Oakland City Planning Commission STAFF REPORT

Case File Number: CMD10109 **August 4, 2010**

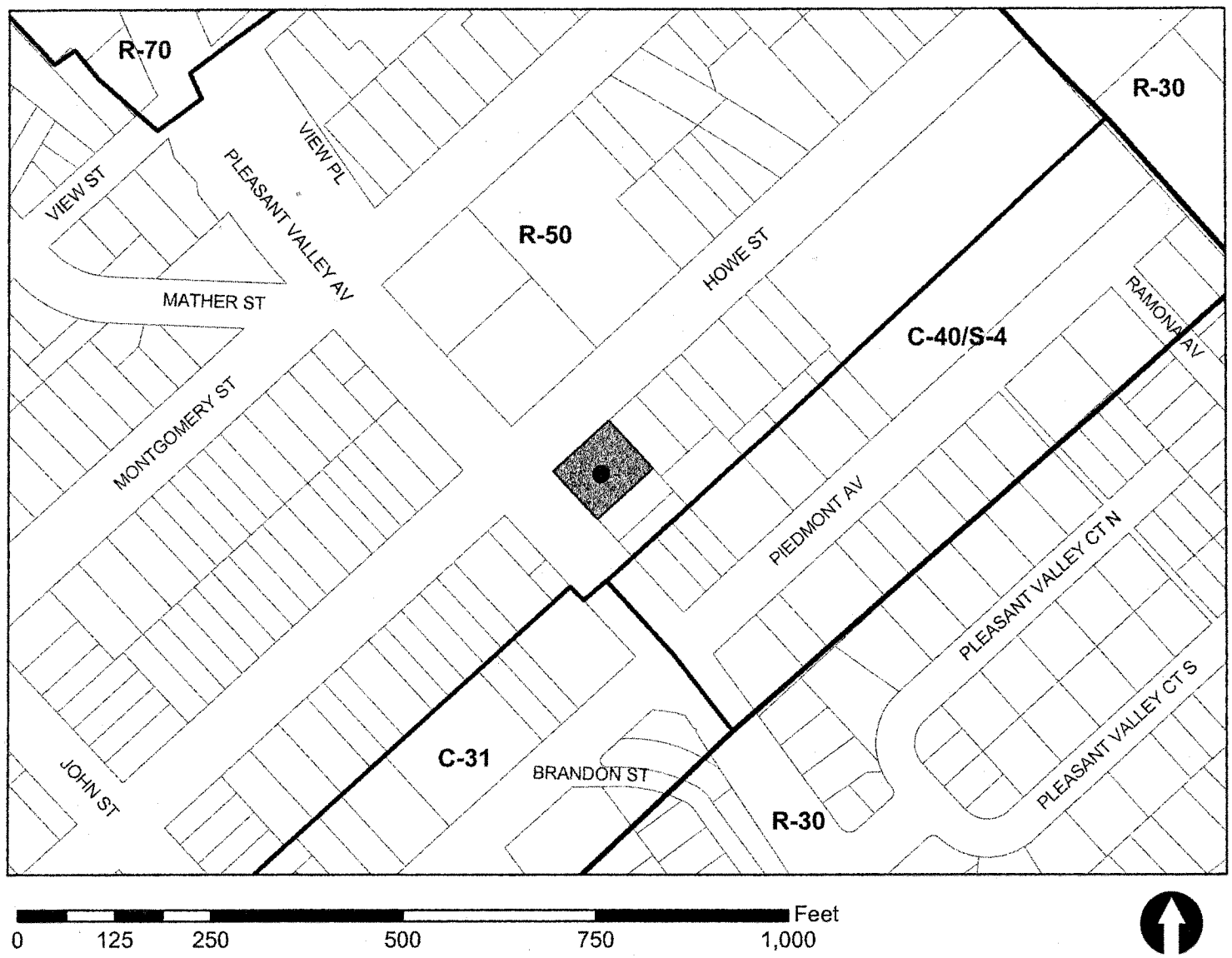
Location:	**1880 Pleasant Valley Avenue (See map on reverse)**
Assessors Parcel Numbers:	**(013 -1128-014-01)**
Proposal:	Modifications to an existing Macro Wireless Telecommunication Facility including (3) microwave antennas and (3) panel antennas mounted to the roof and an equipment cabinet located on the 2nd floor of the existing commercial building.
Applicant:	Clearwire Corp.
Contact Person/ Phone Number:	Charnel James (530) 219-1833
Owner:	Barton W. Bennett
Case File Number:	CMD10109
Planning Permits Required:	Major Conditional Use Permit and Design Review for modifications to an existing Macro Wireless Telecommunication Facility including (3) microwave antennas and (3) panel antennas mounted to the roof and an equipment cabinet located on the 2nd floor of the existing commercial building.
General Plan:	Mixed Housing Type
Zoning:	R-50 Medium Density Residential Zone
Environmental Determination:	Exempt, Section 15303 of the State CEQA Guidelines; new construction of small structures, 15301 existing facilities; 15183 Projects consistent with the General Plan or Zoning.
Historic Status:	Not Potential Designated Historic Property (PDHP); Survey rating: X
Service Delivery District:	2
City Council District:	I
Date Filed:	5/3/10
Finality of Decision:	Appealable to City Council
For Further Information:	Contact case planner **Jose M. Herrera-Preza** at **(510) 238-3808** or jherrera@oaklandnet.com

SUMMARY

This project would provide for a modification to an existing Macro Telecommunications Facilities including (3) new panel antennas, (3) new microwave antennas located behind an existing rooftop screen wall and the installation of an enclosed equipment facility on the second floor of the commercial building. The subject property, zoned residentially, is located within a commercial node surrounded by a residential area where the predominant pattern of development is a mixture of detached single family homes and multi-family residential buildings.

A Major Conditional Use Permit and Design Review is required for modifications to a Macro Telecommunications Facilities located in residential zones. As detailed below, the project meets all of the required findings for approval. Therefore, staff recommends approval of the project subject to the attached conditions of approval.

CITY OF OAKLAND PLANNING COMMISSION



Case File: CMD10-109
Applicant: Clearwire Corp.
Address: 1880 Pleasant Valley Avenue
Zone: R-50

PROJECT DESCRIPTION

The applicant (Clearwire Corp.) is proposing to install a total of six (6) wireless telecommunication antennas to be mounted within two existing roof top screen walls on the building. The proposed antennas would be flush mounted behind two existing RF screen walls which would be slightly enlarged to accommodate the new antennas. (**See Attachment A**). The associated equipment cabinet would be located within the existing building envelope on the second floor of the building.

