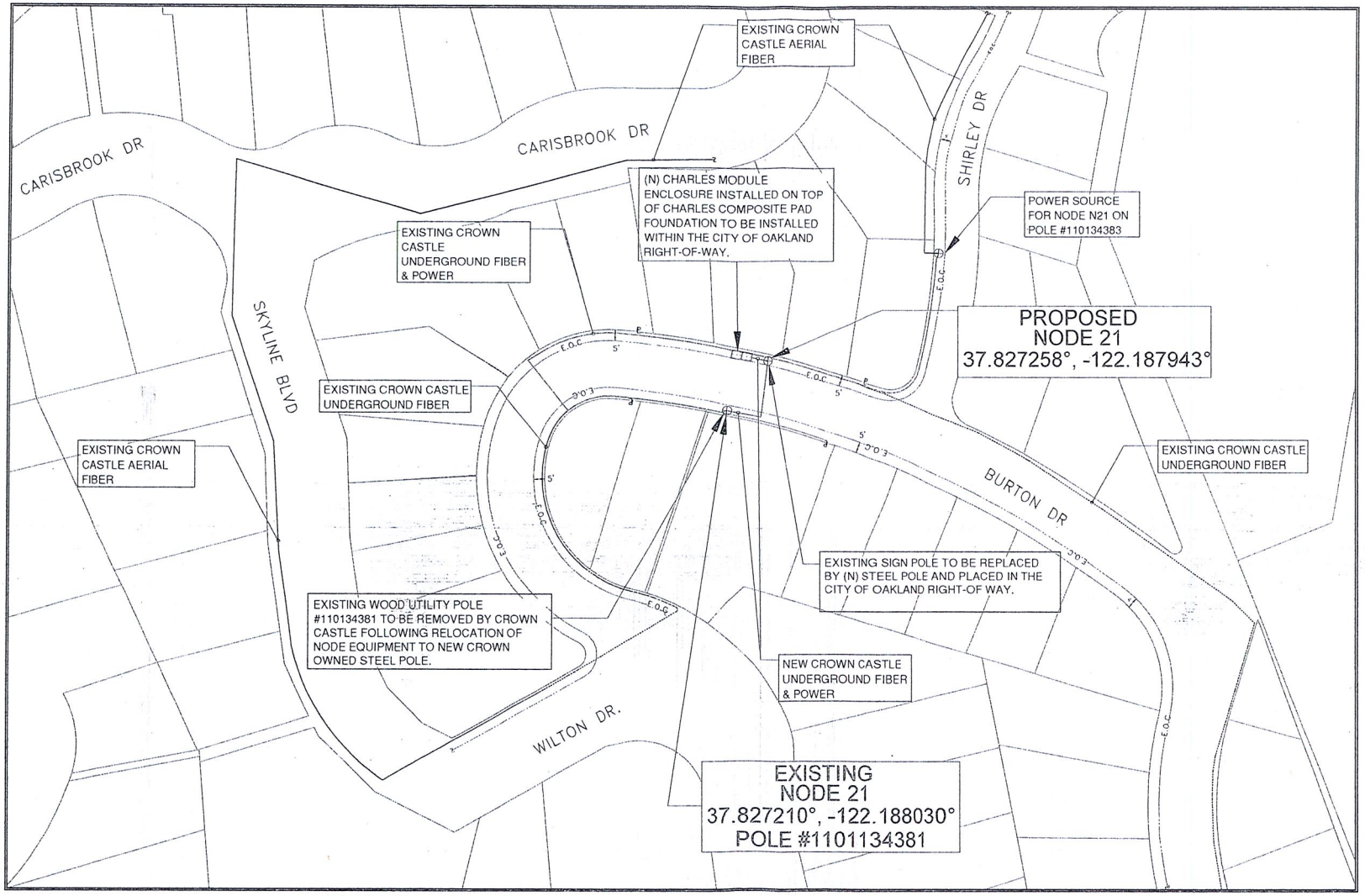
EXISTING SITE CONDITIONS

NODE N21

2838 BURTON DRIVE
OAKLAND, CA 94720

C1
OF 1 SHEET

Y:\HPCM1601\dwg\HPCM1601.dwg Nov. 07, 2016 - 9:58am mschwarz



LEGEND

- EXISTING CASTLE AERIAL FIBER
- EXISTING CROWN CASTLE UG FIBER/ CONDUIT
- EXISTING CROWN CASTLE UG FIBER/CONDUIT & POWER
- NEW CROWN CASTLE UG FIBER/CONDUIT & POWER/CONDUIT
- POLE
- MANHOLE
- VAULT

SITE OVERVIEW

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

4/7/2017

PERMIT SUBMISSION:

REV.	DATE	DESCRIPTION:
1	3/16/2016	CREATE DRAWING
2	3/6/2017	MOVE NEW LOCATION
3	4/7/2017	ADDED SCALE

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

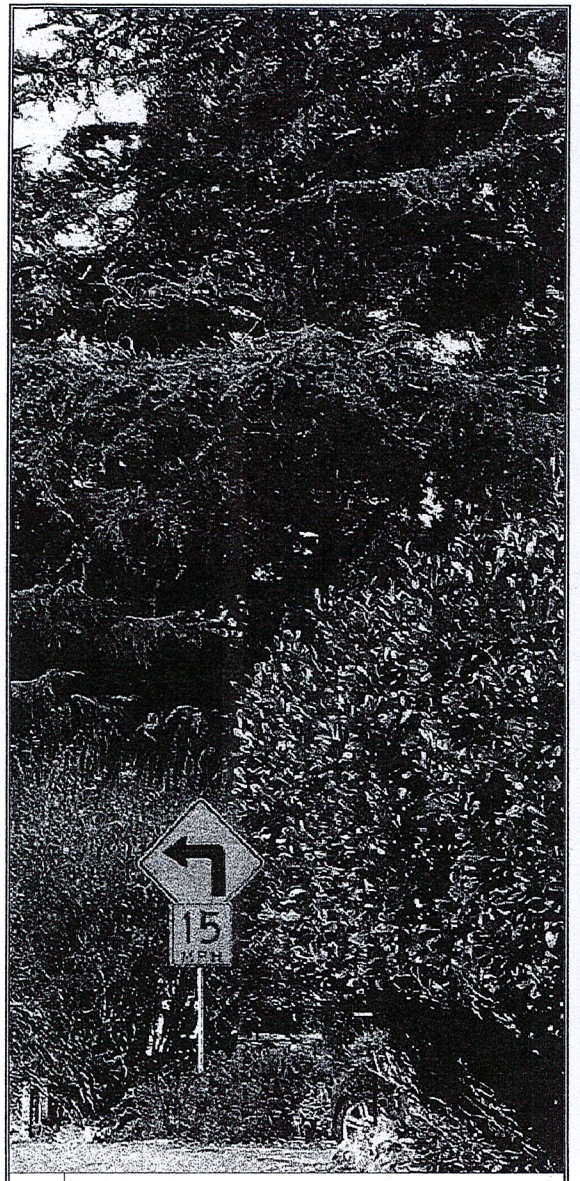
COMMENTS:

DIGALERT 1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET # _____

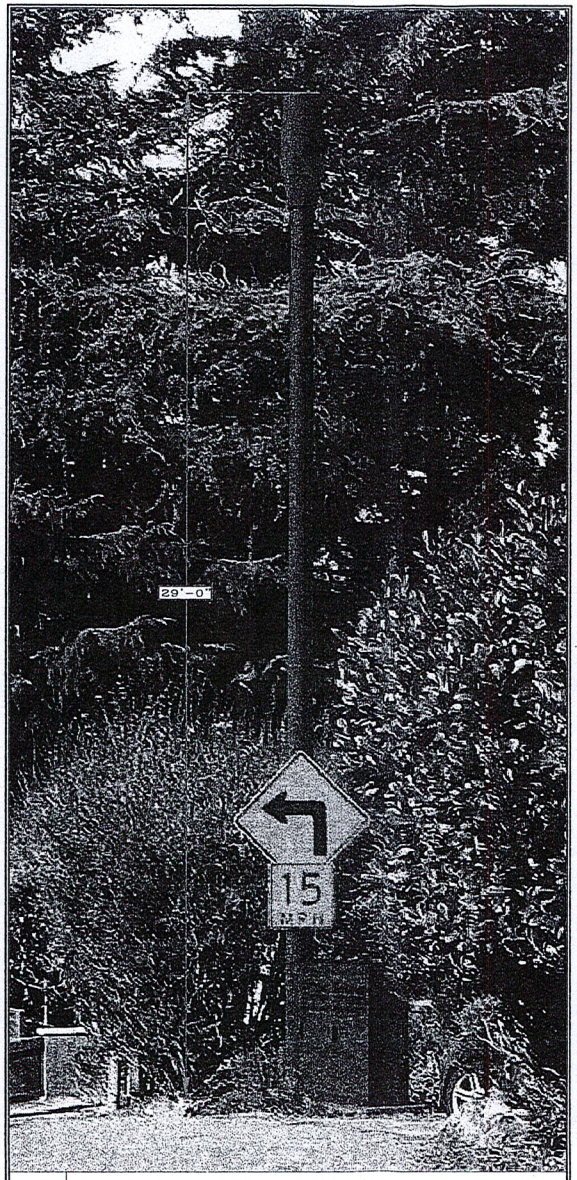
SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
SITE OVERVIEW

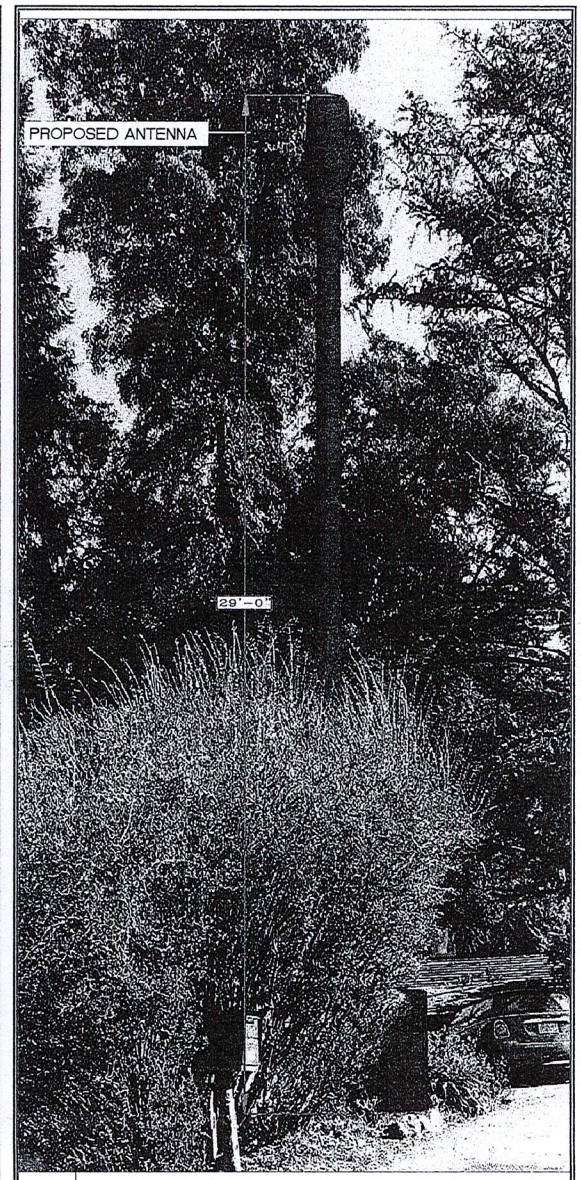
SHEET NUMBER: 2 REVISION: 3



SCALE:	EXISTING LOCATION		
N.T.S	LOOKING WEST	POLE# 110134381	A



SCALE:	PROPOSED NODE PHOTO SIM		
N.T.S	LOOKING WEST	POLE# N/A	B



SCALE:	PROPOSED NODE PHOTO SIM		
N.T.S	LOOKING EAST	POLE# N/A	C

EXISTING NODE & PROPOSED NODE PHOTO SIM

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

4/7/2017

PERMIT SUBMISSION:

REV.	DATE:	DESCRIPTION:	BY:
1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC
3	4/7/2017	ADDED SCALE	Z

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

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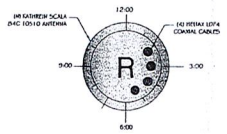
TICKET #

SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
EXISTING NODE PHOTO & PROPOSED NODE PHOTO SIM

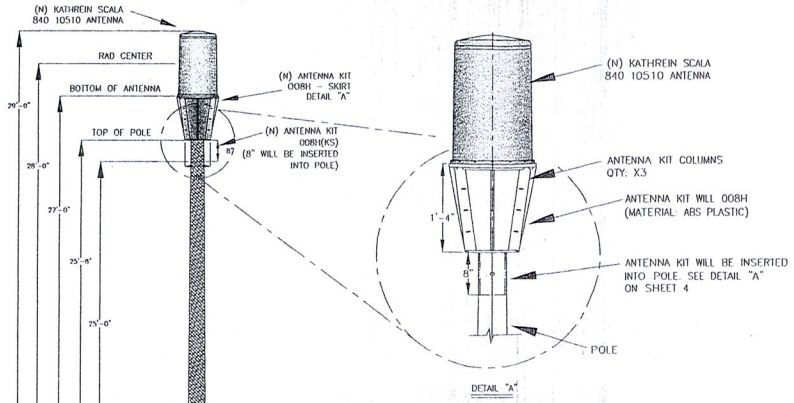
SHEET NUMBER: 3 | REVISION: 3

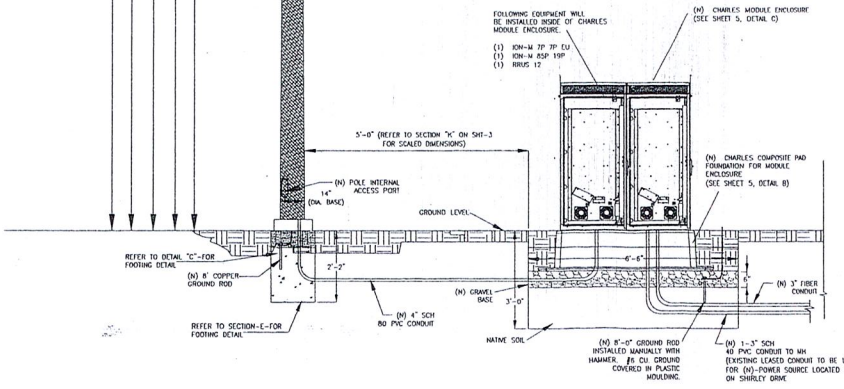
(4) HELIAX LDF4 COAXIAL CABLES
ALL COAX CABLES ARE TO BE INSTALLED INSIDE PROPOSED POLE\P(4) HELIAX LDF4 COAXIAL CABLES

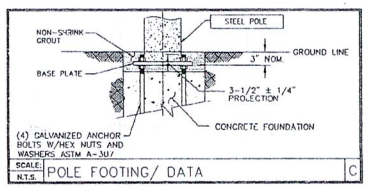


POLE# N/A

SCALE: N.T.S. | RISER POLE DETAIL | B







SCALE: N.T.S. | POLE FOOTING/ DATA | C

SCALE: 1/8"=1' | UTILITY POLE DETAIL | POLE# N/A | LOOKING SOUTH | A

MAKE READY

N/A

NEW CONSTRUCTION

CROWN CASTLE TO INSTALL (N) CONCRETE FOUNDATION FOR STEEL POLE, (N) STEEL POLE, (N) ANTENNA MOUNTING KIT, (N) ANTENNA, (N) COMPOSITE PAD FOUNDATION, (N) MODULE ENCLOSURE, (N) CONDUIT FROM MODULE ENCLOSURE TO STEEL POLE AND EQUIPMENT WITHIN MODULE ENCLOSURE.

INSTALL NEW UNDERGROUND FIBER AND POWER CONDUIT EXTENSION OFF EXISTING UNDERGROUND FACILITIES.

NOTES:

TOP OF POLE: 25'-8"

PROPOSED RAD CENTER OF ANTENNA: 28'-0"

ANTENNA TYPE: 24" HEIGHT X 16" DIA KATHREIN SCALA CYLINDER ANTENNA.

ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

4/7/2017

PERMIT SUBMISSION:

REV.	DATE:	DESCRIPTION:	E
1	3/16/2016	CREATE DRAWING	A
2	3/6/2017	MOVE NEW LOCATION	A
3	4/7/2017	ADDED SCALE	

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

COMMENTS:

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TICKET #

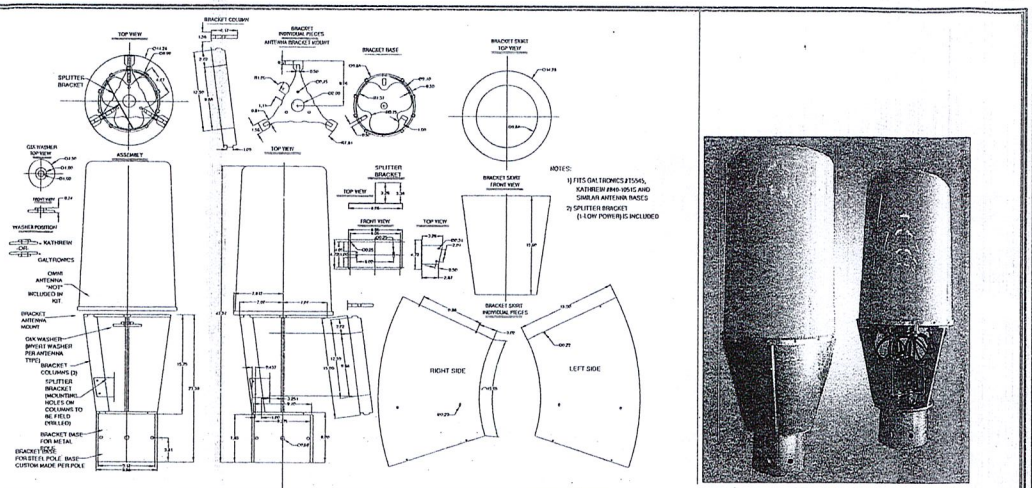
SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
POLE & EQUIPMENT PROFILE

SHEET NUMBER: 4 | REVISION: 3

4 OF

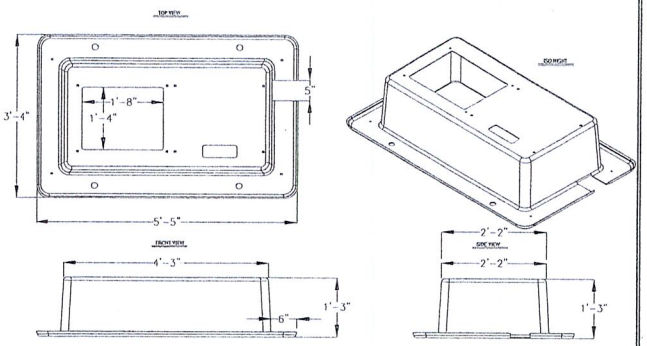
POLE & EQUIPMENT PROFILE



SCALE: NTS

ANTENNA BRACKET ASSEMBLY / KIT 008H

A

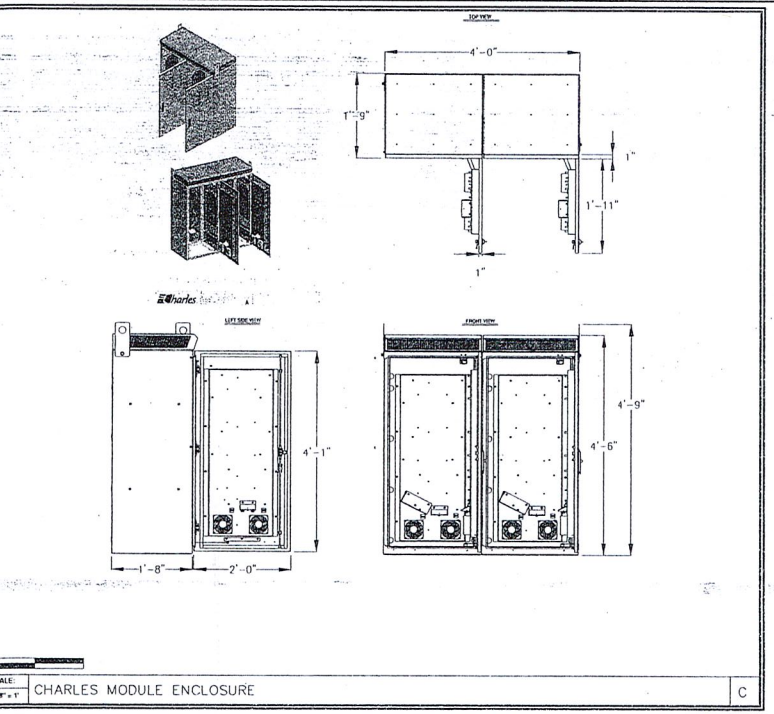


SPECIFICATIONS
1. LOAD TESTED TO 12,000LB WITH LESS THAN 0.1" DEFLECTION
2. CABINET PULLOVER FORCE EXCEDS 150 MPH WIND FORCE PER TELECORDIA GR-487
3. MEETS ANSI/SCTE-77, PER ENVIRON LABS TESTING
   - FLAMMABILITY
   - UV EXPOSURE
   - WATER ABSORPTION
   - IMPACT RESISTANCE
   - CHEMICAL RESISTANCE
4. MEETS TELECORDIA GR-902 PER ENVIRON LABS TESTING
   - CHEMICAL RESISTANCE

SCALE: 3/8" = 1'

CHARLES COMPOSITE PAD, FOUNDATION FOR MODULE ENCLOSURE

B



SCALE: 3/8" = 1'

CHARLES MODULE ENCLOSURE

C

ENCLOSURE & MOUNTING HARDWARE

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
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2	3/6/2017	MOVE NEW LOCATION	AC
3	4/7/2017	ADDED SCALE	Z

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13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP.:

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TICKET #

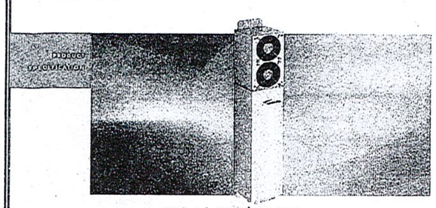
SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
ENCLOSURE &
MOUNTING HARDWARE

SHEET NUMBER: 5 REVISION: 3

ANDREW.
A CommScope Company

ION Series



ION-M7P/7P EU

Multi-band, Multi-operator Remote Optical System

Electrical

Power Supply		
Mains power, Vac		85 to 264
		115 or 230
Power consumption, Watts		530

Optical

Connectors		E2000/APC 8°
Optical return loss, dB		45 minimum
Fiber type, mm		Single mode E9/125
Optical link budget, dB		0 to 10
Composite input power @ OTRx master side, dBm	700 MHz	7.0 composite

Interface

BTS side Number of connectors	Ch1 700	1UL; 1DL
	Ch2 700	1UL; 1DL
System optimized for BTS power, dBm		33
		43
Antenna port connectors		N female 700/700/MHz
Output power		See band specification
Return loss, dB		15

700 MHz SISO/MIMO

Frequency range, MHz		
Uplink		698 to 716
		776 to 787
Downlink		728 to 757

Nominal output power per carrier *, dBm

Number of Carriers	1	2	4	8
GSM/EDGE	43	40	37	34
CDMA	43	40	37	34
UMTS	43	40	37	34
LTE	43	40	37	34

Spurious emission	< -13 dBm/1 MHz
Spurious emission into Public Safety Narrowband	< -46 dBm/6.25 kHz
DL output tolerance over frequency, dB	±1
DL output tolerance over temperature, dB	±0.5**

Input ICP3, dBm	ICP3 optimized	-13 min
	Noise figure optimized	-19 min
Noise figure, dB	ICP3 optimized	18.5 max.
	Noise figure optimized	6 max., 5 dB typ.

System Supervision and Control

Commands	RF on/off
Alarms	Summary Power supply RF UL and DL failure Temperature
Supervision	Composite output power per channel
Support	rms power per channel

Mechanical ***

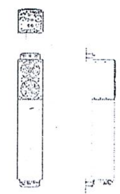
Height, width, depth mm (in)	831 x 156 x 147 (32.7 x 6.1 x 5.8)
Weight, kg (lb)	20 (44)

Environmental

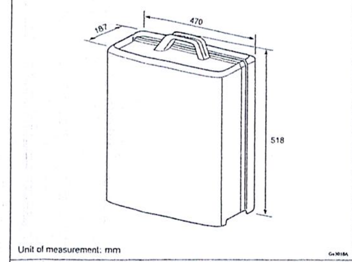
Operating temperature range, °C		-33 to +50
Ingress protection	RF part	IP67
	Fan part	IP55

* Applicable to single modulation mode only
** With active cooling
*** Spacing required 40 mm (1.58 in) around unit

All figures are typical values unless otherwise stated.



SCALE: NTS — ION-M7P/7P EU RADIO SPECIFICATIONS — A



Unit of measurement: mm

Figure 3 RRUS 12 Height, Width, and Depth with Solar Shield

RRUS 12 Dimensions

Table 2 lists the technical data for the RRUS 12.

