

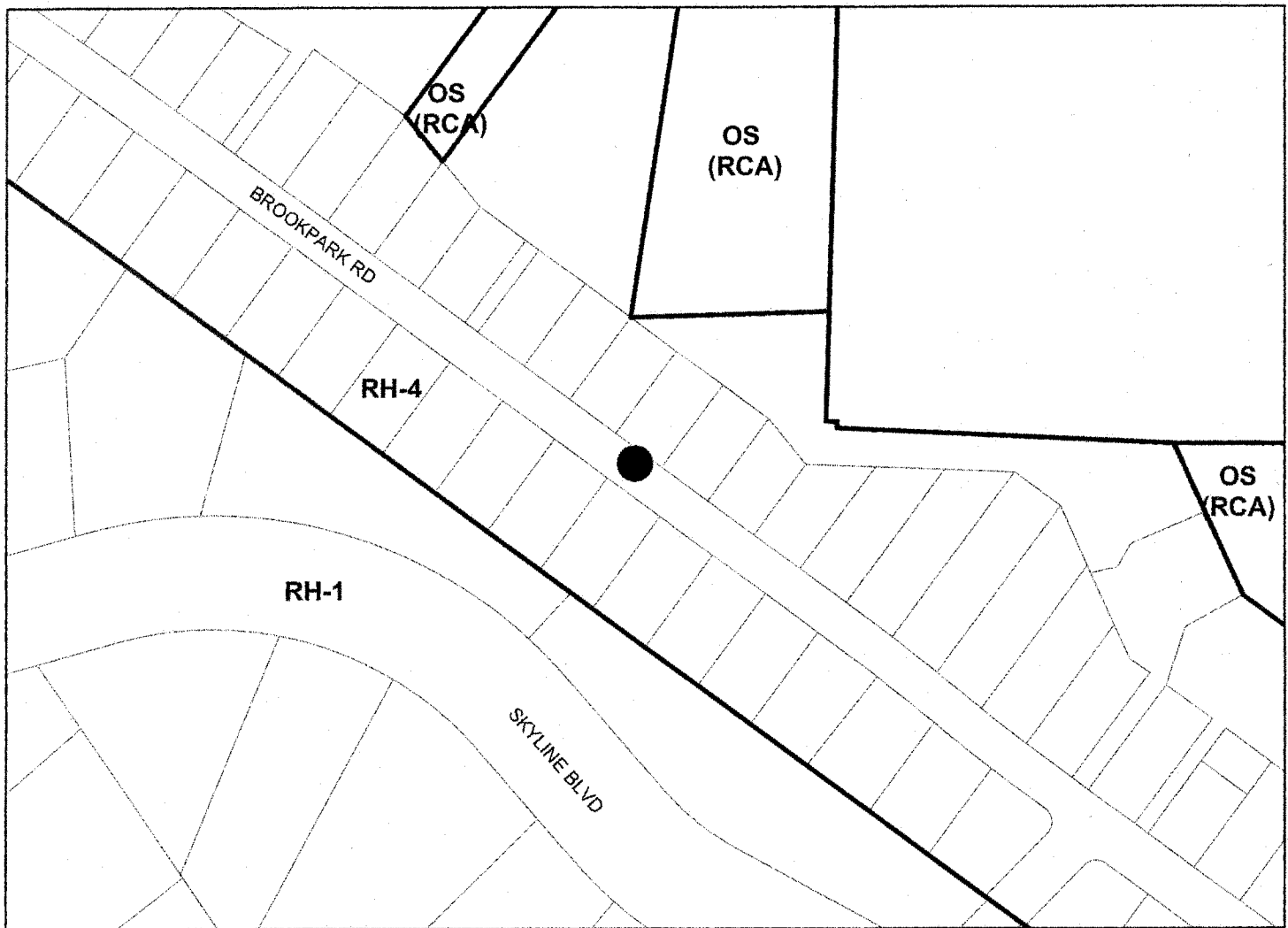
Location:	Public right of way (sidewalk) adjacent to: 12820 Brookpark Road
Assessor's Parcel Numbers:	Adjacent to: 085 -0105-025-00
Proposal:	To install two (2) telecommunications antennas at 27'-10" to 31-feet and equipment at 7-feet to 14'-9.5" in height on a 43-foot tall wooden utility pole.
Applicant /	Rick Hirsch
Phone Number:	(415) 377-7826
Owners:	City of Oakland (Public right-of-way/sidewalk); PG&E (utility pole)
Planning Permits Required:	Regular Design Review to attach a Telecommunications Facility to a Joint Pole Authority utility pole located within a Residential Zone
General Plan:	Hillside Residential
Zoning:	RH-4 Hillside Residential Zone - 4 (R-30 One-Family Residential Zone at the time application was submitted and deemed complete)
Environmental	Exempt, Section 15301 of the State CEQA Guidelines:
Determination:	Existing Facilities; Section 15183 of the State CEQA Guidelines: Project consistent with a Community Plan, General Plan or Zoning
Historic Status:	None
Service Delivery District:	IV
City Council District:	6
Date Filed:	November 4, 2010
Staff Recommendation:	Approve with conditions
Finality of Decision:	<i>Appealable to City Council within 10 days</i>
For Further Information:	Contact case planner Aubrey Rose, Planner II at (510) 238-2071 or arose@oaklandnet.com

SUMMARY

The applicant Mr. Rick Hirsch (for Extenet) requests Planning Commission approval to install two (2) telecommunications antennas at 27'-10" to 31-feet and equipment at 7-feet to 14'-9.5" in height on a 43-foot tall wooden utility pole. The project is subject to Regular Design Review as an attachment to a utility pole located in a residential zone. As is the practice with all telecommunications installations located in or within 100-feet of residential zoning, this application is forwarded to the Planning Commission for review.