PROPERTY DESCRIPTION

The subject property is approximately 8,500 square feet, located on the 1800 block of Pleasant Valley Avenue in between Howe Street and Piedmont Avenue. The subject property is located on a corner lot within a residential zone surrounded by both a mixture of commercial and residential properties. The subject site improved with a commercial office. The office building currently hosts three telecommunications providers on this property (Sprint, T-Mobile & Nextel).

GENERAL PLAN ANALYSIS

The subject property is located within the Mixed Housing Type General Plan designation. The Mixed Housing Type land use classification is intended to create, maintain and enhance residential areas typically located near the city's major arterials and characterized by a mix of single family homes, townhouses, small multi-unit buildings and neighborhood businesses. The proposed unmanned wireless telecommunication facility will not adversely affect or detract from the residential and commercial characteristics of the neighborhood. The antennas will be mounted within existing rooftop enclosures finished and painted to match the building thus visual impacts will be mitigated since the antennas and equipment cabinets will not disturb the existing structure. General Plan Policy N9.9 states that the City encourages that new development respects the architectural integrity of a building's original style. The proposed development will have no visual effect on the existing building.

ZONING ANALYSIS

The subject property is located within the R-50 Medium Density Residential Zone. The R-50 zone is intended to create, preserve, and enhance areas for apartment living at medium densities in desirable settings, and is typically appropriate to areas of existing medium density residential development. The proposal is for a new unmanned wireless telecommunication facility to be flush mounted behind existing rooftop RF screen walls of an existing commercial building. A major conditional use permit is required since the project is within the boundary of a residential zone. Staff finds that the proposed application meets the City of Oakland Telecommunication regulations (see Findings for Approval).

ENVIRONMENTAL DETERMINATION

The California Environmental Quality Act (CEQA) Guidelines lists the projects that qualify as categorical exemptions from environmental review. The proposed project is categorically exempt from the environmental review requirements pursuant to Sec. 15303, new construction of small structures, 15301, alterations to existing facilities, and 15183, projects consistent with the general plan or zoning.

KEY ISSUES AND IMPACTS

1. Conditional Use Permit

Section 17.16.070 of the City of Oakland Planning Code requires a conditional use permit to install a Macro Telecommunication facility in the R-50 Zone. The required findings for a major conditional use permit are listed and included in staff's evaluation as part of this report.

2. Project Site

Section 17.128.110 of the City of Oakland Telecommunication Regulations requires that 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.
D. Existing commercial or industrial structures in residential zones.
E. Other non-residential uses in residential zones.
F. Residential uses in non-residential zones.
G. Residential uses in residential zones.

*Facilities locating on an A, B or C ranked preference do not require a site alternatives analysis.

Since the proposed project involves the co-location of a new unmanned wireless facility on an existing structure with an existing wireless facility, the proposed development meets the (A) co-located on an existing structure or facility with existing wireless antennas, therefore a site alternatives analysis is not required.

3. 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 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:

The project meets design criteria (A) since the antennas will be mounted behind existing rooftop screen walls of the existing commercial building that are painted and finished to match the building and minimizing their impacts from the public view. Furthermore, to mitigate visual impacts the antennas will be mounted at least 30' above the public right of way. The associated equipment cabinets will have no visual impact since the equipment cabinets will be fully enclosed and located inside a second floor utility room and will adequately conceal any visibility from the public right of way or immediate neighbors.

4. 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. With the initial application, a RF emissions report, prepared by a licensed professional engineer or other expert, indicating that the proposed site will operate within the current acceptable thresholds as established by the Federal government or any such agency who may be subsequently authorized to establish such standards.
b. Prior to commencement of construction, a RF emissions report indicating the baseline RF emissions condition at the proposed site.
c. 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.

ARF emissions report, prepared by Hammett & Edison, Inc., Consulting Engineers (**Attachment B**) indicated that the proposed project meets the radio frequency (RF) emissions standards as required by the regulatory agency. The report states that the proposed project will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not cause a significant impact on the environment. Additionally, staff recommends that prior to the issuance of a final building permit, that the applicant submits certified RF emissions report stating that the facility is operating within acceptable thresholds established by the regulatory federal agency.

CONCLUSION

The proposed project meets all of the required findings for approval. Therefore, staff recommends approval of the project subject to the attached conditions.

RECOMMENDATIONS:

1. Affirm staff's environmental determination

2. Approve Conditional Use Permit and Design Review application CMD10-109 subject to the attached findings and conditions of approval.

Prepared by:

Jose M. Herrera-Preza
Planner I

Approved by:

Scott Miller
Zoning Manager

Approved for forwarding to the
City Planning Commission

Eric Angstadt
Deputy Director of Development

ATTACHMENTS:

A. Project Plans & Photo simulation
B. Hammett & Edison RF Emissions Report

FINDINGS FOR APPROVAL

This proposal meets all the required findings under Section 17.134.050, Conditional Use Permit Findings and Residential Design Review Criteria 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 – MINOR CONDITIONAL 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.

The proposed co-location of the six antennas and one equipment cabinet to an existing unmanned macro telecommunications facility, mounted behind two rooftop screen walls painted and finished to match the existing commercial building, would not adversely affect the operating characteristic or livability of the surrounding area. The facility will be unmanned and will not create additional vehicular or pedestrian traffic in the 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 co-location and design of the unmanned telecommunications facility will provide a convenient and functional working and living environment and maintain the attractive nature of the commercial location therefore it would not affect the general quality and character of the neighborhood.

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.

The proposed development will enhance the successful operation of the surrounding area in its basic community function and will provide an essential service to the community or region. This will be achieved by improving the functional use of the site by providing a regional telecommunication facility for the community and will be available to police, fire, public safety organizations and the general public.

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.

The proposal conforms with all significant aspects of the design review criteria set forth in Chapter 17.136 of the Oakland Planning Code, as outlined below.

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 proposal conforms in all significant aspects with the Oakland General Plan and with any other applicable plan or zoning maps adopted by the City of Oakland. The proposed macro-telecommunication facility in the Mixed Housing Type General Plan designation will enhance and improve communication service for a mixture of civic, commercial and institutional uses in the area.