Table 2 RRUS 12 Technical Data

Description	Value
Maximum nominal output power	2x10 W, 2x20 W, 2x30 W, 2x40 W, 2x50 W, and 2x60 W (subject to license handling)

Description	Value
Number of carriers	WCDMA and LTE: One to four carriers. GSM: One to eight carriers. CDMA: One to eight carriers. (subject to license handling)
Frequency[(1)]	1,920 to 1,980 MHz uplink
	2,110 to 2,170 MHz downlink
	B1 for WCDMA and LTE
	1,850 to 1,910 MHz uplink
	1,930 to 1,990 MHz downlink
	B2 for GSM, WCDMA, and LTE
	1,710 to 1,785 MHz uplink
	1,805 to 1,880 MHz downlink
	B3 for GSM, WCDMA, and LTE
	880 to 915 MHz uplink
	925 to 960 MHz downlink
	B8 for GSM and WCDMA
Dimensions with Solar Shield and Handle and Feet	
Height	518 mm
Width	470 mm
Depth	190 mm
Dimensions without Solar Shield and without Handle or Feet	
Height	418 mm
Width	458 mm
Depth	159 mm
Weight	
RRUS 12 B1 and RRUS B2	22.4 kg
RRUS 12 B3 and RRUS 12 B8	26.3 kg
Color	
Gray	

SCALE: NTS — RRU-12 RADIO SPECIFICATIONS — B

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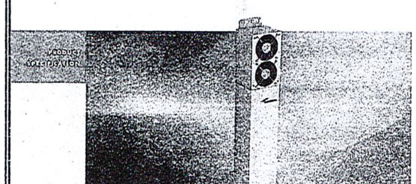


ION-M85P/19P

Electrical

Power Supply		
Mains power, Vac		85 to 264
		115 or 230
	Option, Vdc (on request)	36 to 76
Power consumption, watts		550

Optical

Connectors		E2000/APC 8°
Optical return loss, dB		45 minimum
Fiber type,mm		Single mode E9/125
Optical link budget, dB		0 to 10
Composite input power @ OTRx master side, dBm	700 MHz	3.0 composite
	850 MHz	3.0 composite
	1900 MHz	3.0 composite
	2100 MHz	5.0 composite

Interface

BTS Side		
Number of connectors	850 MHz	n x 4
	1900 MHz	n x 4
	2100 MHz	n x 4
	700 MHz	n x 1
System optimized for BTS power, dBm		33
		43
Antenna Port		
Connector		N Female 850/1900 MHz
Output power		See band specification
Return loss, dB		15

850 MHz

Frequency range, MHz	
Uplink	824 to 849
Downlink	869 to 894
Output power per carrier*, dBm	

1900 MHz

Frequency range, MHz	Uplink	1850 to 1915
	Downlink	1930 to 1995

Output power per carrier*, dBm

Number of Carriers	1	2	4	8
GSM	43	40	37	34
TDMA/EDGE	43	40	37	34
CDMA/EV-DO	43	40	37	34
WCDMA/HSPA	42	39	36	33

Spurious emission		<-13 dBm / 1 MHz
DL output tolerance over frequency, dB		±1
DL output tolerance over temperature, dB		±0.5**
Input ICP3, dBm	ICP3 optimized	-12
	Noise figure optimized	-18
Noise figure, dB	ICP3 optimized	7
		10 max
	Noise figure optimized	4.5
		6 max.

System Supervision and Control

Commands	RF on/off External control ports
Alarms	Summary Power supply Optical UL and DL failure Temperature
Supervision	Composite output power Power detector for transmit power with configurable alarm levels (Optional)

Mechanical***

Height, width, depth mm (in)		831 x 156 x 147 (32.7 x 6.1 x 5.8)
Weight, kg (lb)	ION-M85P/19P	20 (44)
	ION-M17P EU	13 (28.6)
	ION-M7P/7P EU	16 (35)

SCALE: NTS — ION-M 85P/19P RADIO SPECIFICATIONS — C

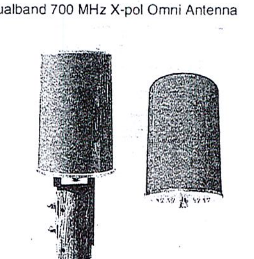
KATHREIN
SCALA DIVISION

840 10510 840 10511

Dualband 700 MHz X-pol Omni Antenna

Kathrein's dual band antennas are ready for LTE applications, covering all existing wireless bands as well as all spectrum under consideration for future systems.

- Wide band operation.
- Exceptional intermodulation characteristics.
- High strength fiberglass radome.



General specifications:

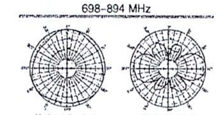
Frequency range	698–894 MHz 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° upper and lower band -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intrasystem	>30 dB
Isolation intersystem	>40 dB (698–894 // 1710–2170 MHz)
Radome color	Brown or grey
Weight	45 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load Side	at 93 mph (150kph) 32 lbf (138 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer.

See reverse for order information.

* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

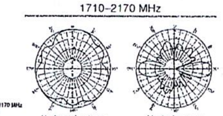
Specifications:	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.5 dBi	6.5 dBi	9 dBi	9 dBi	8.5 dBi
	(with 1–4 dB nulls, typical)		(with 8–10 dB nulls, typical)		
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half-power)	30° (half-power)	19° (half-power)	17° (half-power)	17.5° (half-power)

698–894 MHz



Horizontal pattern ±45°-polarization — Vertical pattern ±45°-polarization

1710–2170 MHz



Horizontal pattern ±45°-polarization — Vertical pattern ±45°-polarization

SCALE: NTS — KATHREIN SCALA 840 10510 ANTENNA — D

EQUIPMENT SPECIFICATIONS

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

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2	3/6/2017	MOVE NEW LOCATION
3	4/7/2017	ADDED SCALE

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Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

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TICKET #

SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
EQUIPMENT SPECIFICATIONS

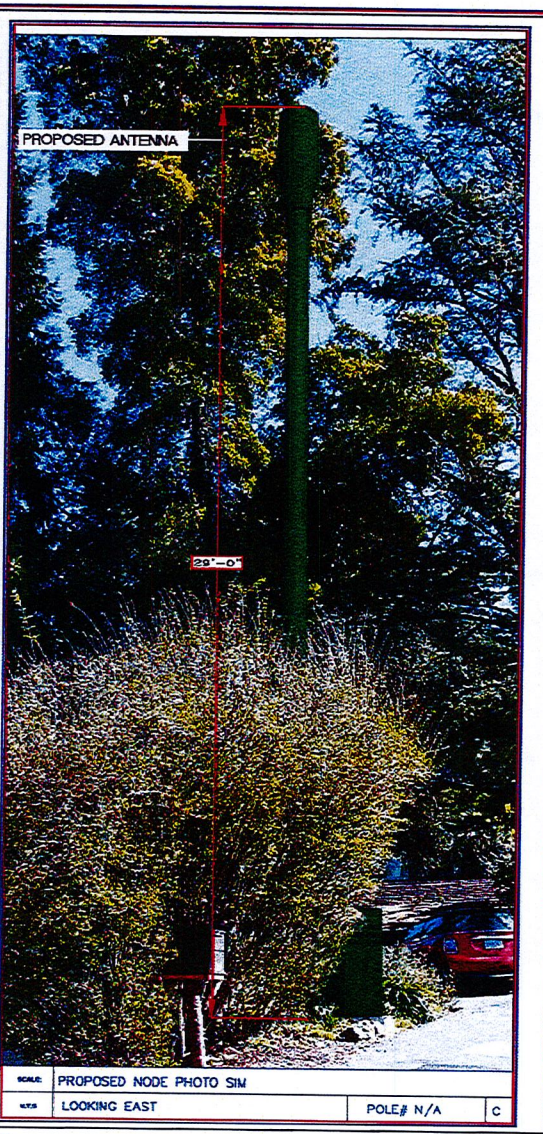
SHEET NUMBER: 6 — REVISION: 3

6 OF

Attachment A

SCALE:	EXISTING LOCATION		
N.T.S	LOOKING WEST	POLE# 110134381	A

SCALE:	PROPOSED NODE PHOTO SIM		
N.T.S	LOOKING WEST	POLE# N/A	B



SCALE:	PROPOSED NODE PHOTO SIM		
N.T.S	LOOKING EAST	POLE# N/A	C

EXISTING NODE & PROPOSED NODE PHOTO SIM

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 554-1580

PROJECT INFORMATION:
2838 BURTON DR.
OAKLAND, CA 94720

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1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC

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PHONE: (951) 471-1919

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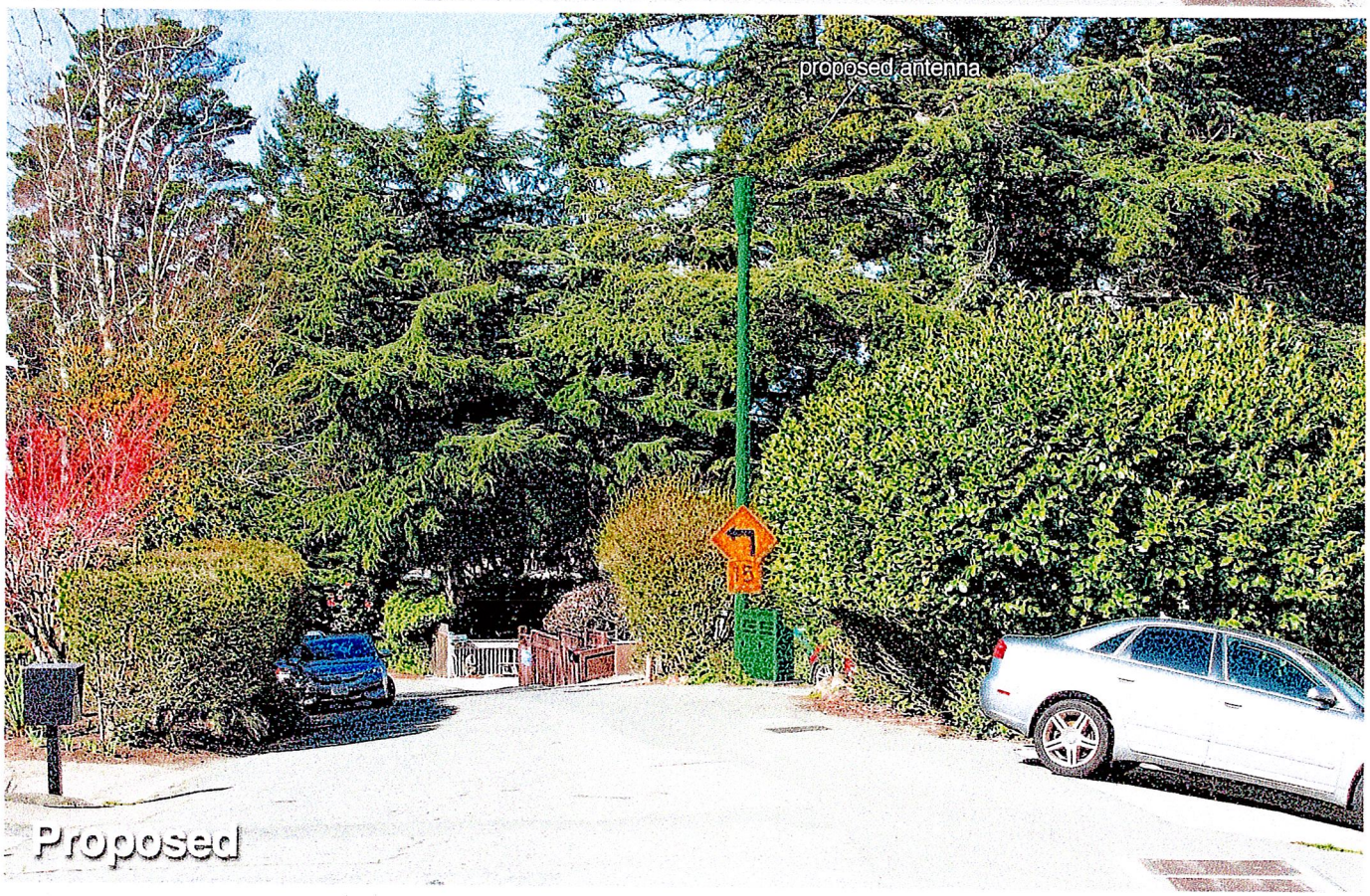
CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
EXISTING NODE PHOTO &
PROPOSED NODE PHOTO SIM

SHEET NUMBER: 3 OF 6
REVISION: 0



CROWN CASTLE

Piedmont Pines Rule 20 Undergrounding PH 1 Site # N21

Looking West from Burton Drive

2838 Burton Drive
Oakland, CA

3/10/17

View #1

Applied Imagination 510 914-0500

CROWN CASTLE

3/10/17

Piedmont Pines Rule 20 Undergrounding PH 1 Site # N21

2838 Burton Drive
Oakland, CA

Looking East from Burton Drive

View #2

Applied Imagination 510 914-0500

Attachment A

SCALE:	EXISTING WOOD UTILITY POLE & NODE		
N.T.S	LOOKING SOUTH	POLE# 110134381	A

Attachment B

JERROLD T. BUSHBERG Ph.D., DABMP, DABSNM, FAAPM, FHPS
♦HEALTH AND MEDICAL PHYSICS CONSULTING♦

7784 Oak Bay Circle Sacramento, CA 95831
(800) 760-8414–jbushberg@hampc.com

Ernesto Figueroa
Sr. RF Engineer
Crown Castle
695 River Oaks Parkway
San Jose, CA 95134

March 10, 2017

Introduction

This report provides an analysis of the technical specifications the proposed Crown Castle wireless facilities in order to determine compliance with public and occupational radiofrequency (RF) safety standards. The project scope for Crown Castle includes the installation of new wireless equipment and all associated brackets on utility poles in the public right-of-way in accordance with the construction specifications and governing construction guidelines as depicted in the node configuration drawing (attachment 1). These nodes will be used for wireless telecommunications transmission and reception utilizing one omni-directional Kathrein Scala antennae model 840-10510 mounted to a utility pole. The antenna and power specification details are depicted in attachment two. The distance from the antenna center to the ground for node N21m will be 28.0 feet. This analysis represents the worst case for this proposed node that is utilizing these transmission and antennae specifications. The node ID and address for this configuration proposed for Oakland Hills, CA is shown in Appendix A-0-1.