Staff recommends approval of the requested permit, subject to the attached Findings and Conditions of Approval.

CITY OF OAKLAND PLANNING COMMISSION



0 125 250 500 750 1,000 Feet



Case File: DR10-283
Applicant: Rick Hirsch (for Extenet)
Address: Existing wooden utility pole in public
right-of-way (sidewalk)
fronting 12820 Brookpark Rd
Zone: RH-4

BACKGROUND

Recent State case law (Sprint v. Palos Verdes Estates) has enabled the City to require Design Review for telecommunications facilities attached to utility poles located within the right-of-way. The Planning & Zoning Department has determined that such Design Reviews be decided at the equivalent level as telecommunications projects located on private property located in the same zone.

Under the Telecommunications Act of 1996, the Federal Communications Commission (FCC) preempted cities' zoning jurisdiction over wireless telecommunications facilities, limiting their authority to aesthetic review and confirmation of satisfactory radio frequency (RF) emissions reports. For further information the FCC can be contacted at 1-888-225-5322 or www.fcc.gov

SITE DESCRIPTION

The site is a section of public right-of-way (sidewalk) along the east side of Brookpark Road. There are single-family homes along both sides of the street. The homes are predominantly single-story with approximately 20-foot deep front yards. Brookpark Road essentially runs along a ridge of the Oakland hills directly east of and parallel to Skyline Boulevard.

PROJECT DESCRIPTION

The proposal is to attach two (2) two-foot tall antennas ("Kathrein omni") to four-foot horizontal extensions attached at 30'6" in height and equipment at seven-feet to 14'-9.5" in height for wireless telecommunications purposes. **PG&E has already swapped poles. This replacement does not require a Building Permit and the City was not informed. Replacement of the existing pole (unknownst to th City) in no way guarantees approval of a telecommunications facility.** The antenna would be panel-style in shape and with attachment apparatus would measure over three-feet in height. Pole mounted equipment cabinets would be contained in a singular shroud painted matte (non-reflective) brown to match the color and finish of the wooden pole.

GENERAL PLAN ANALYSIS

The site is located in a Hillside Residential area under the General Plan. The intent of the Hillside Residential area is: *"to create, maintain, and enhance residential areas characterized by detached, single unit structures."* The General Plan is silent on telecommunications activities (which are now classified as Essential Service Civic Activity under the Planning Code). The proposal would enhance service to residents from a highly effective location with a relatively unobtrusive design. Staff finds the proposal to be in conformance with the General Plan.

ZONING ANALYSIS

The site is located within the RH-4 Hillside Residential Zone - 4. 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."* At the time the project was submitted and deemed complete, the property was located within the R-30 One-Family Residential Zone. The intent of the R-30 Zone is: *"to create, preserve, and enhance areas for single-family dwellings in*

desirable settings for urban living, and is typically appropriate to already developed lower density dwelling areas of the city." The change in Zoning does not affect the project.

As described in the Background section of this report, telecommunications facilities located on JPA poles are now subject to Design Review. Additional findings for Macro facilities apply to all JPA cases. Findings required to approve the project ensure the location and design are inconspicuous and concealed to the extent practicable. Authority for review and approval is to be equivalent to Zoning for private property. Therefore, the subject proposal for a site located in a residential zone is referred to the Planning Commission. The Planning Commission has approved a JPA case that was located in front of taller trees and no residences, and has continued another case for relocation and/or redesign that was located fronting a residence and involved a pole top bayonet extension and antenna, and pole mounted equipment that were not contained in a singular shroud.

Given advancing technologies, enhanced service at this location would assist users in the residential zone. The antenna would not increase the height of the pole or obstruct a view and pole mounted equipment cabinets would be contained in a singular shroud painted matte brown to match the color and finish of the wooden pole. The proposal meets the Telecommunications Regulations for Site Location Preferences for locating on City property on a quasi-public facility and a site alternatives analysis is not required. A site design preference analysis and a satisfactory emissions (RF) report have been submitted. Staff finds the proposal to be consistent with the Planning Code.

ENVIRONMENTAL DETERMINATION

The California Environmental Quality Act (CEQA) Guidelines categorically exempts specific types of projects from environmental review. Section 15301 of the State CEQA Guidelines exempts projects involving *"...the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use..."* The proposal to attach wireless telecommunications antennas and related equipment to a wooden utility pole meets this description. The project is therefore exempt from further Environmental Review.

KEY ISSUES AND IMPACTS

In consideration of the proposal, site surroundings, and discussions regarding recent cases under this relatively new type of review, staff recommends Planning Commission approval of this application for the following reasons:

The site does not front:

- a scenic vista

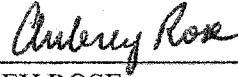
The proposal features:

- a JPA pole in an area lacking other non-residential structures
- no height increase to the JPA pole
- no ground mounted equipment cabinets
- pole mounted equipment cabinets to be encased in a single, continuous shroud painted matte brown to match the color and finish of the wooden utility pole

No correspondence has been received by the City regarding the application.

- RECOMMENDATIONS:**
1. Affirm staff's environmental determination.
 2. Approve the Regular Design Review subject to the attached Findings, Additional Findings, and Conditions.