17.136.070A – DESIGN REVIEW CRITERIA :

A. The proposed design will create a building or set of buildings that are well related to the surrounding area in their scale, bulk, height, materials, and textures.

The proposal would modify an existing telecommunications facility through the addition of (3) panel antennas and (3) microwave antennas inside existing rooftop enclosures of a commercial office building and (1) equipments cabinet, located inside a second floor utility room. The addition of the antennas to the existing building will not create an increase in height and will match the existing building in their color and finish materials. The new antennas will be fully enclosed inside RF friendly screen enclosures and maintains existing projection height above the roof lines. The existing exterior finish materials will not change and the location and scale of the addition will be compatible to the existing facilities and therefore is consistent and well related to the surrounding area in scale, bulk, height, materials, and textures.

B. The proposed design will protect, preserve, or enhance desirable neighborhood characteristics.

The design will be appropriate and compatible with current zoning and general plan land use designations. The proposal protects and preserves the surrounding neighborhood context by co-locating additional wireless telecommunication antennas to an existing facility. The antennas will be fully enclosed inside a RF screen enclosure that is painted to match the building and be located 30' from the public right of way thus mitigating the impact on the public view and will not have any visual impact. The equipment cabinet would be inside the building, thus will not affect adjoining neighborhood properties.

C. The proposed design will be sensitive to the topography and landscape.

The subject property is on a lot in which topography is not an issue of concern. The location and scale of the proposal will maintain existing landscaping.

D. If situated on a hill, the design and massing of the proposed building relates to the grade of the hill.

This criteria is not applicable to this proposal.

CONDITIONS OF APPROVAL

E. The proposed design conforms in all significant respects with the Oakland Comprehensive Plan and with any applicable district plan or development control map which has been adopted by the City Council.

The proposal conforms with the City of Oakland Comprehensive General Plan meeting specific General Plan policies and the Supplemental Report and Recommendations on Revisions to the Citywide Telecommunications Regulations. The proposal will conform to performance standards for noise set forth in Section 17.143.020 (j) and (k) for decibels levels in residential areas for both day and nighttime use. The Project conforms to all macro-facility definitions set forth in Section 17.128.050 and meets all design review criteria to minimize all impacts throughout the neighborhood

17.128.070(B) CITY OF OAKLAND TELECOMMUNICATIONS FACILITIES (MACRO) DESIGN REVIEW CRITERIA

1. **Antennas should be painted and/or textured to match the existing structure:**
The proposed antennas will be located behind RF friendly screen walls that and will be painted and finished to match the existing structure thus minimizing the impacts from public view.

2. **Antennas mounted on architecturally significant structures or significant architectural details of the building should be covered by appropriate casings which are manufactured to match existing architectural features found on the building:**
The proposed antennas will be mounted on the roof of an existing commercial building behind screen walls. The antennas will be mounted approximately 30' above grade to the centerline of the antennas. The antennas will not be mounted on any structure that will affect architectural features of existing buildings on the subject property.

3. **Where feasible, antennas can be placed directly above, below or incorporated with vertical design elements of a building to help in camouflaging:**
The proposal will utilize unused antenna space behind existing rooftop screen walls setback from the façade of the building. Screen walls are painted and textured to camouflage antennas from public view thus creating minimal visual impact from street view.

4. **Equipment shelters or cabinets shall be screened from the public view by using landscaping, or materials and colors consistent with surrounding backdrop:**
The associated equipment shelters or cabinets will be located inside a second floor utility room and therefore the exterior of the structure will not be affected in anyway that will adversely affect it's aesthetic features from the street.

5. **Equipment shelters shall be consistent with the general character of the area:**
The associated equipment shelters or cabinets will be located inside a second floor utility room and therefore the exterior of the structure will not be affected.

6. **For antennas attached to the roof, maintain a 1:1 ratio 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.**
The proposal will utilize unused antenna space behind existing rooftop screen walls setback from the façade of the building. Screen walls are painted and textured to camouflage antennas from public view thus creating minimal visual impact from street view.

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.**
The antennas will be rooftop mounted on the exterior of building and will not be accessible to the public due to its location. The equipment cabinets will be inside the building, in a secured and separated room from other commercial activities and will not be accessible to the public.

17.128.070 (C) Conditional Use Permit Criteria for Macro Facilities.
In addition to the conditional use criteria listed in Chapter 17.134, the following specific additional criteria must be met before a conditional use permit can be granted:

1. The project must meet the special design review criteria listed in subsection B of this Section.
The project meets all special design review criteria, please see findings above.

2. The proposed project must not disrupt the overall community character. (Ord. 11904 § 5.01 (part), 1996: prior planning code § 8507)
The project when viewed in it's entirety, will benefit the overall community character by co-locating antennas on a commercial building and screening them from public view.

CONDITIONS OF APPROVAL

CONDITIONS OF APPROVAL
CMD10-109

STANDARD CONDITIONS:

1. **Approved Use**
   Ongoing
   a) The project shall be constructed and operated in accordance with the authorized use as described in the application materials, **CMD10-109**, and the plans dated **May 3rd, 2010** and submitted on **May 3rd, 2010** 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 required prior written approval from the Director of City Planning or designee.

   b) This action by the City Planning Commission ("this Approval") includes the approvals set forth below. This Approval includes: **The co-location of a new unmanned macro telecommunications facility located along the rooftop of an existing commercial building, under Oakland Planning Code 17.128**

2. **Effective Date, Expiration, Extensions and Extinguishment**
   Ongoing
   Unless a different termination date is prescribed, this Approval shall expire **two calendar 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 **Oakland Planning Code Telecommunications Regulations** 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 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.
   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, and vegetation management for preventing fires and soil erosion.

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

   c) Violation of any term, conditions or project description relating to the Approvals 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 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.

6. **Signed Copy of the Conditions**
   With submittal of a demolition, grading, and building permit
   A copy of the approval letter and conditions 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**
   a) ***Ongoing*** The project applicant shall defend (with counsel reasonably 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 their respective agents, officers, and employees (hereafter collectively called the City) from any claim, action, or proceeding (including legal costs and attorney's fees) against the City to attack, set aside, void or annul this Approval, or any related approval by the City. The City shall promptly notify the project applicant of any claim, action or proceeding and the City shall cooperate fully in such defense. The City may elect, in its sole discretion, to participate in the defense of said claim, action, or proceeding. The project applicant shall reimburse the City for its reasonable legal costs and attorney's fees.

   b) Within ten (10) calendar days of the filing of a claim, action or proceeding to attack, set aside, void, or annul this Approval, or any related approval by the City, the project applicant shall execute a Letter Agreement with the City, acceptable to the Office of the City Attorney, which memorializes the above obligations and this condition of approval. This condition/obligation shall survive termination, extinguishment, or invalidation of this, or any related approval. Failure to timely execute the Letter Agreement does not relieve the project applicant of any of the obligations contained in 7(a) above, or other conditions of approval.