Calculation Methodology

Calculations at the level of the antenna were made in accordance with the cylindrical model recommendations for near-field analysis contained in the Federal Communications Commission, Office of Engineering and Technology Bulletin 65 (OET 65) entitled "Evaluating Compliance with FCC-Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields." RF exposure calculations at ground level were made using equation 10 from the same OET document. Several assumptions were made in order to provide the most conservative or "worse case" projections of power densities. Calculations were made assuming that all channels were operating simultaneously at their maximum design ERP. Attenuation (weakening) of the signal that would result from surrounding foliage or buildings was ignored. Buildings or other structures can reduce the signal strength by a factor of 10 (i.e., 10 dB) or more depending upon the construction material. In addition, for ground level calculations, the ground or other surfaces were considered to be perfect reflectors (which they are not) and the RF energy was assumed to overlap and interact constructively at all locations (which they would not) thereby resulting in the calculation of the maximum potential exposure. In fact, the accumulations of all these very conservative assumptions, will significantly overestimate the actual exposures that would typically be expected from such a facility. However, this method is a prudent approach that errs on the side of safety.

RF Safety Standards

The two most widely recognized standards for protection against RF field exposure are those published by the American National Standards Institute (ANSI) C95.1 and the National Council on Radiation Protection and measurement (NCRP) report #86.

The NCRP is a private, congressionally chartered institution with the charge to provide expert analysis of a variety of issues (especially health and safety recommendations) on radiations of all forms. The scientific analyses of the NCRP are held in high esteem in the scientific and regulatory community both nationally and internationally. In fact, the vast majority of the radiological health regulations currently in existence can trace their origin, in some way, to the recommendations of the NCRP.

All RF exposure standards are frequency-specific, in recognition of the differential absorption of RF energy as a function of frequency. The most restrictive exposure levels in the standards are associated with those frequencies that are most readily absorbed in humans. Maximum absorption occurs at approximately 80 MHz in adults. The NCRP maximum allowable continuous occupational exposure at this frequency is 1,000 $\mu W/cm^2$. This compares to 5,000 $\mu W/cm^2$ at the most restrictive of the PCS frequencies (~1,800 MHz) that are absorbed much less efficiently than exposures in the VHF TV band.

The traditional NCRP philosophy of providing a higher standard of protection for members of the general population compared to occupationally exposed individuals, prompted a two-tiered safety standard by which levels of allowable exposure were substantially reduced for "uncontrolled " (e.g., public) and continuous exposures. This measure was taken to account for the fact that workers in an industrial environment are typically exposed no more than eight hours a day while members of the general population in proximity to a source of RF radiation may be exposed continuously. This additional protection factor also provides a greater margin of safety for children, the infirmed, aged, or others who might be more sensitive to RF exposure. After several years of evaluating the national and international scientific and biomedical literature, the members of the NCRP scientific committee selected 931 publications in the peer-reviewed scientific literature on which to base their recommendations. The current NCRP recommendations limit continuous public exposure at PCS frequencies to 1,000 $\mu W/cm^2$.

The 1992 ANSI standard was developed by Scientific Coordinating Committee 28 (SCC 28) under the auspices of the Institute of Electrical and Electronic Engineers (IEEE). This standard, entitled "IEEE Standards for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz" (IEEE C95.1-1991), was issued in April 1992 and subsequently adopted by ANSI. A complete revision of this standard (C95.1-2005) was completed in October 2005 by SCC 39 the IEEE International Committee on Electromagnetic Safety. The current version, including minor revisions, was published in March 2010. Their recommendations are similar to the NCRP recommendation for the maximum permissible exposure (MPE) to the public PCS frequencies (950 $\mu W/cm^2$ for continuous exposure at 1,900 MHz) and incorporates the convention of providing for a greater margin of safety for public as compared with occupational exposure. Higher whole body exposures are allowed for brief periods provided that no 30 minute time-weighted average exposure exceeds these aforementioned limits.

On August 9, 1996, the Federal Communications Commission (FCC) established a RF exposure standard that is a hybrid of the current ANSI and NCRP standards. The maximum permissible exposure values used to

assess environmental exposures are those of the NCRP (i.e., maximum public continuous exposure at PCS frequencies of 1,000 $\mu W/cm^2$). The FCC issued these standards in order to address its responsibilities under the National Environmental Policy Act (NEPA) to consider whether its actions will "significantly affect the quality of the human environment." In as far as there was no other standard issued by a federal agency such as the Environmental Protection Agency (EPA), the FCC utilized their rulemaking procedure to consider which standards should be adopted. The FCC received thousands of pages of comments over a three-year review period from a variety of sources including the public, academia, federal health and safety agencies (e.g., EPA & FDA) and the telecommunications industry. The FCC gave special consideration to the recommendations by the federal health agencies because of their special responsibility for protecting the public health and safety. In fact, the maximum permissible exposure (MPE) values in the FCC standard are those recommended by EPA and FDA. The FCC standard incorporates various elements of the 1992 ANSI and NCRP standards which were chosen because they are widely accepted and technically supportable. There are a variety of other exposure guidelines and standards set by other national and international organizations and governments, most of which are similar to the current ANSI/IEEE or NCRP standard, figure one.

The FCC standards "Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation" (Report and Order FCC 96-326) adopted the ANSI/IEEE definitions for controlled and uncontrolled environments. In order to use the higher exposure levels associated with a controlled environment, RF exposures must be occupationally related (e.g., PCS company RF technicians) and they must be aware of and have sufficient knowledge to control their exposure. All other environmental areas are considered uncontrolled (e.g., public) for which the stricter (i.e., lower) environmental exposure limits apply. All carriers were required to be in compliance with the new FCC RF exposure standards for new telecommunications facilities by October 15, 1997. These standards applied retroactively for existing telecommunications facilities on September 1, 2000.

The task for the physical, biological, and medical scientists that evaluate health implications of the RF data base has been to identify those RF field conditions that can produce harmful biological effects. No panel of experts can guarantee safe levels of exposure because safety is a null concept, and negatives are not susceptible to proof. What a dispassionate scientific assessment can offer is the presumption of safety when RF-field conditions do not give rise to a demonstrable harmful effect.

Summary & Conclusions

All Crown Castle antenna systems operating with the maximal exposure conditions characteristics as specified above and observing a 5 foot (public) exclusion zone directly in front of and at the same elevation as the antenna, will be in full compliance with FCC RF public and occupational safety exposure standards (see appendix A-1). These transmitters, by design and operation, are low-power devices (see attachment 2). An RF safety notice sign, as depicted in appendix A-2 should be placed near the antenna. This sign should contain appropriate contact information and indicate that RF exposures at 5 feet or closer to the face of the antenna may exceed the FCC public exposure standard. Thus only qualified RF workers may work within the 5 foot exclusion zone. The maximum RF exposure at ground level from this node will not be in excess of 9.5% of the FCC public safety standard, (see appendix A-3). A chart of the electromagnetic spectrum and a comparison of RF power densities from various common sources is presented in figures two and three respectively in order to place exposures from wireless telecommunications systems in perspective.

Given the low levels of radiofrequency fields that would be generated from all Crown Castle omni-directional antenna installations of this configuration, (e.g., antenna specification and input power); where the center of the antenna is 28.0 or more feet above grade, and the 5 foot public exclusion zone directly in front and at the same elevation as the antenna is observed, there is no scientific basis to conclude that harmful effects will attend the utilization of these proposed wireless telecommunications facilities. This conclusion is supported by a large numbers of scientists that have participated in standard-setting activities in the United States who are overwhelmingly agreed that RF radiation exposure below the FCC exposure limits has no demonstrably harmful effects on humans.

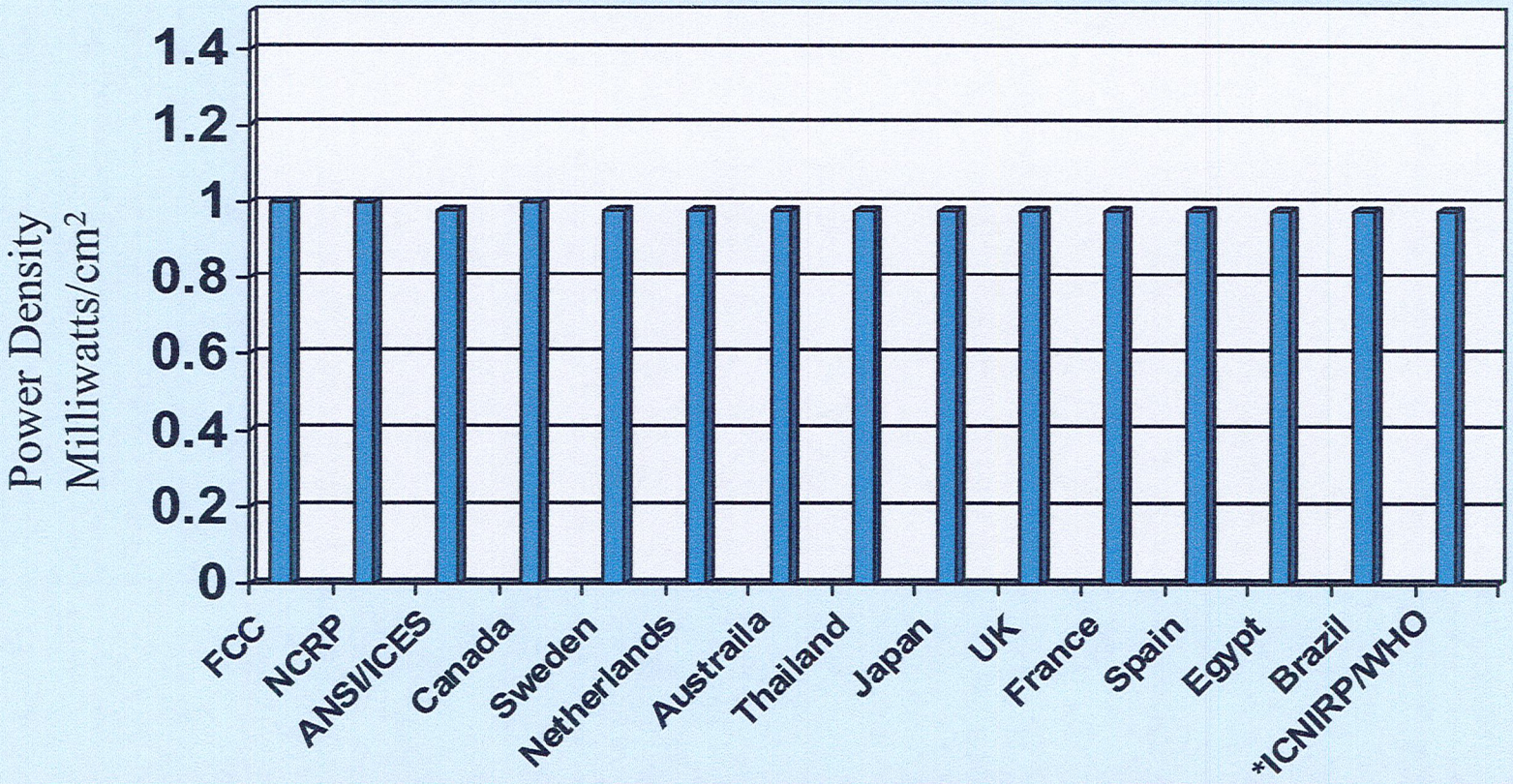
These findings are based on my professional evaluation of the scientific issues related to the health and safety of non-ionizing electromagnetic radiation and my analysis of the technical specification as provided by Crown Castle Networks. The opinions expressed herein are based on my professional judgement and are not intended to necessarily represent the views of any other organization or institution. Please contact me if you require any additional information.

Sincerely,

Jerrold T. Bushberg Ph.D., DABMP, DABSNM, FAAPM
Diplomate, American Board of Medical Physics (DABMP)
Diplomate, American Board of Science in Nuclear Medicine (DABSNM)
Fellow, American Association of Physicists in Medicine (FAAPM)
Fellow, Health Physics Society (FHPS)

Enclosures: Figures 1-3; Attachment 1,2; Appendix A-0, A-1, A-2, A-3 and Statement of Experience.