Prepared by:



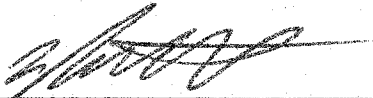
AUBREY ROSE
Planner II

Approved by:



SCOTT MILLER
Zoning Manager
Community and Economic Development Agency

Approved for forwarding to the
City Planning Commission:



ERIC ANGSTADT
Deputy Director
Community and Economic Development Agency

ATTACHMENTS:

- A. Findings for Approval
- B. Conditions of Approval
- C. Plans
- D. Applicant's Photo-Simulations
- E. Site Design Preference Analysis

Attachment A: Findings for Approval

This proposal meets the required findings under Regular Design Review Criteria (OMC Sec. 17.136.040(B)) and Design Review Criteria for Macro Facilities (OMC Sec. 17.128.070(B)), as set forth below. Required findings are shown in bold type; explanations as to why these findings can be made are in normal type.

REGULAR DESIGN REVIEW CRITERIA FOR NONRESIDENTIAL FACILITIES(OMC SEC. 17.136.040(B))

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 proposal is to attach two (2) two-foot tall antennas ("Kathrein omni") to four-foot horizontal extensions attached at 30'6" in height and equipment at seven-feet to 14'-9.5" in height for wireless telecommunications purposes. The antenna would be panel-style in shape and with apparatus would measure over three-feet in height. Pole mounted equipment cabinets would be contained in a singular shroud painted matte (non-reflective) brown to match the color and finish of the wooden pole.

The site is a section of public right-of-way (sidewalk) along the east side of Brookpark Road. There are single-family homes along both sides of the street. The homes are predominantly single-story with approximately 20-foot deep front yards. Brookpark Road essentially runs along a ridge of the Oakland hills directly east of and parallel to Skyline Boulevard.

The site is located within the RH-4 Hillside Residential Zone - 4. 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."* At the time the project was submitted and deemed complete, the property was located within the R-30 One-Family Residential Zone. The intent of the R-30 Zone is: *"to create, preserve, and enhance areas for single-family dwellings in desirable settings for urban living, and is typically appropriate to already developed lower density dwelling areas of the city."* The change in Zoning does not affect the project.

Given advancing technologies, enhanced service at this location would assist users in the residential zone. The antenna would not increase the height of the pole or obstruct a view and pole mounted equipment cabinets would be contained in a singular shroud painted matte brown to match the color and finish of the wooden pole.

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;

This finding is met for the following reasons:

The site does not front:

- a scenic vista

The proposal features:

ATTACHMENT A

Findings for Approval

- a JPA pole in an area lacking other non-residential structures
- no height increase to the JPA pole
- no ground mounted equipment cabinets
- pole mounted equipment cabinets to be encased in a single, continuous shroud painted matte brown to match the color and finish of the wooden utility pole

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. The intent of the Hillside Residential area is: *"to create, maintain, and enhance residential areas characterized by detached, single unit structures."* The General Plan is silent on telecommunications activities (which are now classified as Essential Service Civic Activity under the Planning Code). The proposal would enhance service to residents from a highly effective location with a relatively unobtrusive design. Staff finds the proposal to be in conformance with the General Plan.

DESIGN REVIEW CRITERIA FOR MACRO FACILITIES (OMC SEC. 17.128.070(B)):

1. Antennas should be painted and/or textured to match the existing structure.

The antenna will be painted matte brown to match the color and finish of the wooden utility pole.

2. Antennas mounted on architecturally significant structures or significant architectural detail of the building should be covered by appropriate casings which are manufactured to match existing architectural features found on the building.

The antenna will be attached to a wooden utility pole.

3. Where feasible, antennas can be placed directly above, below or incorporated with vertical design elements of a building to help in camouflaging.

The antenna will be mounted to the side of the wooden utility pole because mounting to the top is not feasible as wires run directly across the top and a separation between antennas and wires must be maintained.

4. Equipment shelters or cabinets shall be screened from the public view by using landscaping, or materials and colors consistent with surrounding backdrop or placed underground or inside existing facilities or behind screening fences.

Equipment cabinets will be mounted to the pole in a singular shroud that is significantly smaller than typical ground mounted cabinets and shelters and the exterior will be painted matte brown to match the color and finish of the wooden pole.

5. Equipment shelters or cabinets shall be consistent with the general character of the area.

Equipment cabinets will be housed in a singular shroud attached to a structure (wooden utility pole) and painted matte brown to match its color and finish.

6. For antennas attached to the roof, maintain a 1:1 ratio (example: ten feet high antenna requires ten feet setback from facade) for equipment setback; screen the antennas to match existing air

conditioning units, stairs, or elevator towers; avoid placing roof mounted antennas in direct line with significant view corridors.

This finding is inapplicable; the proposal does not involve a roofed structure.

7. 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.

Equipment will be pole mounted a minimum of seven feet above grade and will be encased in a shroud; the antenna will be located at twenty-nine feet above grade.

Attachment B: Conditions of Approval

1. Approved Use

Ongoing

- a) The project shall be constructed and operated in accordance with the authorized use as described in **the application materials submitted November 4, 2010 and the revised plans dated March 15, 2011**, and as amended by the following conditions. Any additional uses or facilities other than those approved with this permit, as described in the project description and the approved plans, will require a separate application and approval. Any deviation from the approved drawings, Conditions of Approval or use shall require prior written approval from the Director of City Planning or designee.
- b) This action by the **Planning Commission** ("this Approval") includes the approvals set forth below. This Approval includes **establishment of a wireless telecommunications facility on a utility pole including two antennas attached to an extension on the pole and a singular shroud containing pole mounted equipment, all painted matte brown**

2. Effective Date, Expiration, Extensions and Extinguishment

Ongoing

Unless a different termination date is prescribed, this Approval shall expire **two (2) years** from the approval date, 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 permit, 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 for this project may invalidate this Approval if the said extension period has also expired.