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, and if any 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.

10. **Job Site Plans**
    Ongoing throughout demolition, grading, and/or construction
    At least one (1) copy of the stamped approved plans, along with the Approval Letter and Conditions of Approval, shall be available for review at the job site at all times.

11. **Special Inspector/Inspections, Independent Technical Review, Project Coordination and Management**
    Prior to issuance of a demolition, grading, and/or construction permit
    The project applicant may be required to pay for on-call special inspector(s)/inspections as needed during the times of extensive or specialized plancheck review, or construction. The project applicant may also be required to cover the full costs of independent technical and other types of peer review, monitoring and inspection, including without limitation, third party plan check fees, including inspections of violations of Conditions of Approval. The project applicant shall establish a deposit with the Building Services Division, as directed by the Building Official, Director of City Planning or designee.

PROJECT SPECIFIC CONDTIONS:

12. **Radio Frequency Emissions**
    Prior to issuance of building permit
    The applicant shall submit a certified RF emissions report to the City of Oakland stating that the proposed facility will operate within the established RF standards set by the Federal Communications Commission.
    Prior to the issuance of a 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.

13. **Sinking Fund for Facility Removal or Abandonment.**
    Prior to issuance of a 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 of 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 adequate to

determined by the office of Budget and Finance and shall be adequate to defray expenses associated with the removal of the telecommunication facility.

14. 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.

15. Compliance with Title 24

Prior to issuance of certificate of occupancy.

The applicant shall implement acoustical techniques in compliance with Title 24 to ensure that noise levels in interior spaces remain at or below 45 CNEL with all doors and windows closed.

clearwire®

PLEASANT VALLEY AVE.
CA-SFO0604
1880 PLEASANT VALLEY AVE, OAKLAND, CA 94611

RECEIVED
MAY 03 2010
City of Oakland
Planning & Zoning Division

CLEARWIRE SIGNATURE BLOCK

DAVID SEMSARHA – RF ENGINEER — DATE

MIKE LEWIS – MICROWAVE ENGINEER — DATE

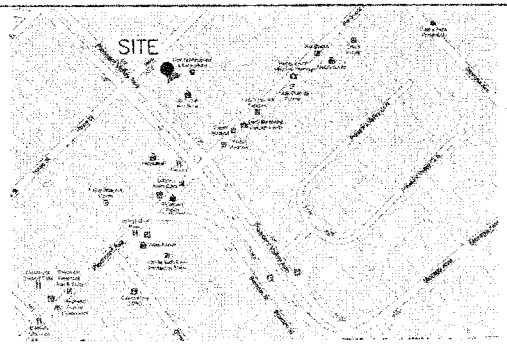
DENNIS PIKE – CONSTRUCTION MANAGER — DATE

NSA SIGNATURE BLOCK

MICHELE PHIPPEN – ZONING/SITE ACQ. MANAGER — DATE

MIRO MILOSEVICH – CONSTRUCTION MANAGER — DATE

VICINITY MAP - N.T.S.



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DRIVING DIRECTIONS

FROM: CLEARWIRE REGIONAL OFFICE
2999 OAK RD
WALNUT CREEK, CA 94597

TO: 1880 PLEASANT VALLEY AVE,
OAKLAND, CA 94611

DISTANCE: 15.4 MILES

1. DEPART OAK RD 0.1 MILES
2. TURN RIGHT ONTO TREAT BLVD 0.3 MILES
3. TURN RIGHT ONTO N MAIN ST 0.2 MILES
4. TAKE RAMP RIGHT FOR I-680 SOUTH / SINCLAIR FWY TOWARD SAN JOSE / OAKLAND 1.5 MILES
5. TAKE RAMP RIGHT FOR SR-24 WEST / GROVE SHAFTER FWY TOWARD LAFAYETTE / OAKLAND 9.3 MILES
6. KEEP RIGHT TO STAY ON SR-24 WEST / CALDECOTT TUNNEL / GROVE SHAFTER FWY 2.2 MILES
7. AT EXIT 4B, TAKE RAMP RIGHT FOR BROADWAY TOWARD BROADWAY 1.3 MILES
8. TURN LEFT ONTO PLEASANT VALLEY AVE 0.4 MILES
9. ARRIVE AT 1880 PLEASANT VALLEY AVE, OAKLAND, CA 94611-4211 0.0 MILES

CODE COMPLIANCE

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 THESE CODES.

1. CALIFORNIA ADMINISTRATIVE CODE (INCL TITLE 24 & 25)
2. 2007 CALIFORNIA BUILDING CODE
3. CITY/COUNTY ORDINANCES
4. BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)
5. MECHANICAL 2007 CALIFORNIA CODE
6. ANSI/EIA-222-F LIFE SAFETY CODE NFPA-101
7. 2007 CALIFORNIA PLUMBING CODE
8. 2007 CALIFORNIA ELECTRICAL CODE
9. LOCAL BUILDING CODE

BUILDING/ SITE DATA LEGEND

LATITUDE:	37° 48' 51.05" N
LONGITUDE:	122° 14' 47.94" W
ELEVATION:	179'
A.P.N.:	013-1128-014-01
ZONING:	R-50, RESIDENTIAL
JURISDICTION	CITY OF OAKLAND
OCCUPANCY:	U, UNMANNED
TYPE OF CONSTRUCTION:	VB
CURRENT USE:	COMMERCIAL BUILDING
PROPOSED USE:	COMMERCIAL BUILDING
AREA OF CONST.:	100 SQ. FT.
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
TITLE 24 REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. TITLE 24 IS EXEMPT.

PROJECT DESCRIPTION

INSTALLATION OF WIRELESS COMMUNICATION ANTENNAS & EQUIPMENT ON EXISTING ROOFTOP, INCLUDING THE INSTALLATION OF A NEW EQUIPMENT CABINET, (3) MICROWAVE DISHES, AND (3) PANEL ANTENNAS.