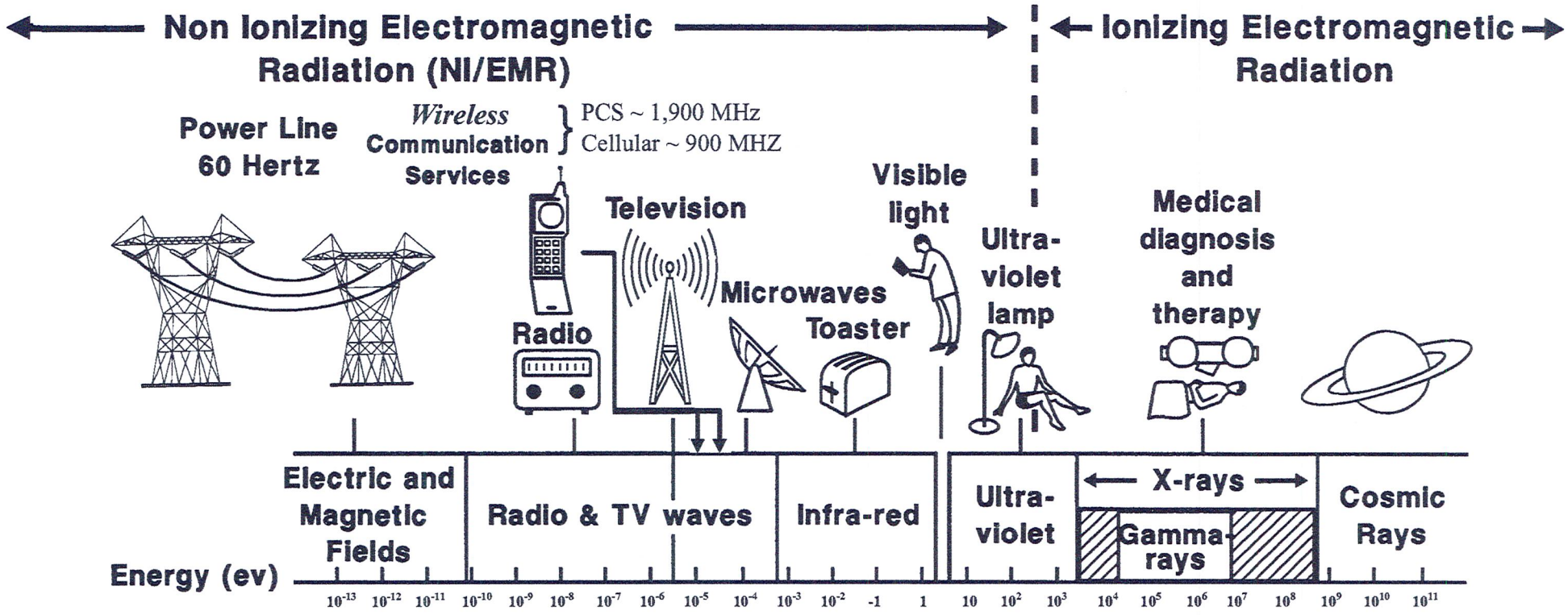
National and International Public RF Exposure Standards (DAS @ 1,950 MHz)



*International Commission on Non-Ionizing Radiation Protection (ICNIRP) Public Safety Exposure Standard. ICNIRP standard recommended by the World Health Organization (WHO). Members of the ICNIRP Scientific Committee were from:

- Australia
- Finland
- France
- Germany
- Hungary
- Italy
- Sweden
- Japan
- United Kingdom
- United States

Figure 1



The Electromagnetic Spectrum

Figure 2

Typical Exposure from Various Radio Frequency / Microwave Sources

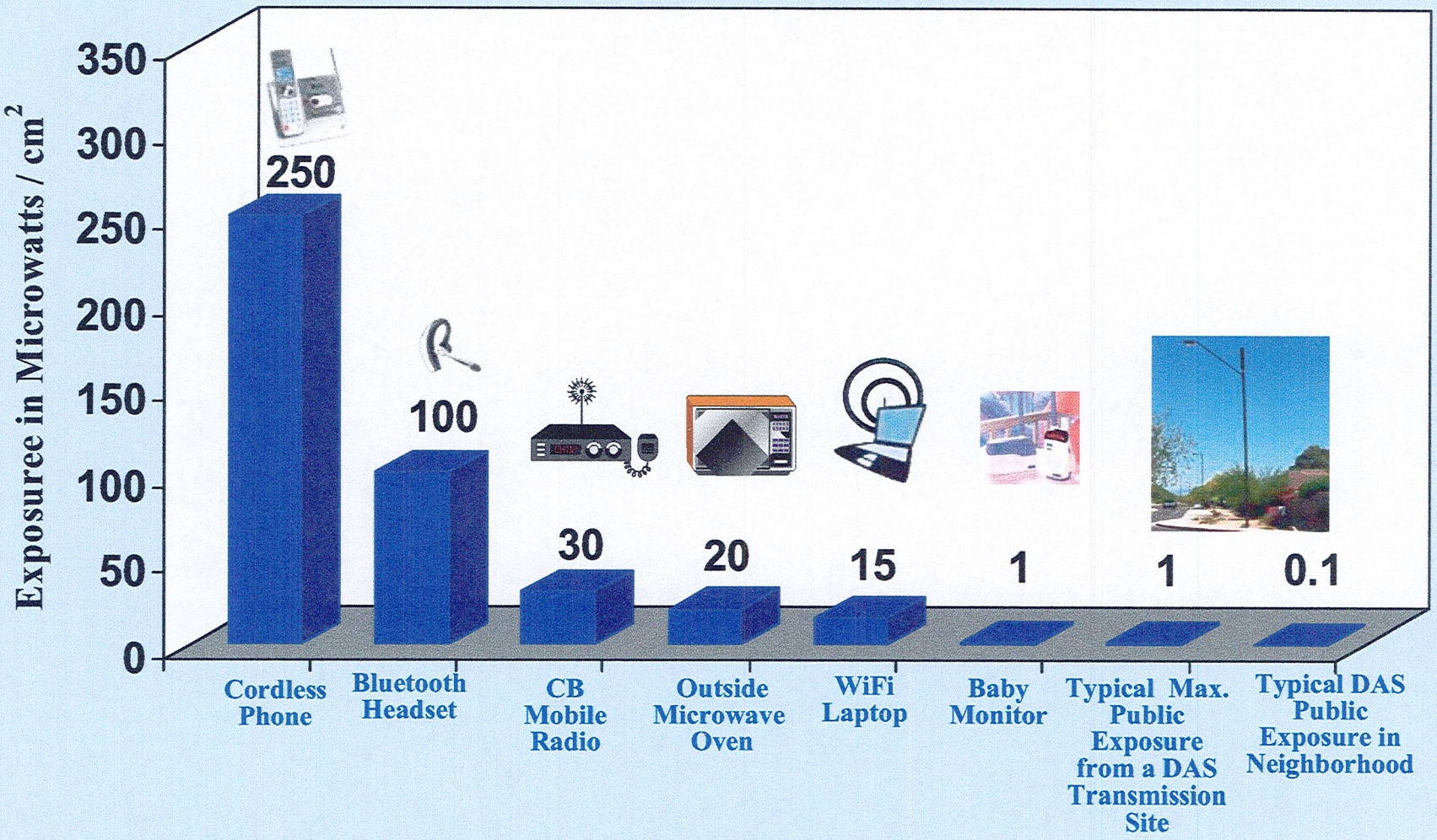


Figure 3

Attachment 1

Site Configuration Examples

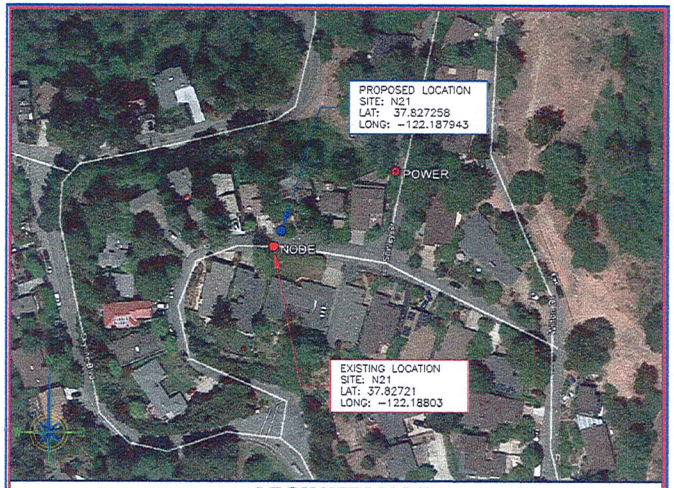
NOTE:

A COPY OF ALL REQUIRED PERMITS MUST BE PRESENT DURING ANY WORK ON THIS LOCATION AND PERFORMING WORK AT THIS LOCATION INDICATES THAT THE CONTRACTOR HAS READ AND COMPLIED WITH THE REQUIREMENTS STATED IN THE PERMITS

SIGNATURE:

CROWN CASTLE

NODE N21 RELOCATION
PIEDMONT PINES RULE20 UNDERGROUNDING PH. 1
2838 BURTON DR.
OAKLAND, CA 94720



VICINITY MAP

DIGALERT
1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET # _____

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE AREAS GOVERNING CODES.

1. STATE ADMINISTRATIVE CODE
2. STATE BUILDING CODE
3. ANSI/EIA-222-F LIFE SAFETY CODE NFPA-101-1990
4. STATE MECHANICAL CODE
5. STATE PLUMBING CODE
6. STATE ELECTRIC CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

PROPERTY INFORMATION

CUSTOMER:	CROWN CASTLE
PROJECT:	NODE N21 RELOCATION PIEDMONT PINES RULE20 UNDERGROUNDING PH. 1
NODE:	N21 (OAKLAND HILLS)
LATITUDE:	37.827258
LONGITUDE:	-122.187943
STREET ADDRESS:	2838 BURTON DR.
CITY, STATE:	OAKLAND, CA 94720
POLE# :	
POLE TYPE:	(N) STEEL POLE
RAD CENTER / ANTENNA HEIGHT:	28'-0" 29'-0"
ANTENNA TYPE:	84010510 (KATHREIN SCALA)
AZIMUTH FOR ANTENNA:	N/A
POWER TO POLE:	UNDERGROUND SECONDARY
POLE ACCESS:	STREET ACCESS
POLE OWNER:	CROWN CASTLE
POLE LOCATION & DESCRIPTION:	NOT AVAILABLE

PROJECT SUMMARY

THE PROJECT CONSISTS OF THE INSTALLATION OF A STEEL POLE, FOUNDATION, ANTENNA, AND MISC. PASSIVE EQUIPMENT WHICH WILL BE OWNED, OPERATED AND MAINTAINED BY CROWN CASTLE.

PROJECT DESCRIPTION

INSTALL STEEL POLE AND FOUNDATION IN ACCORDANCE WITH WITH CONSTRUCTION SPECIFICATIONS.

INSTALL (N) ABOVE GROUND CABINET WITH (N) FOUNDATION.

INSTALL OMNI ANTENNA AND ALL ASSOCIATED BRACKETS ON POLE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS.

INSTALL NEW UNDERGROUND FIBER AND POWER CONDUIT EXTENSION OFF EXISTING UNDERGROUND FACILITIES.

PROJECT SCOPE

SHEET	DESCRIPTION	REV.
1	TITLE SHEET	0
2	SITE OVERVIEW	0
3	EXISTING NODE PHOTO & PROPOSED NODE PHOTO SIM.	0
4	POLE & EQUIPMENT PROFILE	0
5	ENCLOSURE AND MOUNTING HARDWARE	0
6	EQUIPMENT SPECIFICATIONS	0

SHEET INDEX

DO NOT SCALE DRAWINGS

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

GENERAL CONTRACTOR NOTES

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

3/6/2017

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:_____

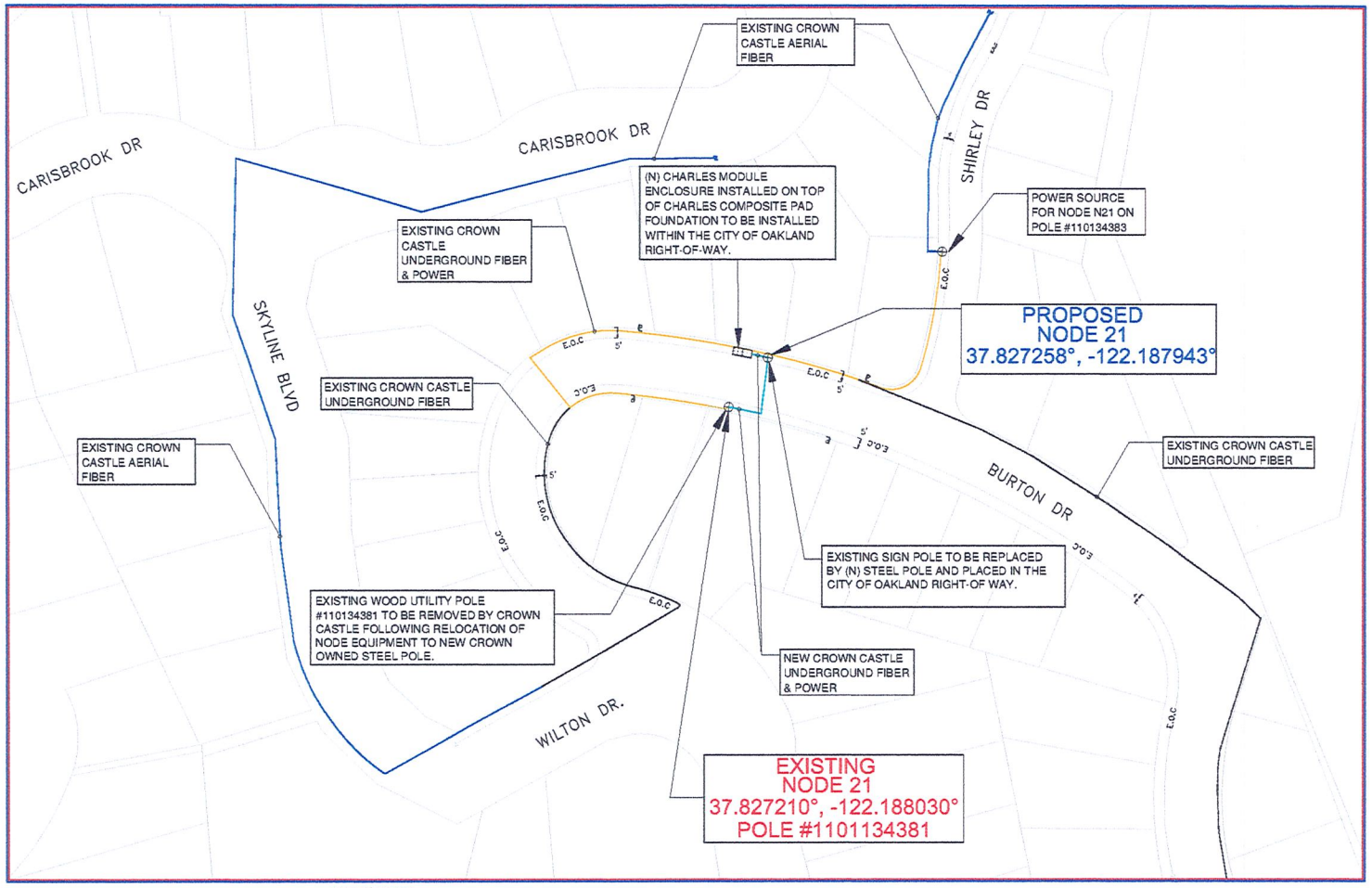
COMMENTS:

SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
TITLE SHEET

SHEET NUMBER: **1** REVISION: **0**

1 OF 6



LEGEND

- EXISTING CASTLE AERIAL FIBER
- EXISTING CROWN CASTLE UG FIBER/ CONDUIT
- EXISTING CROWN CASTLE UG FIBER/CONDUIT & POWER
- NEW CROWN CASTLE UG FIBER/CONDUIT & POWER/CONDUIT
- POLE
- MANHOLE
- VAULT

SITE OVERVIEW

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

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REV.	DATE	DESCRIPTION	BY
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PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

COMMENTS:

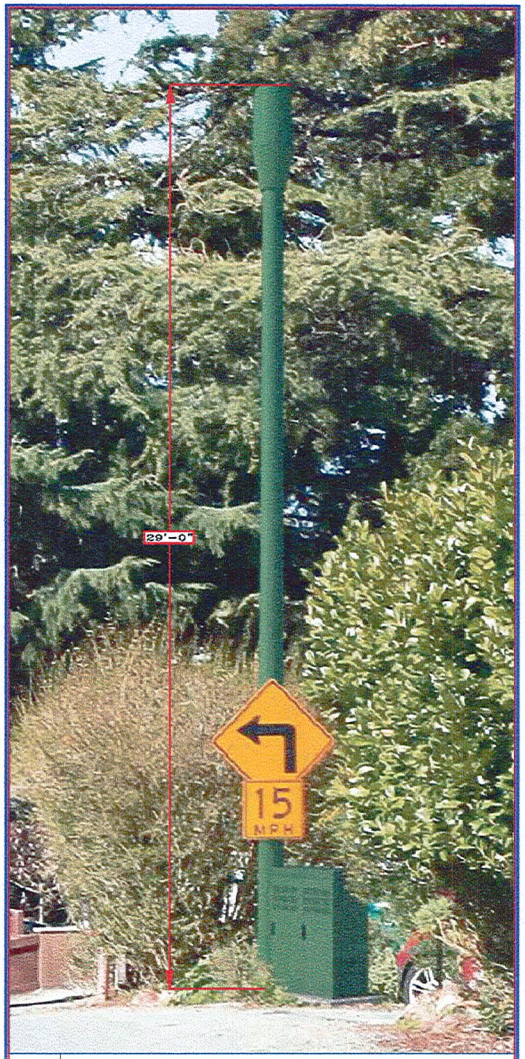
DIGALERT
1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET # _____

SHEET TITLE:

CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
SITE OVERVIEW

SHEET NUMBER: **2** REVISION: **0**

SCALE:	EXISTING LOCATION		
N.T.S	LOOKING WEST	POLE# 110134381	A



SCALE:	PROPOSED NODE PHOTO SIM		
N.T.S	LOOKING WEST	POLE# N/A	B

SCALE:	PROPOSED NODE PHOTO SIM		
N.T.S	LOOKING EAST	POLE# N/A	C

EXISTING NODE & PROPOSED NODE PHOTO SIM

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

3/6/2017

PERMIT SUBMISSION:

REV.:	DATE:	DESCRIPTION:	BY:
1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Tamescal Dyn. Rd.
Corona, Ca. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

COMMENTS:

DIGALERT
1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET # _____

SHEET TITLE:

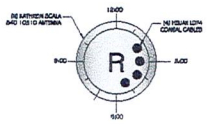
CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
EXISTING NODE PHOTO &
PROPOSED NODE PHOTO SIM

SHEET NUMBER: REVISION:

3 **0**

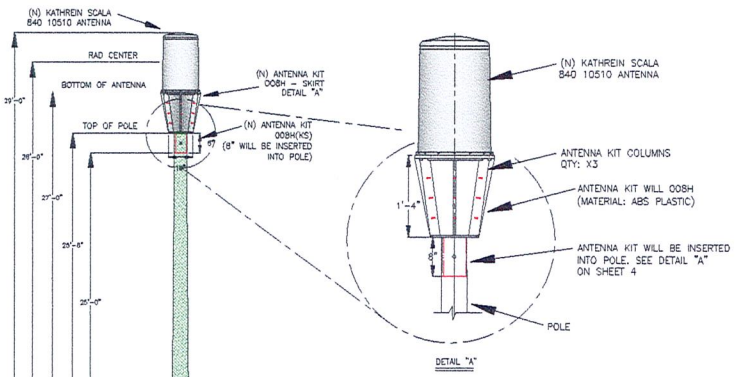
3 OF 6

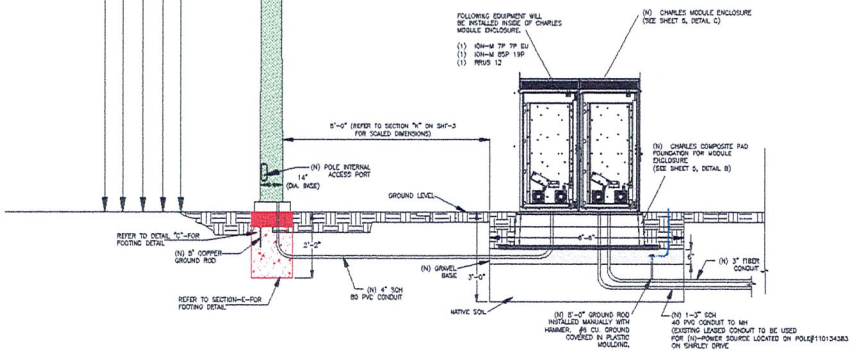
(4) HELIAX LDF4 COAXIAL CABLES
ALL COAX CABLES ARE TO BE INSTALLED INSIDE PROPOSED POLE\P(4) HELIAX LDF4 COAXIAL CABLES



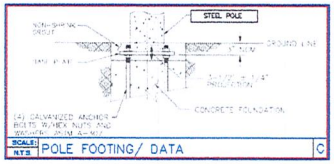
POLE# N/A

SCALE: N.T.S. RISER POLE DETAIL B





SCALE: N.T.S. UTILITY POLE DETAIL | POLE# N/A | LOOKING SOUTH | A



SCALE: N.T.S. POLE FOOTING/ DATA C

MAKE READY

N/A

NEW CONSTRUCTION

CROWN CASTLE TO INSTALL (N) CONCRETE FOUNDATION FOR STEEL POLE, (N) STEEL POLE, (N) ANTENNA MOUNTING KIT, (N) ANTENNA, (N) COMPOSITE PAD FOUNDATION, (N) MODULE ENCLOSURE, (N) CONDUIT FROM MODULE ENCLOSURE TO STEEL POLE AND EQUIPMENT WITHIN MODULE ENCLOSURE.

INSTALL NEW UNDERGROUND FIBER AND POWER CONDUIT EXTENSION OFF EXISTING UNDERGROUND FACILITIES.

NOTES:

TOP OF POLE: 25'-8"

PROPOSED RAD CENTER OF ANTENNA: 28'-0"

ANTENNA TYPE: 24" HEIGHT X 16" DIA KATHREIN SCALA CYLINDER ANTENNA.

ANTENNA OUTPUT DOES NOT EXCEED GENERAL POPULATION EXPOSURE LIMITS.

RF EMISSION PLACARDS / SIGNAGE MEETING THE FCC REQUIREMENTS SHALL BE IN A LOCATION VISIBLE FROM CLIMBING SPACE AND BE AFFIXED TO THE POLE NO LOWER THAN 9'-0" ABOVE GROUND LINE & NO HIGHER THAN 3'-0" BELOW THE ANTENNA.

PLACARDS / SIGNAGE ARE UVA RESISTANT AND SHALL BE ATTACHED TO THE POLE WITH GALVANIZED NAILS OR GALVANIZED SCREWS.

POLE & EQUIPMENT PROFILE

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:

2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:

3/6/2017

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1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC

PLANS PREPARED BY:

HP COMMUNICATIONS INC.
13341 Tamarack Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:

CROWN CASTLE

REP:

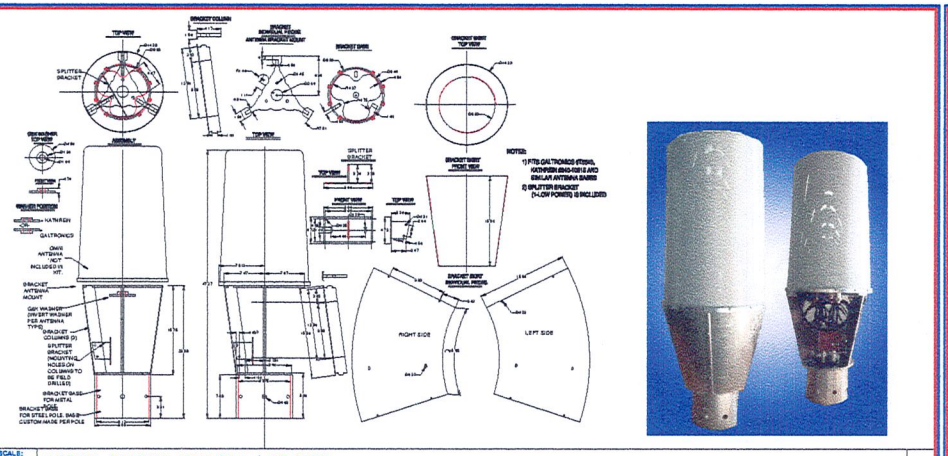
COMMENTS:

DIGALERT 1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET # _____

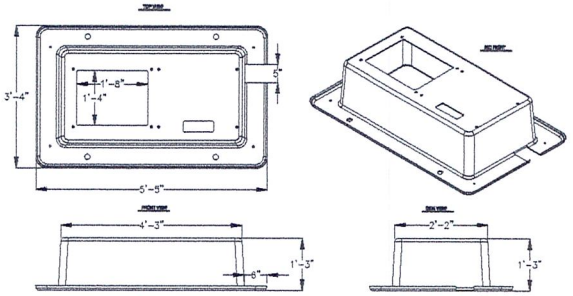
SHEET TITLE:

CROWN CASTLE
NR1 NODE RELOCATION
PIEDMONT PINES RULE20
POLE & EQUIPMENT PROFILE

SHEET NUMBER: **4** REVISION: **0**

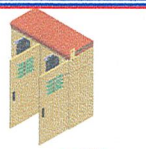


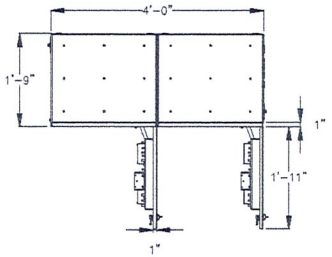
SCALE: NTS — ANTENNA BRACKET ASSEMBLY / KIT 008H — A

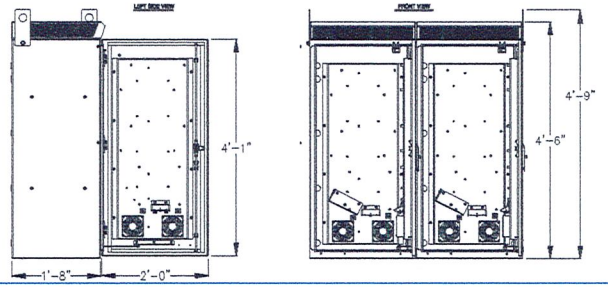


SPECIFICATIONS
1. LOAD TESTED TO 12,000LB WITH LESS THAN 0.1" DEFLECTION
2. CABINET PULLOVER FORCE EXCEEDS 150 MPH WIND FORCE PER TELECORDIA GR-487
3. MEETS ANSI/EIA/ECTA-77: PER ENVIRON LABS TESTING
   -FLAMMABILITY
   -UV EXPOSURE
   -WATER ABSORPTION
   -IMPACT RESISTANCE
   -CHEMICAL RESISTANCE
4. MEETS TELECORDIA GR-902 PER ENVIRON LABS TESTING
   -CHEMICAL RESISTANCE