3. Scope of This Approval; Major and Minor Changes

Ongoing

The project is approved pursuant to the **Planning Code** only. Minor changes to approved plans may be approved administratively by the Director of City Planning or designee. Major changes to the approved plans shall be reviewed by the Director of City Planning or designee to determine whether such changes require submittal and approval of a revision to the approved project by the approving body or a new, completely independent permit.

4. Conformance with other Requirements

Prior to issuance of a demolition, grading, P-job, or other construction related permit

- a) The project applicant shall comply with all other applicable federal, state, regional and/or local laws/codes, requirements, regulations, and guidelines, including but not limited to those imposed by the City's Building Services Division, the City's Fire Marshal, and the City's Public Works Agency. 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 of Approval #3.
- b) The applicant shall submit approved building plans for project-specific needs related to fire protection to the Fire Services Division for review and approval, including, but not limited to automatic extinguishing systems, water supply improvements and hydrants, fire department access, elevated walking pathways, safety railings, emergency access and lighting.

5. Conformance to Approved Plans; Modification of Conditions or Revocation

Ongoing

- a) Site shall be kept in a blight/nuisance-free condition. Any existing blight or nuisance shall be abated within 60-90 days of approval, unless an earlier date is specified elsewhere.
- b) Violation of any term, **Conditions of Approval** or **project description** relating to the **Conditions of 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 Approvals or alter these **Conditions of Approval** if it is found that there is violation of any of the **Conditions of Approval** 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 Conditions of Approval.

6. Signed Copy of the Conditions of Approval

A copy of the approval letter and **Conditions of Approval** shall be signed by the property owner, notarized, and submitted with each set of permit plans to the appropriate City agency for this project.

7. Indemnification

Ongoing

- a. To the maximum extent permitted by law, the applicant shall defend (with counsel acceptable to the City), indemnify, and hold harmless the City of Oakland, the Oakland City Council, the City of Oakland Redevelopment Agency, the Oakland City Planning Commission and its respective agents, officers, and employees (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, (1) an approval by the City relating to a development-related application or subdivision or (2) implementation of an approved development-related project. The City may elect, in its sole discretion, to participate in the defense of said Action and the 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 applicant shall execute a Letter of Agreement with the City, acceptable to the Office of the City Attorney, which memorializes the above obligations. These obligations and the Letter of Agreement shall survive termination, extinguishment or invalidation of the approval. Failure to timely execute the Letter of Agreement does not relieve the applicant of any of the obligations contained in this condition or other requirements or Conditions of Approval that may be imposed by the City.

8. Compliance with Conditions of Approval

Ongoing

The project applicant shall be responsible for compliance with the recommendations in any submitted and approved technical report and all the Conditions of Approval set forth below at its sole cost and expense, and subject to review and approval of the City of Oakland.

9. Severability

Ongoing

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

10. Landscape Maintenance.

Ongoing

All new landscaping shall be permanently maintained in good growing condition and, whenever necessary, replaced with new plant materials to ensure continued compliance with applicable landscaping requirements.

11. Operational Noise-General

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 (*see also condition #30*).

SPECIFIC CONDITIONS FOR TELECOMMUNICATIONS FACILITIES

12. Sinking Fund For Facility Removal Or Abandonment

Prior to the issuance of building permit

The applicant shall provide proof of the establishment of a sinking fund to cover the cost of removing the facility if it is abandoned within a prescribed period. The word "abandoned" shall mean a facility that has not been operational for a six (6) month period, except where non-operation is the result of maintenance or renovation activity pursuant to valid City permits. The sinking fund shall be established to cover a two-year period, at a financial institution approved by the City's Office of Budget and Finance. The sinking fund payment shall be determined by the Office of Budget and Finance and shall be adequate to defray expenses associated with the removal of the telecommunication facility.

13. Emissions Report

Prior to a final inspection

The applicant shall provide an RF emissions report to the City of Oakland Zoning Division indicating that the site is actually operating within the acceptable thresholds as established by the Federal government or any such agency that may be subsequently authorized to establish such standards.

14. Camouflaging

Prior to a final inspection

All apparatus (including but not limited to antenna and equipment) shall be painted brown (matte or non-reflective) to match the color and finish of the existing wooden utility pole.

APPROVED BY:

City Planning Commission: _____ (date) _____ (vote)

Conditions of Approval

extenel
 3030 WARREN RD.
 SUITE 100
 LIVERMORE, CA 94550
 www.extenel.com

NO.	DATE	REVISION
1	1/14/11	CONSTRUCTION PERMITS
2	2/16/11	REVISION PERMIT
3	3/15/11	REVISION PERMIT
4	3/15/11	REVISION PERMIT
5	3/15/11	REVISION PERMIT
6	3/15/11	REVISION PERMIT
7	3/15/11	REVISION PERMIT
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9	3/15/11	REVISION PERMIT
10	3/15/11	REVISION PERMIT