PROJECT SUMMARY

PROPERTY OWNER:
BARTON W. BENNETT
1880 PLEASANT VALLEY AVE.
OAKLAND, CA 9611
CONTACT: BARRY BENNETT
PHONE: (510) 531-7909

APPLICANT:
CLEAR WIRELESS
4400 CARILLON POINT
KIRKLAND, WA 98033
CONTACT: CAROL BYRNE
PHONE: (925) 395-6457

SITE ACQUISITION/ZONING:
NSA WIRELESS INC.
2000 CROW CANYON PL. STE. 400
SAN RAMON, CA 94583
CONTACT: MICHELE PHIPPEN
PHONE: (925) 244-1890

CONSTRUCTION MANAGER:
NSA WIRELESS INC.
2000 CROW CANYON PL. STE. 400
SAN RAMON, CA 94583
CONTACT: MIRO MILOSEVICH
PHONE: (925) 202-1903

ARCHITECT:
STANTEC ARCHITECTURE INC.
1137 N. McDOWELL BLVD.
PETALUMA, CA 94954
CONTACT: MAISHA RUTH
PHONE: (707) 658-4707

STRUCTURAL ENGINEER:
STANTEC CONSULTING INC
2590 VENTURE OAKS WAY
VENTURE OAKS, CA 95833
CONTACT: JIM CARLSON, P.E.
PHONE: (916) 569-2589

ELECTRICAL ENGINEER:
STANTEC CONSULTING INC
2590 VENTURE OAKS WAY
VENTURE OAKS, CA 95833
CONTACT: DAVE KHOLL
PHONE: (916) 569-2537

SHEET INDEX

T1	TITLE SHEET
A1	SITE PLAN
A2	EQUIPMENT PLAN AND ANTENNA LAYOUT
A2.1	EQUIPMENT CABINET AND DETAILS
A3	ELEVATIONS
A3.1	LINE OF SITE
A4	ELEVATIONS
A5	ANTENNA DETAILS
E1	SINGLE LINE DIAGRAM AND PANEL SCHEDULE
E2	GROUNDING SCHEMATIC DIAGRAM & NOTES
HAZ	MATERIAL SAFETY DATA SHEET & BATTERY TABLE

clearwire
5805 LAKE WASHINGTON BLVD.
NE, SUITE 300
KIRKLAND, WA 98033

PROJECT INFORMATION:
COMMERCIAL ROOFTOP
PLEASANT VALLEY AVE.
CA-SFO0604
1880 PLEASANT VALLEY AVE,
OAKLAND, CA 94611
ALAMEDA COUNTY

CURRENT ISSUE DATE: 4/22/10

ISSUED FOR: ZD

REV.:	DATE:	DESCRIPTION:	BY:
1			

ATTACHMENT A

SHEET TITLE: TITLE SHEET

SHEET NUMBER: T1

REVISION: XXXXXXX

SCALE NOTE:

IF DIMENSIONS SHOWN ON PLAN DO NOT SCALE CORRECTLY, CHECK FOR REDUCTION OR ENLARGEMENT FROM ORIGINAL PLANS.

ORIGINATION NOTE:

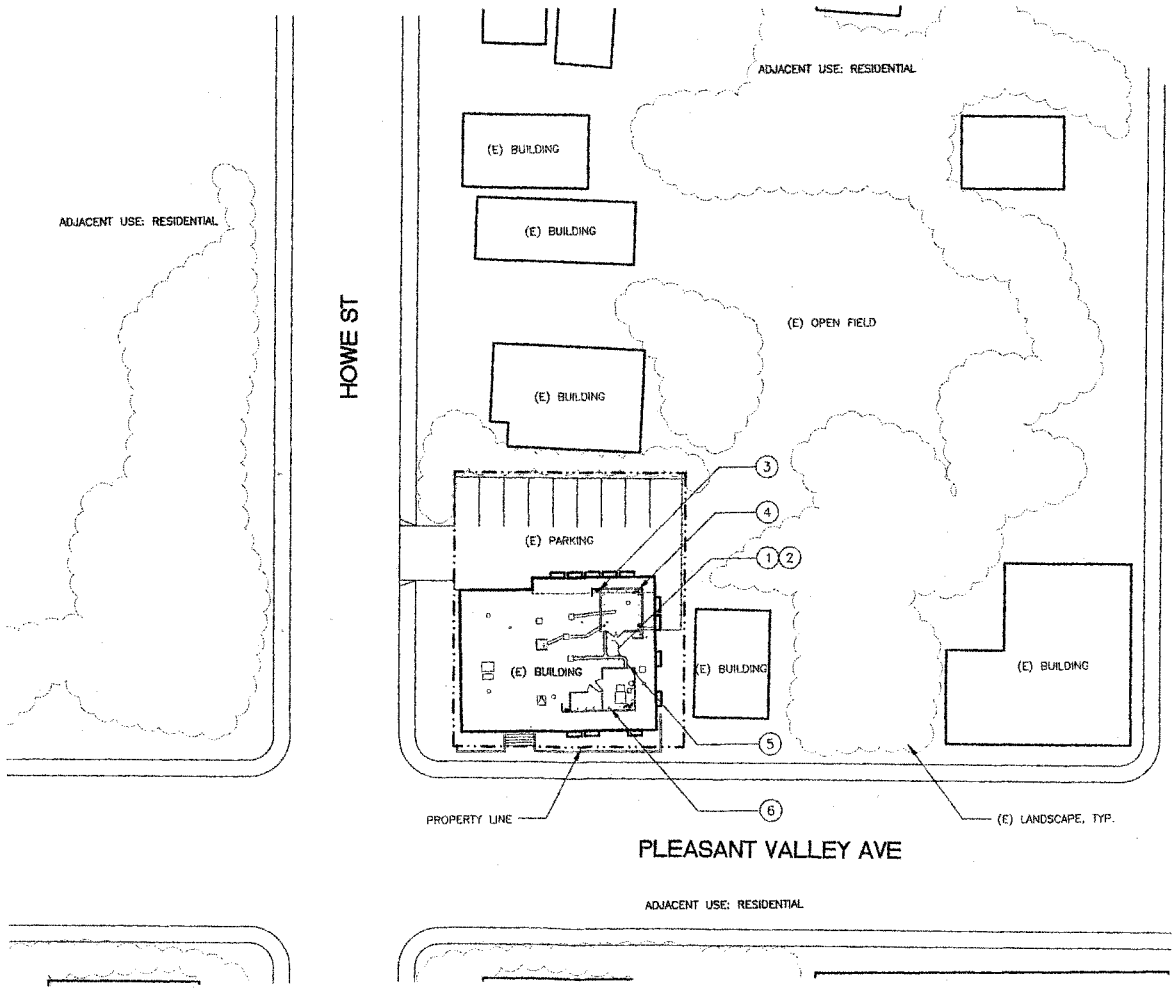
BASE PLAN PROVIDED BY OTHERS AND MAY BE AN OLDER SITE PLAN OR AS-BUILT. NEWER FIELD NOTATIONS APPEAR UNSCREENED AND OVERRIDE SCREENED IMAGE. CONTRACTOR TO FIELD CONFIRM ALL AND TO OBTAIN AS BUILTS, BEFORE START OF CONSTRUCTION.