SCALE: NTS — CHARLES COMPOSITE PAD FOUNDATION FOR MODULE ENCLOSURE — B







SCALE: NTS — CHARLES MODULE ENCLOSURE — C

ENCLOSURE & MOUNTING HARDWARE

CROWN CASTLE
605 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1580

PROJECT INFORMATION:
2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:
3/6/2017

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REV.	DATE:	DESCRIPTION:	BY:
1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA. 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:
CROWN CASTLE
REP:

COMMENTS:
DIGALERT
1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET #

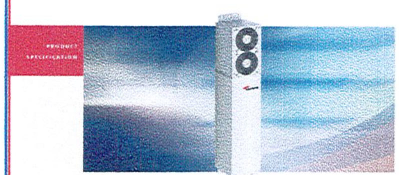
SHEET TITLE:
CROWN CASTLE
NC1 NODE RELOCATION
PIEDMONT PINES RU#30
ENCLOSURE & MOUNTING HARDWARE

SHEET NUMBER: **5** REVISION: **0**
5 OF 6

A — ION-M7P/7P EU RADIO SPECIFICATIONS

ANDREW
A CommScope Company

PRODUCT SPECIFICATION

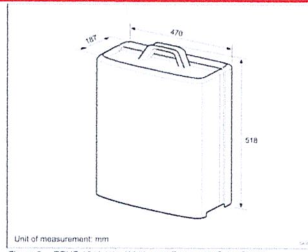


ION-M7P/7P EU

Multi-band, Multi-operator Remote Optical System

SCALE: NTS — ION-M7P/7P EU RADIO SPECIFICATIONS — A

B — RRU-12 RADIO SPECIFICATIONS



Unit of measurement: mm

Figure 3 RRUS 12 Height, Width, and Depth with Solar Shield

RRUS 12 Dimensions

Table 2 lists the technical data for the RRUS 12.

Table 2 RRUS 12 Technical Data

Description	Value
Maximum nominal output power	2x10 W, 2x20 W, 2x30 W, 2x40 W, 2x50 W, and 2x60 W (subject to license handling)

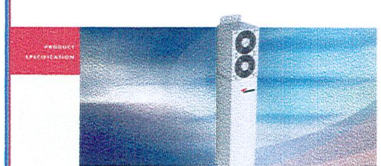
Description	Value
Number of carriers	WCDMA and LTE: One to four carriers. GSM: One to eight carriers. CDMA: One to eight carriers. (subject to license handling)
Frequency [1]	1,920 to 1,980 MHz uplink
	2,110 to 2,170 MHz downlink
	B1 for WCDMA and LTE
	1,850 to 1,910 MHz uplink
	1,930 to 1,990 MHz downlink
	B2 for GSM, WCDMA, and LTE
	1,710 to 1,785 MHz uplink
	1,805 to 1,880 MHz downlink
	B3 for GSM, WCDMA, and LTE
	880 to 915 MHz uplink
	925 to 960 MHz downlink
	B8 for GSM and WCDMA
Dimensions with Solar Shield and Handle and Feet	
Height	518 mm
Width	470 mm
Depth	190 mm
Dimensions without Solar Shield and without Handle or Feet	
Height	418 mm
Width	458 mm
Depth	159 mm
Weight	
RRUS 12 B1 and RRUS B2	22.4 kg
RRUS 12 B3 and RRUS 12 B8	26.3 kg
Color	
Gray	

SCALE: NTS — RRU-12 RADIO SPECIFICATIONS — B

C — ION-M 85P/19P RADIO SPECIFICATIONS

ANDREW
A CommScope Company

PRODUCT SPECIFICATION



ION-M85P/19P

Electrical

Power Supply		
Mains power, Vac		85 to 264 115 or 230
	Option, Vdc (on request)	36 to 76
Power consumption, watts		550
Optical		
Connectors		E2000/APC 8°
Optical return loss, dB		45 minimum
Fiber type, mm		Single mode E9/125
Optical link budget, dB		0 to 10
Composite input power @ OTRx master side, dBm	700 MHz	3.0 composite
	850 MHz	3.0 composite
	1900 MHz	3.0 composite
	2100 MHz	5.0 composite
Interface		
BTS Side		
Number of connectors	850 MHz	n x 4
	1900 MHz	n x 4
	2100 MHz	n x 4
	700 MHz	n x 1
System optimized for BTS power, dBm		33 43
Antenna Port		
Connector		N Female 850/1900 MHz
Output power		See band specification
Return loss, dB		15
850 MHz		
Frequency range, MHz		
Uplink		824 to 849
Downlink		869 to 894
Output power per carrier*, dBm		

1900 MHz

Frequency range, MHz	Uplink	1850 to 1915			
	Downlink	1930 to 1995			
Output power per carrier*, dBm	Number of Carriers	**1**	**2**	**4**	**8**
	GSM	43	40	37	34
	TDMA/EDGE	43	40	37	34
	CDMA/EV-DO	43	40	37	34
	WCDMA/HSPA	42	39	36	33
Spurious emission		<-13 dBm / 1 MHz			
DL output tolerance over frequency, dB		±1			
DL output tolerance over temperature, dB		±0.5**			
Input ICP3, dBm	ICP3 optimized	-12			
	Noise figure optimized	-10			
Noise figure, dB	ICP3 optimized	7 10 max			
	Noise figure optimized	4.5 6 max			

System Supervision and Control

Commands		RF on/off External control ports
Alarms		Summary Power supply Optical UL and DL failure Temperature
Supervision		Composite output power Power detector for transmit power with configurable alarm levels (Optional)

Mechanical***

Height, width, depth mm (in)		831 x 156 x 147 (32.7 x 6.1 x 5.8)
Weight, kg (lb)	ION-M85P/19P	20 (44)
	ION-M17P EU	13 (28.6)
	ION-M7P/7P EU	16 (35)

SCALE: NTS — ION-M 85P/19P RADIO SPECIFICATIONS — C

D — KATHREIN SCALA 840 10510 ANTENNA

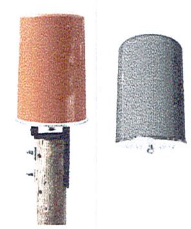
KATHREIN
SCALA DIVISION

840 10510 840 10511

Dualband 700 MHz X-pol Omni Antenna

Kathrein's dual band antennas are ready for LTE applications, covering all existing wireless bands as well as all spectrum under consideration for future systems.

- Wide band operation.
- Exceptional intermodulation characteristics.
- High strength fiberglass radome.

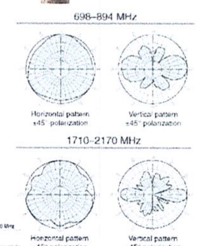


General specifications:

Frequency range	698–894 MHz 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° upper and lower band -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intrasystem / intersystem	>30 dB >40 dB (698–894 // 1710–2170 MHz)
Radome color	Brown or grey
Weight	45 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load Side	at 93 mph (150kph) 32 lbf (138 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer

See reverse for order information.

* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.



Specifications	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.0 dBi	6.5 dBi (with 1–4 dB nulls typical)	9 dBi	9 dBi (with 6–10 dB nulls, typical)	9.5 dBi
Maximum input power	250 watts (at 50 C)	250 watts (at 50 C)	200 watts (at 50 C)	200 watts (at 50 C)	200 watts (at 50 C)
+45° and -45° polarization vertical beamwidth	37° (half-power)	30° (half-power)	19° (half-power)	17° (half-power)	17.5° (half-power)

SCALE: NTS — KATHREIN SCALA 840 10510 ANTENNA — D

EQUIPMENT SPECIFICATIONS

CROWN CASTLE
695 RIVER OAKS PARKWAY
SAN JOSE, CA 95134
PHONE: (408) 954-1560

PROJECT INFORMATION:
2838 BURTON DR.
OAKLAND, CA 94720

CURRENT ISSUE DATE:
3/6/2017

PERMIT SUBMISSION:

REV.	DATE:	DESCRIPTION:	BY:
1	3/16/2016	CREATE DRAWING	AC
2	3/6/2017	MOVE NEW LOCATION	AC

PLANS PREPARED BY:
HP COMMUNICATIONS INC.
13341 Temescal Cyn. Rd.
Corona, CA 92883
PHONE: (951) 471-1919

PLANS APPROVED BY:
CROWN CASTLE
REP:

COMMENTS:

DIGALERT
1-800-227-2600
CALL AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA
TICKET #

SHEET TITLE:
CROWN CASTLE
N21 NODE RELOCATION
PIEDMONT PINES RULE20
EQUIPMENT SPECIFICATIONS

SHEET NUMBER: **6** REVISION: **0**
6 OF 6

Attachment 2

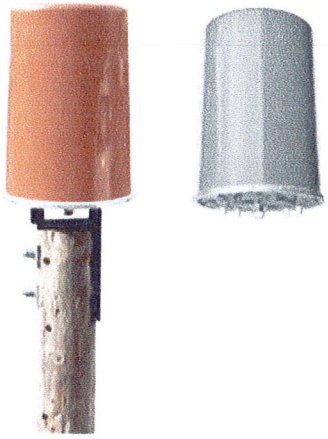
Antenna Specifications

KATHREIN
SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna

	Antenna 1	Antenna 2
Dual Band (MHz)	698–894	1710–2170
Dual Polarization	X	X
HPBW	360°	360°



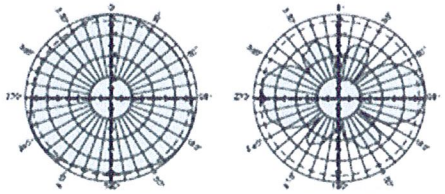
General specifications:

Frequency range	698–894 MHz 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° upper and lower band -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intrasystem intersystem	>30 dB >40 dB (698–894 // 1710–2170 MHz)
Radome color	Brown or grey
Weight	45 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load Side	at 93 mph (150kph) 32 lbf (138 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer.

See reverse for order information.

*Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

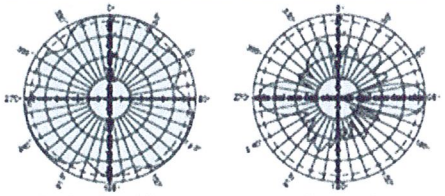
698–894 MHz



Horizontal pattern
±45°-polarization

Vertical pattern
±45°-polarization

1710–2170 MHz



Horizontal pattern
±45°-polarization

Vertical pattern
±45°-polarization

Specifications:	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.5 dBi (with 1–4 dB nulls, typical)	6.5 dBi	9 dBi	9 dBi (with 6–10 dB nulls, typical)	8.5 dBi
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half-power)	30° (half-power)	19° (half-power)	17° (half-power)	17.5° (half-power)

11202-G

RoHS Lead-Free

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

Antenna Power Detail - Config #1

			700MHz			850MHz			1900MHz			2100MHz									
Node ID	Antenna Type	Antenna Manufacturer & Model #	Net Power to Antenna (Watts)	Antenna Gain (dBd)	Total ERP (Watts)	Net Power to Antenna (Watts)	Antenna Gain (dBd)	Total ERP (Watts)	Net Power to Antenna (Watts)	Antenna Gain (dBd)	Total ERP (Watts)	Net Power to Antenna (Watts)	Antenna Gain (dBd)	Total ERP (Watts)	Proposed Antenna Rad Center (AGL) (feet)	Number of Required Antennas at Site	Azimuth Antenna #1	Azimuth Antenna #2	Latitude (decimal) NAD 83	Longitude (decimal) NAD 83	Street Address/cross street	City, State
N21M	1 Panel	Kathrein Scala - 84010510	25.18	2.35	43.25	12.59	4.35	34.28	12.59	6.85	60.95	38.11	6.35	164.45	28' 0"	1	N/A	N/A	37.817258	-122.187943	2838 Burton Dr	Oakland, CA