CURRENT DATE: 3/15/11

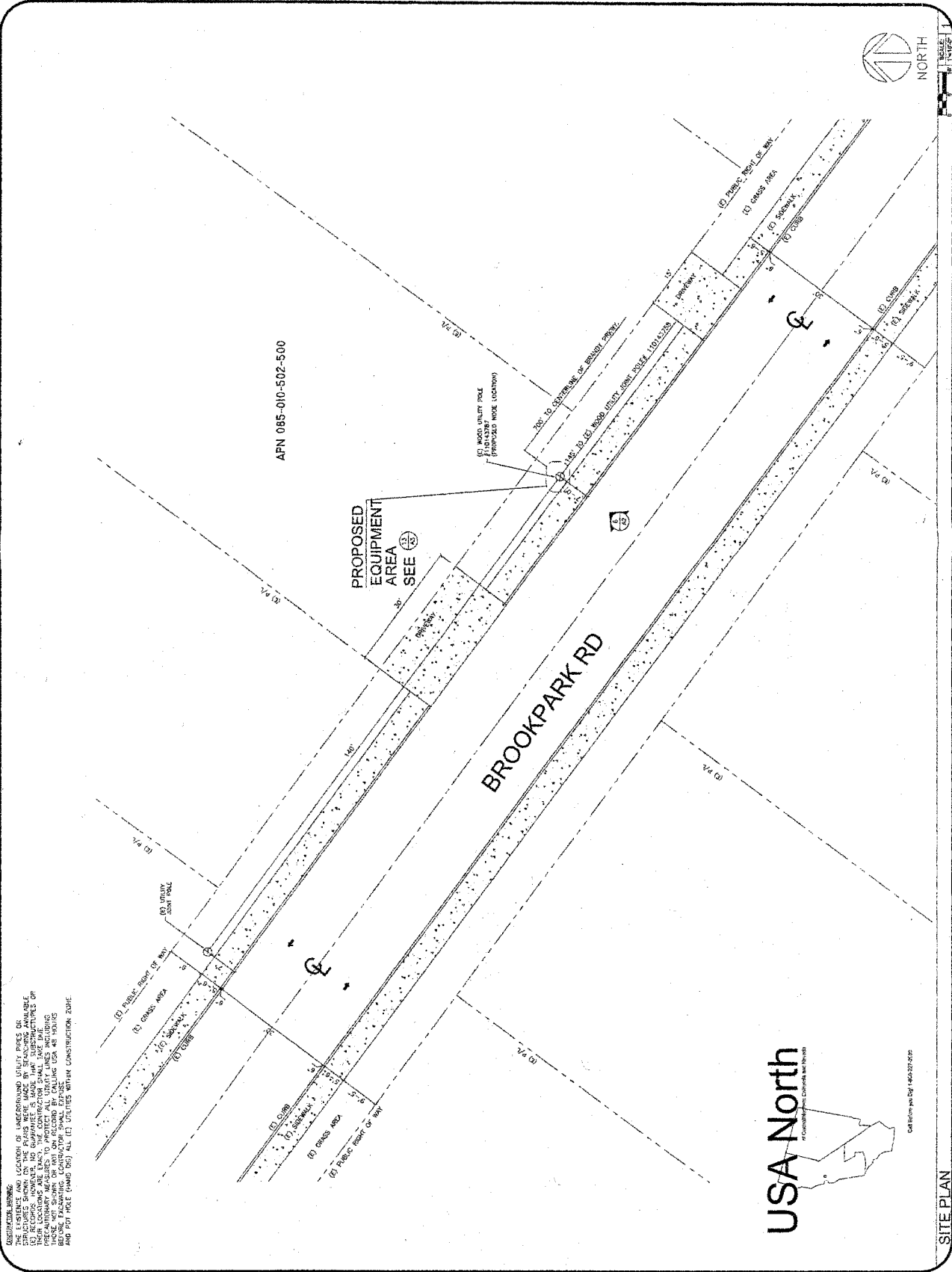
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 CORONA, CA 92702
 (951) 261-2170
 FAX: (951) 262-3113
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LICENSING:

SITE NO.: SKY-042A
 SITE NAME & ADDRESS:
 SKYLINE NETWORK-042A
 12345678901234567890
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SITE PLAN

SCALE: 1" = 100'
 NORTH
 A1 4



USE/OWNER: THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY LINES OR
 RECORDS SHOWN HEREIN ARE BASED ON THE RECORDS OF THE
 RECORDS SHOWN HEREIN. THE CONTRACTOR SHALL TAKE THE
 RECORDS SHOWN HEREIN AS TRUTH AND SHALL BE RESPONSIBLE FOR
 THE LOCATION AND DEPTH OF ALL UTILITIES WITHIN THE CONSTRUCTION ZONE.
 AND FOR THE PROTECTION OF ALL UTILITIES WITHIN THE CONSTRUCTION ZONE.



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SITE PLAN

EQUIPMENT CONFIGURATION SCALE: 1/8" = 1'-0"

ANTENNA CONFIGURATION SCALE: 1/8" = 1'-0"

PIPE ASSEMBLY SCALE: 1/8" = 1'-0"

DBL WOOD ARM ASSEMBLY SCALE: 1/8" = 1'-0"

DELTA NODE MOUNTING BRACKET SCALE: 1/8" = 1'-0"

BATTERY BACK-UP XUPS 1000-7070 SCALE: 1/8" = 1'-0"

DELTA NODE DDR206 SCALE: 1/8" = 1'-0"