GENERAL NOTES:

1. THIS PROPOSAL IS FOR AN UNMANNED TELECOMMUNICATIONS FACILITY CONSISTING OF INSTALLATION OF NEW ANTENNAS ON THE ROOFTOP OF AN EXISTING BUILDING. THE NEW FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE.
2. THE NEW FACILITY IS UNMANNED AND IS NOT FOR HUMAN HABITAT. (NO HANDICAP ACCESS IS REQUIRED).
3. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY CLEARWIRE TECHNICIANS.
4. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS PROPOSAL.
5. OUTDOOR STORAGE AND SOLID WASTE CONTAINERS ARE NOT NEW.
6. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
7. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED BY THE CONSTRUCTION OPERATION.
8. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTION REQUIRED FOR CONSTRUCTION.
9. SUBCONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
10. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND DRAWINGS PROVIDED BY THE SITE OWNER. SUBCONTRACTOR SHALL NOTIFY CLEARWIRE OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

KEY NOTES:

1. PROPOSED CLEARWIRE LEASE AREA IN SPRINT EQUIPMENT ROOM ON 2ND FLOOR
2. PROPOSED CLEARWIRE EQUIPMENT CABINET IN SPRINT EQUIPMENT ROOM ON 2ND FLOOR
3. PROPOSED RF ANTENNA BEHIND RF FRIENDLY SCREEN WALL (TYP. OF 3)
4. PROPOSED MICROWAVE ANTENNA BEHIND RF FRIENDLY SCREEN WALL (TYP. OF 3)
5. PROPOSED COAXIAL CABLE RUN IN CABLE TRAY
6. EXISTING ANTENNAS TO REMAIN. TYP.



LEGAL DESCRIPTION:

TBD.

NOTES:

1. DO NOT SCALE DRAWINGS. ALL DIMENSIONS OF AND BETWEEN EXISTING BUILDINGS/STRUCTURES, OR RELATIVE DISTANCES AS SHOWN BETWEEN EXISTING BUILDINGS/STRUCTURES AND THE TRUE NORTH ARE TO BE CONFIRMED BY A SURVEYOR.
2. POWER/TELCO ROUTING AND DESIGN ARE PRELIMINARY AND MUST BE VERIFIED WITH LOCAL UTILITY COMPANIES.

SITE PLAN

SCALE 1" = 20'-0" 1

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5805 LAKE WASHINGTON BLVD. NE. SUITE 300 KIRKLAND, WA 98033

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1880 PLEASANT VALLEY AVE.
OAKLAND, CA 94611
ALAMEDA COUNTY

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	4/22/10	100% ZD	MP

PLANS PREPARED BY:

Stantec

Stantec Architecture Inc. 1137 N. McDowell Blvd. Petaluma, CA U.S.A. 94954 Tel. 707.765.1660 Fax. 707.765.9908 www.stantec.com

CONSULTANT:

NSA Wireless, Inc.
2000 CROW CANYON PL., STE 400
SAN RAMON, CA 94583
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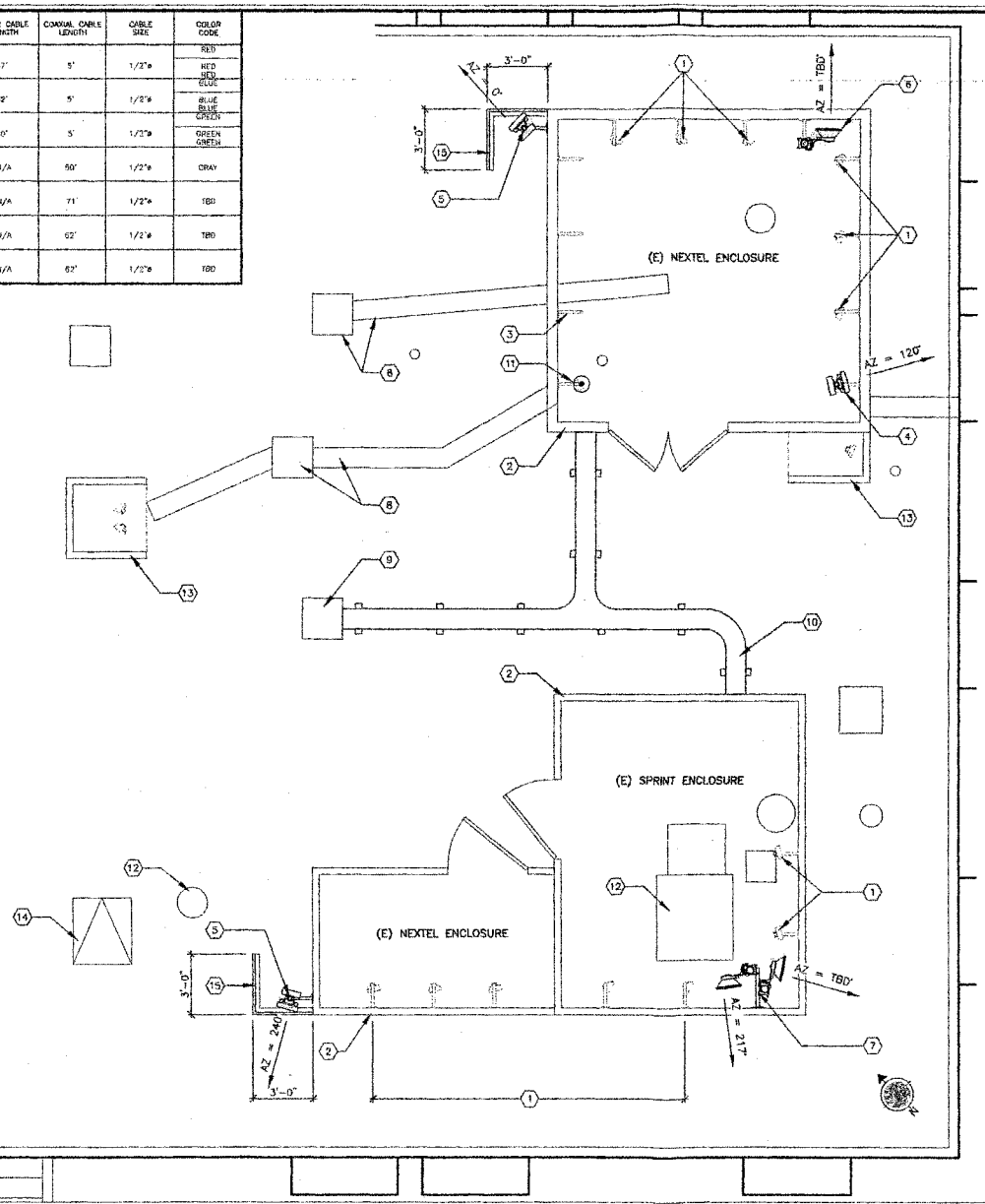
FAX: (925) 355-0672