Appendix A-0

Node IDs, Configuration & Locations

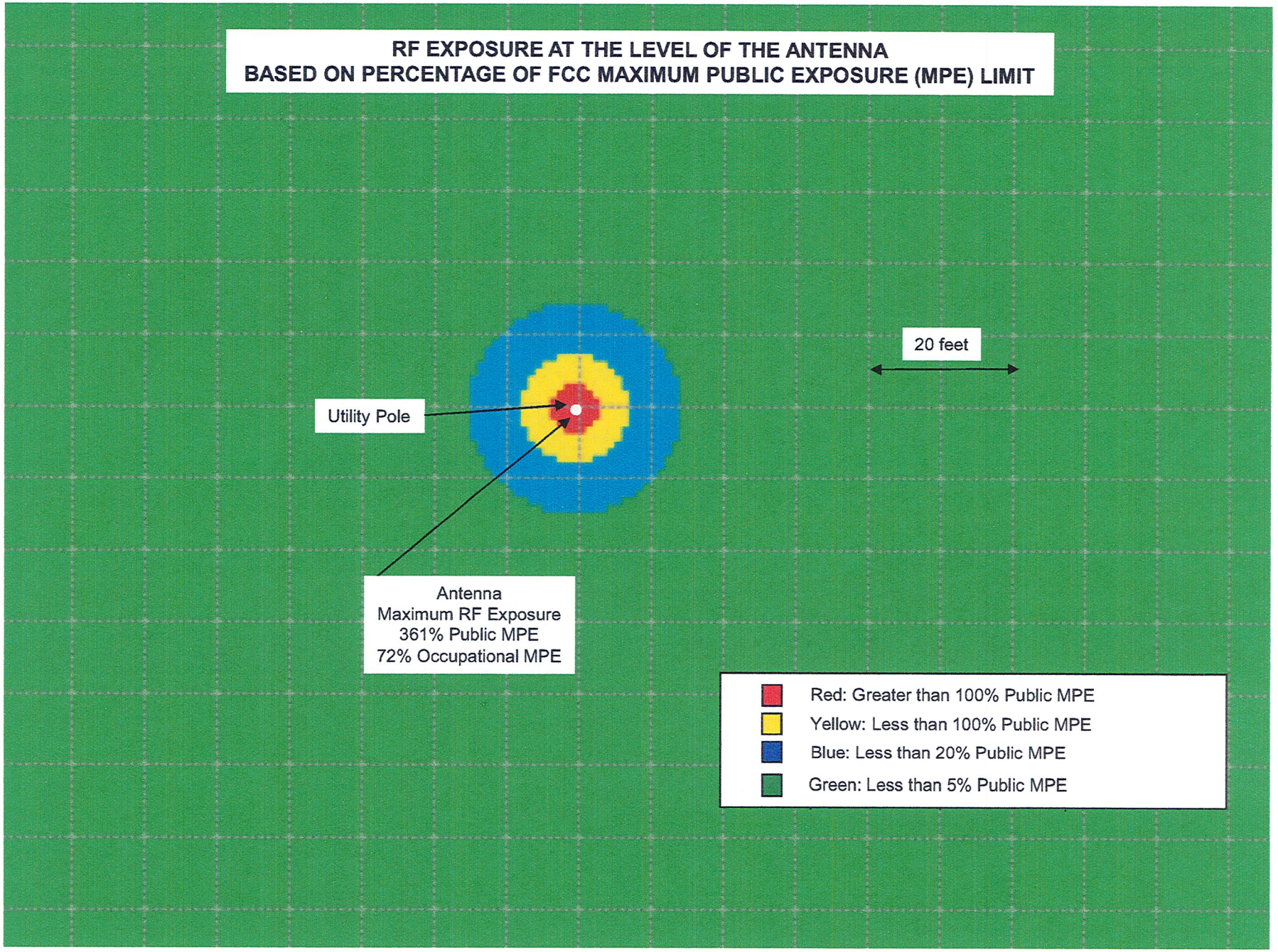
Appendix A-0
Node IDs, Configuration & Locations

Configuration 1: Omni											
Site ID	Antenna Config	Pole Number	Antenna Rad Center	Azimuths	Latitude	Longitude	Street Address	City, CA	Antenna Type	Node Equipment	Ground Elevation
N21M	Omni	NEW POLE	28'	NA	37.817258	-122.187943	2838 BURTON DR	OAKLAND	Kathrein Scala 840 10510	Commscope ION-M 86P19P_ION-M 7P/7P_FJJ RRUS AWS	1451 ft

Appendix A-1

RF EXPOSURE AT THE LEVEL OF THE ANTENNA

RF EXPOSURE AT THE LEVEL OF THE ANTENNA
BASED ON PERCENTAGE OF FCC MAXIMUM PUBLIC EXPOSURE (MPE) LIMIT



Appendix A-2

RF NOTICE SIGN

NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennae.

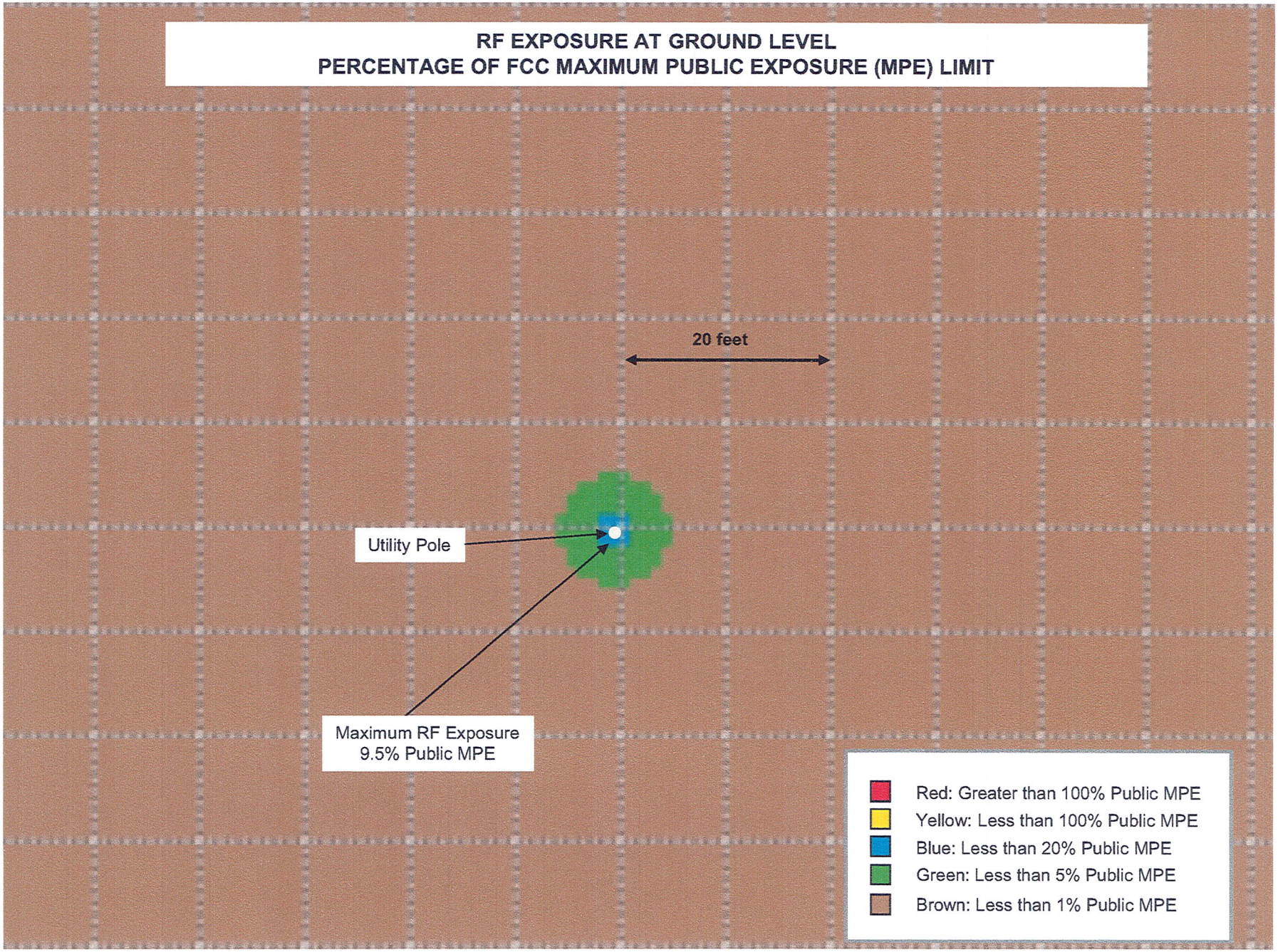
RF EXPOSURE AT 5 FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS 5 FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL _____

FOR INSTRUCTIONS. REFER TO SITE # _____

Reference: Federal Communications Commission (FCC) Public Exposure Standard. OET Bulletin-65, Edition 97-01, August 1997.

Appendix A-3

RF Exposure At Ground Level


RF EXPOSURE AT GROUND LEVEL
PERCENTAGE OF FCC MAXIMUM PUBLIC EXPOSURE (MPE) LIMIT
20 feet
Utility Pole
Maximum RF Exposure
9.5% Public MPE
Red: Greater than 100% Public MPE
Yellow: Less than 100% Public MPE
Blue: Less than 20% Public MPE
Green: Less than 5% Public MPE
Brown: Less than 1% Public MPE

STATEMENT OF EXPERIENCE

Jerrold Talmadge Bushberg, Ph.D., DABMP, DABSNM, FAAPM, FHPS

Dr. Jerrold Bushberg has performed health and safety analysis for RF & ELF transmissions systems since 1978 and is an expert in both health physics and medical physics. The scientific discipline of Health Physics is devoted to radiation protection, which, among other things, involves providing analysis of radiation exposure conditions, biological effects research, regulations and standards as well as recommendations regarding the use and safety of ionizing and non-ionizing radiation. In addition, Dr. Bushberg has extensive experience and lectures on several related topics including medical physics, radiation protection, (ionizing and non-ionizing), radiation biology, the science of risk assessment and effective risk communication in the public sector.

Dr. Bushberg's doctoral dissertation at Purdue University was on various aspects of the biological effects of microwave radiation. He has maintained a strong professional involvement in this subject and has served as consultant or appeared as an expert witness on this subject to a wide variety of organizations/institutions including, local governments, school districts, city planning departments, telecommunications companies, the California Public Utilities Commission, the California Council on Science and Technology, national and international news organizations, and the U.S. Congress. In addition, his consultation services have included detailed computer based modeling of RF exposures as well as on-site safety inspections. Dr. Bushberg has performed RF & ELF environmental field measurements and recommend appropriate mitigation measures for numerous transmission facilities in order to assure compliance with FCC and other safety regulations and standards. The consultation services provided by Dr. Bushberg are based on his professional judgement as an independent scientist, however they are not intended to necessarily represent the views of any other organization.

Dr. Bushberg is a member of the main scientific body of International Committee on Electromagnetic Safety (ICES) which reviews and evaluates the scientific literature on the biological effects of nonionizing electromagnetic radiation and establishes exposure standards. He also serves on the ICES Risk Assessment Working Group that is responsible for evaluating and characterizing the risks of nonionizing electromagnetic radiation. Dr. Bushberg was appointed and is serving as a member of the main scientific council of the National Council on Radiation Protection and Measurements (NCRP). He is also the Senior Scientific Vice-President of the NCRP and chairman of the NCRP Board of Directors. Dr. Bushberg has served as chair of the NCRP scientific committee on Radiation Protection in Medicine and he continues to serve as a member of this committee as well as the NCRP scientific advisory committee on Non-ionizing Radiation Safety. The NCRP is the nation's preeminent scientific radiation protection organization, chartered by Congress to evaluate and provide expert consultation on a wide variety of radiological health issues. The current FCC RF exposure safety standards are based, in large part, on the recommendations of the NCRP. Dr. Bushberg holds several radiation detection technology patents and was awarded the NCRP *Sinclair Medal* for "Excellence in Radiation Science" in 2014. Dr. Bushberg was elected to the International Engineering in Medicine and Biology Society Committee on Man and Radiation (COMAR) which has as its primary area of responsibility the examination and interpreting the biological effects of non-ionizing electromagnetic energy and presenting its findings in an authoritative and professional manner. Dr. Bushberg also served for several years as a member of a six person U.S. expert delegation to the international scientific community on Scientific and Technical Issues for Mobile Communication Systems established by the FCC and the FDA Center for Devices and Radiological Health.

Dr. Bushberg is a full member of the Bioelectromagnetics Society, the Health Physics Society and the Radiation Research Society. Dr. Bushberg received both a Masters of Science and Ph.D. from the Department of Bionucleonics at Purdue University. Dr. Bushberg is a fellow of the American Association of Physicists in Medicine, a fellow of the National Health Physics Society and is certified by several national professional boards with specific sub-specialty certification in radiation protection and medical physics. Prior to coming to California, Dr. Bushberg was on the faculty of Yale University School of Medicine.

Attachment C

CROWN CASTLE
OAKLAND HILLS OHN21
SITE ALTERNATIVES

Propose Site Location Overview

Alternative Locations Map

Overview

- This is an existing site on a JPA pole that needs to be relocated as its part of a Rule 20 underground project.
- This project will replace the wooden pole with a new metal pole
- The area Crown is looking to cover is all residential with no commercial property in the area.
- The only existing structures in the area metal light poles owned by the city. The city has refused to work with Crown on allowing them to attach equipment to the poles.
- The search area for this site is extremely small as it's replacing an existing site in an existing DAS network.

View of the Existing site

Photo Simulation of Proposed Facility

Item A on the map

Item B on the map, This has the power meter and back up batteries for this node. This pole will not be able to hold any additional equipment due to loading in the power space of the pole. Plus the trees purpose a challenge to our coverage objective.

Item C on the map – This is one of two city owned light poles in the area. Oakland has not been willing to allow Crown to mount equipment to city owned infrastructure.

Item D on the map – This is one of two city owned light poles in the area. Oakland has not been willing to allow Crown to mount equipment to city owned infrastructure.