NOTICE

NOTE

ASSEMBLY INSTRUCTIONS

1. EQUIPMENT CONFIGURATION

2. ANTENNA CONFIGURATION

3. BATTERY BACK-UP XUPS 1000-7070

4. DELTA NODE MOUNTING BRACKET

5. DELTA NODE DDR206

6. PIPE ASSEMBLY

7. DBL WOOD ARM ASSEMBLY

8. DELTA NODE MOUNTING BRACKET

9. BATTERY BACK-UP XUPS 1000-7070

10. DELTA NODE DDR206

11. PIPE ASSEMBLY

12. DBL WOOD ARM ASSEMBLY

13. EQUIPMENT CONFIGURATION

14. ANTENNA CONFIGURATION

15. DELTA NODE MOUNTING BRACKET

16. BATTERY BACK-UP XUPS 1000-7070

17. DELTA NODE DDR206

18. PIPE ASSEMBLY

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129. DBL WOOD ARM ASSEMBLY

130. DELTA NODE MOUNTING BRACKET

131. BATTERY BACK-UP XUPS 1000-7070

132. DELTA NODE DDR206

133. PIPE ASSEMBLY

134. DBL WOOD ARM ASSEMBLY

135. DELTA NODE MOUNTING BRACKET

136. BATTERY BACK-UP XUPS 1000-7070

137. DELTA NODE DDR206

138. PIPE ASSEMBLY

139. DBL WOOD ARM ASSEMBLY

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165. DELTA NODE MOUNTING BRACKET

166. B

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1	1/21/11	DESIGN
2	2/15/11	REVISIONS
3	3/15/11	REVISIONS
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SITE NAME & ADDRESS:
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REVISION:
EQUIPMENT DETAILS
A3 4

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DBL WOOD ARM ASSEMBLY

SCALE: 1/2" = 1'-0"

PIPE ASSEMBLY

SCALE: 1/2" = 1'-0"

ANTENNA CONFIGURATION

SCALE: 1/2" = 1'-0"

DELTA NODE MOUNTING BRACKET

SCALE: 1/2" = 1'-0"

LADDER BRACKET

SCALE: 1/2" = 1'-0"

DELTA NODE DDR206

SCALE: 1/2" = 1'-0"

DELTA NODE DDR206

SCALE: 1/2" = 1'-0"

BATTERY BACK-UP XUPS 600-6969

SCALE: 1/2" = 1'-0"

NOT USED

SCALE: 1/2" = 1'-0"

NOT USED

SCALE: 1/2" = 1'-0"

NOT USED

SCALE: 1/2" = 1'-0"

KATHREIN ANTENNA 742-226

SCALE: 1/2" = 1'-0"

MILBANK METER BOX U74190-RL

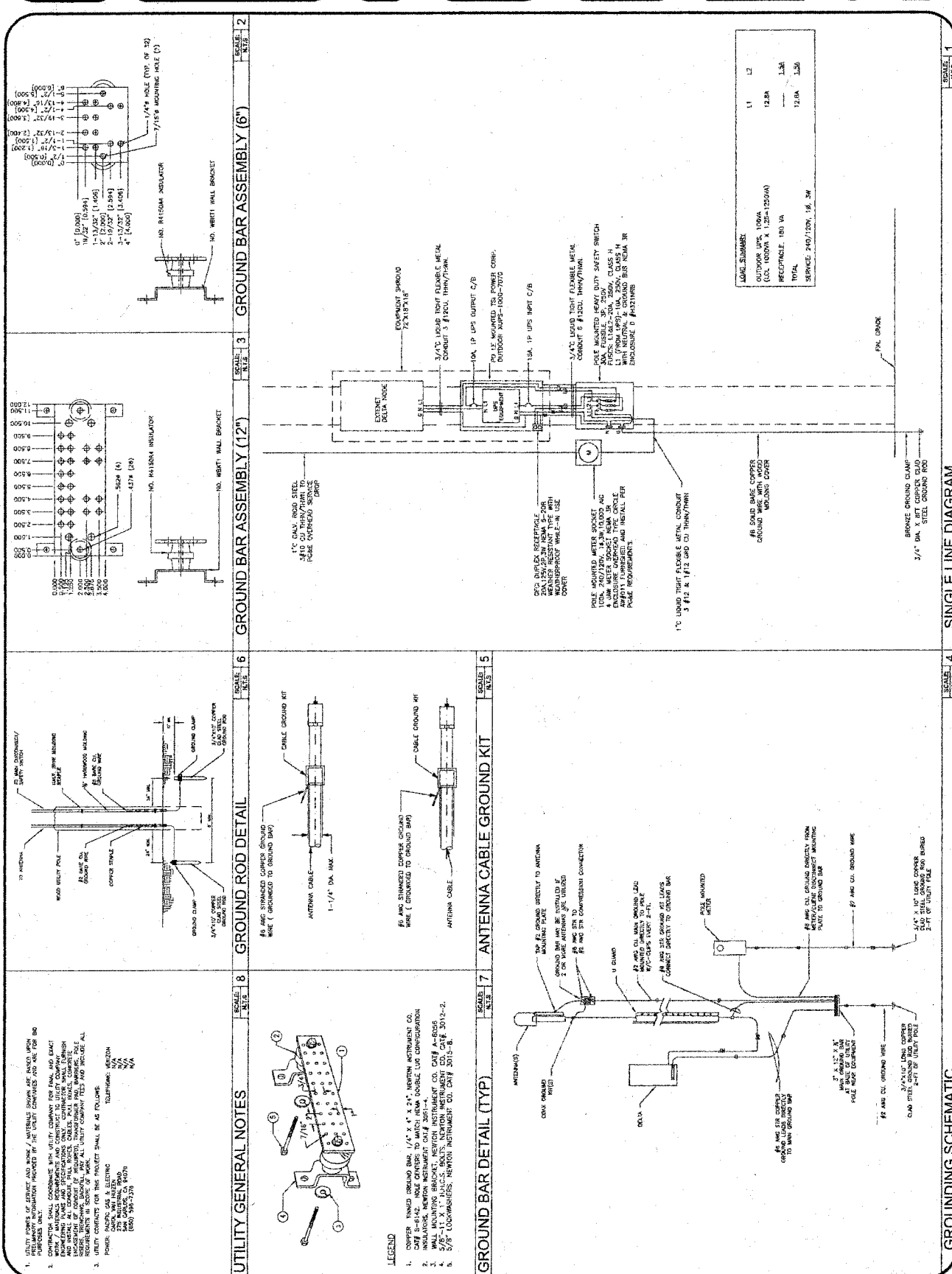
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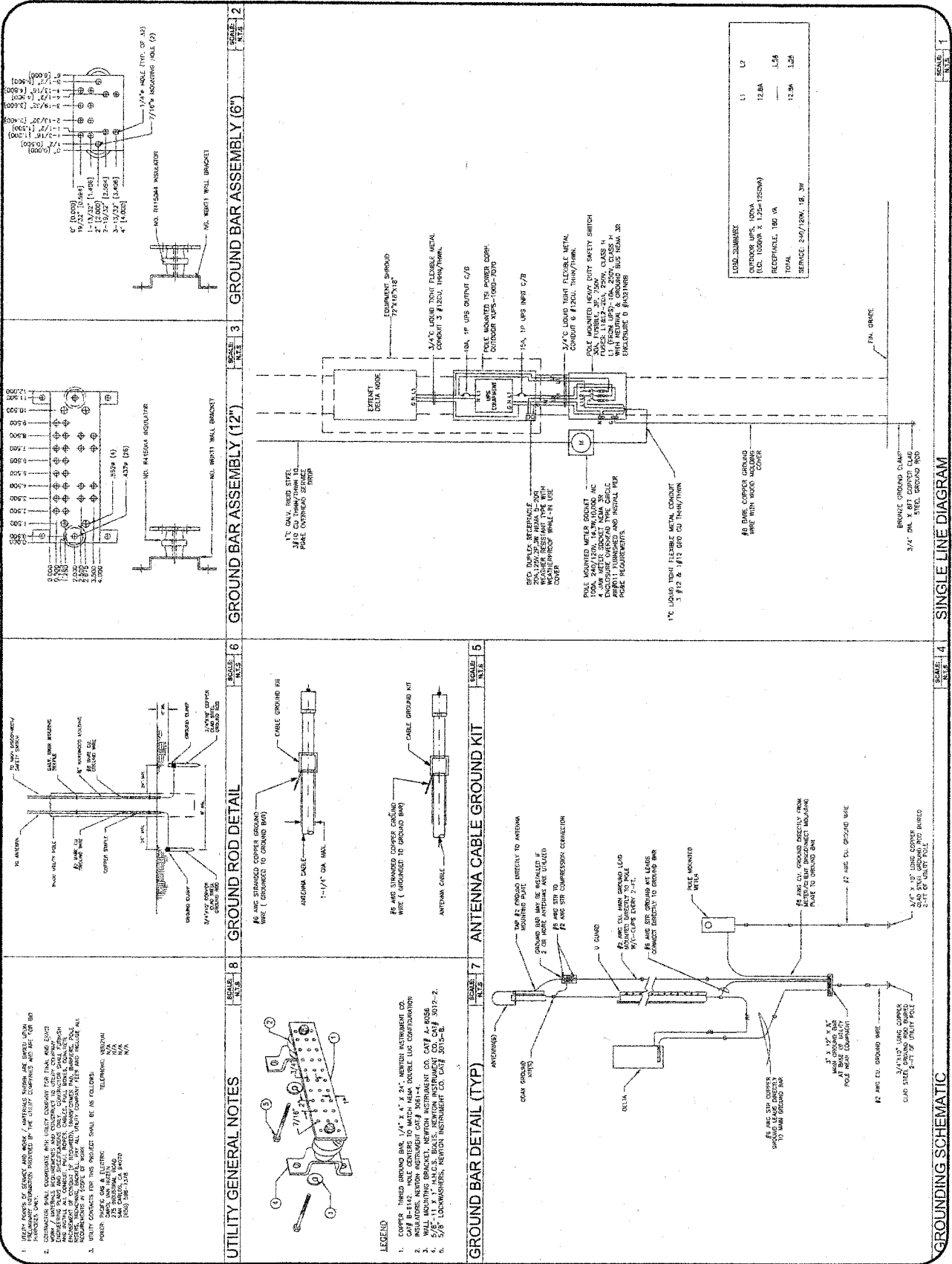
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NOT USED

SCALE: 1/2" = 1'-0"





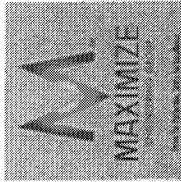
Sky-43A

View One

12820 Brookpark Rd. Oakland Ca 94619

Date of Final : 3/06/2011

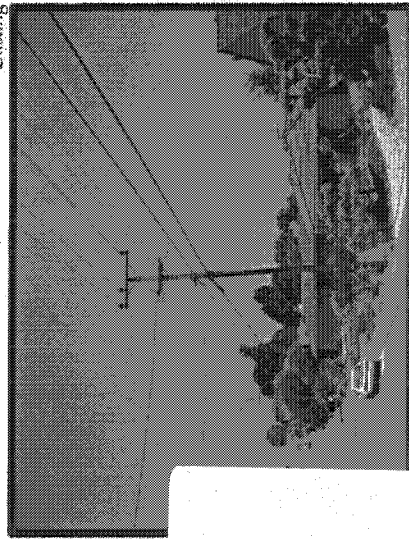
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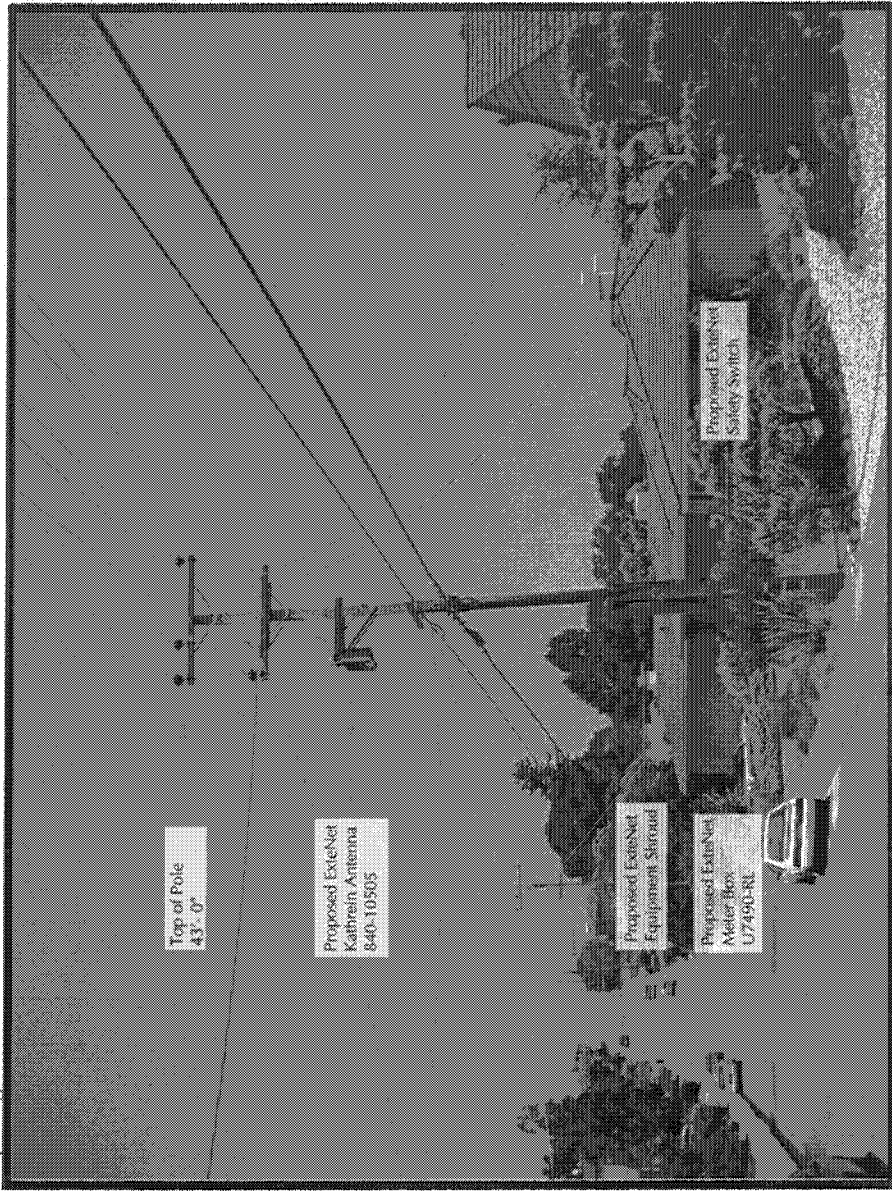
Site Map



Existing



Proposing





DAS Network Fundamentals

A Distributed Antenna System (DAS) network is a group of multiple transceivers all interconnected to provide wireless service into a target area. In effect, a DAS network is a much smaller of a traditional (macro) cellular network.

A DAS network has three major components:

- Node – a transceiver serving a small (0.25 mile radius) typically located on electrical poles, light poles, or other outside plant (OSP)
- Hub – a centralized location that interfaces with the node and Wireless Service Provider (WSP – e.g. AT&T, Sprint, Verizon, etc) equipment to deliver functioning wireless signals
- Interconnection – a medium, typically fiber optics, that interconnects the node equipment with the hub equipment

Design Process for Skyline

Similar to the design of a macro cellular network, a WSP will provide requirements that a Distributed Antenna System (DAS) network must fulfill. There are three general classifications of requirements:

- Coverage – delivering adequate wireless signal in an area where signal is either not present or not usable (e.g. interference)
- Capacity – providing additional wireless signal and bandwidth resources from many sources (versus one source) to segment traffic and increase the overall capacity of the area being served
- Performance – providing both coverage and capacity to reduce congestion, better facilitate mobility, and improve the overall network performance in that specific area

The requirements for a DAS design could be either any one of the classifications or could be a combination of any or all of them.

In the case of the Skyline network, the primary requirement was to provide coverage in the specified area.

In a coverage design, there are three major goals:

- Contiguous coverage – design a network that provides seamless coverage throughout the area of interest
- Interface with the macro network – ensure coverage and performance continuity between the DAS and the macro network
- Aesthetics – minimizing the number of nodes and equipment per node location required to serve the area of interest

Because the goals can somewhat conflict (e.g. providing seamless coverage while minimizing the number of nodes within the design), combined with the small effective coverage radius of each individual node, the design process is very iterative. It is not uncommon to modify designs three to four



Summary

The designed node placement for the Skyline network is the optimal balance among the three main goals for a coverage-based DAS network. Even the slightest deviation in node locations, distance between nodes, antenna heights, etc. would have adverse effects for both the WSP and for the community.