SEAL OF APPROVAL:

SHEET TITLE: SITE PLAN

SHEET NUMBER: A1 REVISION: XXXXXXX

ANTENNA I.D.	AZIMUTH	ANTENNA MAKE/MODEL	FIBER CABLE LENGTH	COAXIAL CABLE LENGTH	CABLE SIZE	COLOR CODE
SECTOR A	0°	KATHREIN 840 10064	57'	5'	1/2"ø	RED RED RED
SECTOR B	120°	KATHREIN 840 10064	82'	5'	1/2"ø	BLUE BLUE BLUE
SECTOR C	240°	KATHREIN 840 10064	80'	5'	1/2"ø	GREEN GREEN GREEN
GPS	N/A	MOTOROLA TIMING 2000	N/A	50'	1/2"ø	GRAY
MICROWAVE 1	217°	ANDREW 2' DISH	N/A	71'	1/2"ø	TBD
MICROWAVE 2	TBD'	ANDREW 1' DISH	N/A	62'	1/2"ø	TBD
MICROWAVE 3	TBD'	ANDREW 1' DISH	N/A	62'	1/2"ø	TBD



1. (E) PANEL ANTENNA AND PIPE MOUNT (TYP.)
2. (E) RF FRIENDLY SCREEN WALL
3. (E) VACANT PIPE MOUNT (TYP. OF 6)
4. (N) PANEL ANTENNA INSTALLED ON (E) PIPE MOUNT
5. (N) PANEL ANTENNA & (N) PIPE MOUNT
6. (N) MW ANTENNA INSTALLED ON (E) PIPE MOUNT
7. TWO (N) MW ANTENNAS INSTALLED ON (N) PIPE MOUNT
8. (E) NEXTEL DOG HOUSE AND CABLE TRAY FOR CABLES
9. (E) SPRINT DOG HOUSE AND CABLE TRAY FOR CABLES, THROUGH TO SPRINT EQUIPMENT ROOM BELOW. SEE A2.1
10. (N) CABLE TRAY FOR 2" CLEARWIRE FLEX-DUCT (FIBER) & 1/2" COAX CABLES
11. (N) GPS ANTENNA
12. (E) ROOFTOP EQUIPMENT, TYP.
13. (E) T-MOBILE SCREEN W/ PANEL ANTENNA
14. (E) ROOF HATCH
15. (N) RF FRIENDLY SCREEN WALL. FINISH AND PAINT TO MATCH ADJACENT SCREEN WALL

EQUIPMENT AREA PLAN

SCALE 3/8"=1'-0"

1

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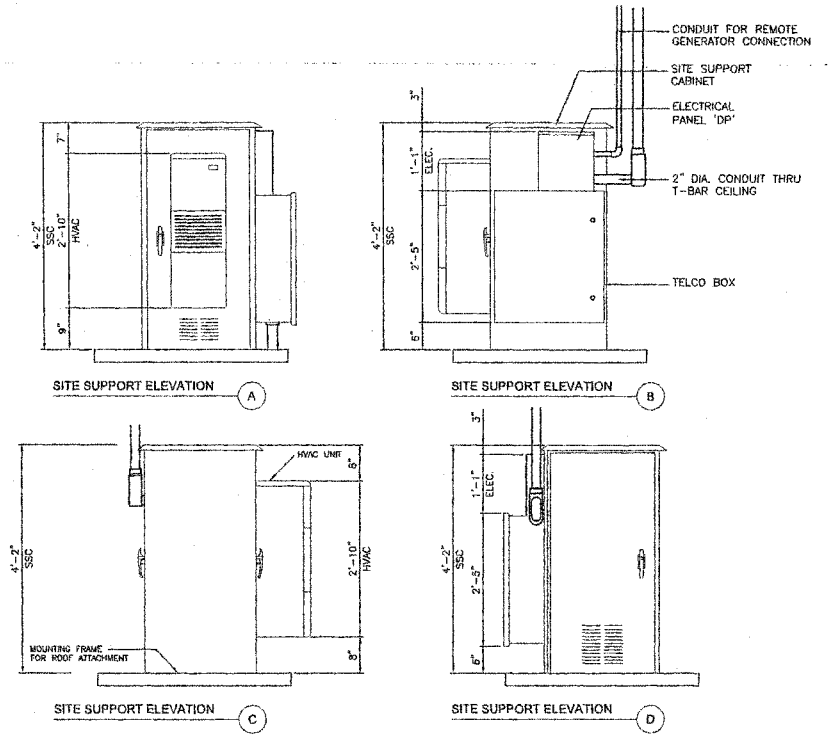
SEAL OF APPROVAL:

SHEET TITLE:

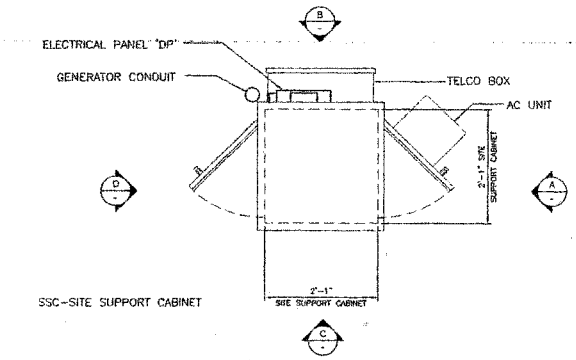
EQUIPMENT PLAN AND ANTENNA LAYOUT

SHEET NUMBER: A2

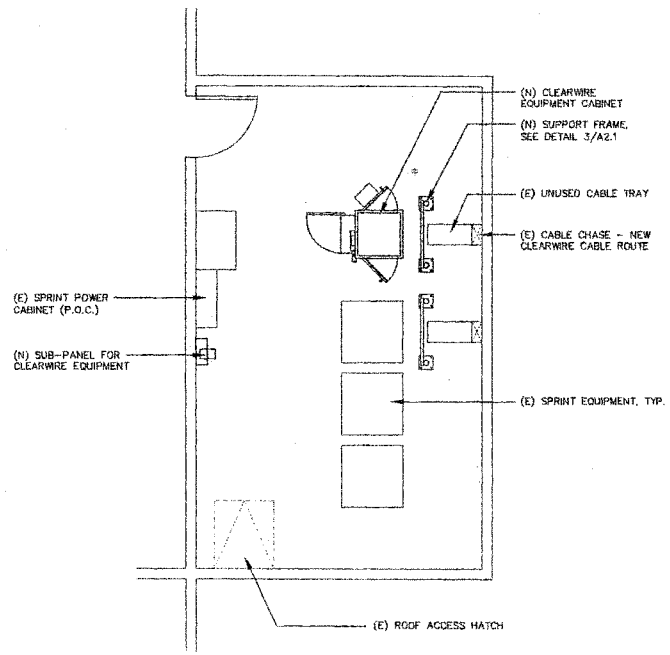
REVISION: XXXXXXX



EQUIPMENT ELEVATIONS DDB UNLIMITED #R7-54DXCW-ACD — SCALE 1"=1'-0" — 1

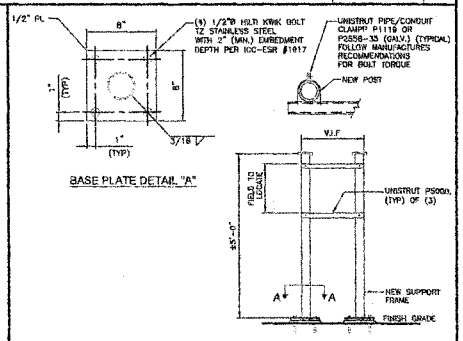


DDB UNLIMITED #R7-54DXCW-ACD EQUIPMENT PLAN VIEW — SCALE 1" = 1'-0" — 4



SPRINT EQUIPMENT ROOM PLAN - 2ND FLOOR — SCALE 3/8"=1'-0" — 5

NOT USED — SCALE N.T.S. — 2



SUPPORT FRAME — SCALE N.T.S. — 3

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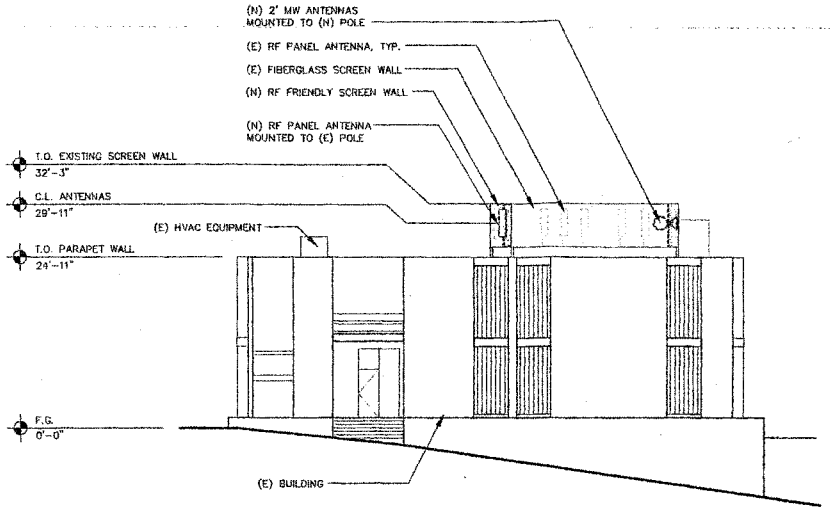
SEAL OF APPROVAL:

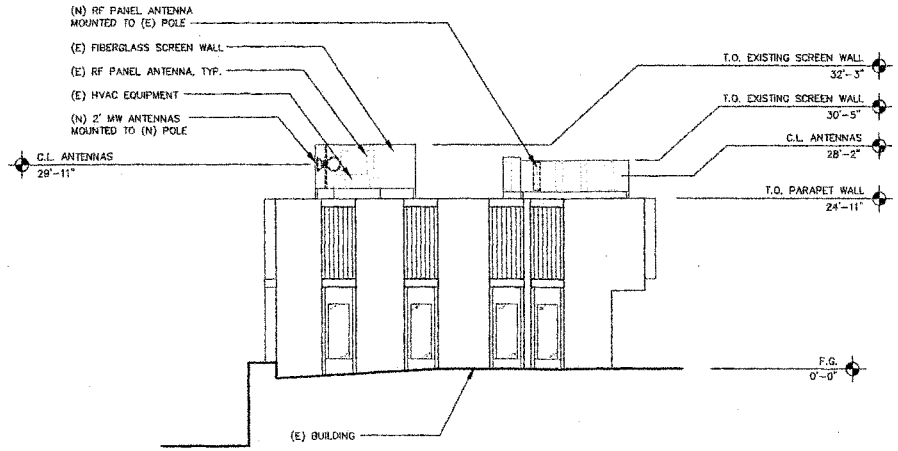
SHEET TITLE:
EQUIPMENT CABINET AND DETAILS

SHEET NUMBER: A2.1 REVISION: XXXXXXX

SCALE NOTE:
IF DIMENSIONS SHOWN ON PLAN DO NOT SCALE CORRECTLY, CHECK FOR REDUCTION OR ENLARGEMENT FROM ORIGINAL PLANS.



SOUTHWEST ELEVATION — SCALE 1/8" = 1'-0" — 1



SOUTHEAST ELEVATION — SCALE 1/8" = 1'-0" — 2

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KIRKLAND, WA 98033

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1880 PLEASANT VALLEY AVE.
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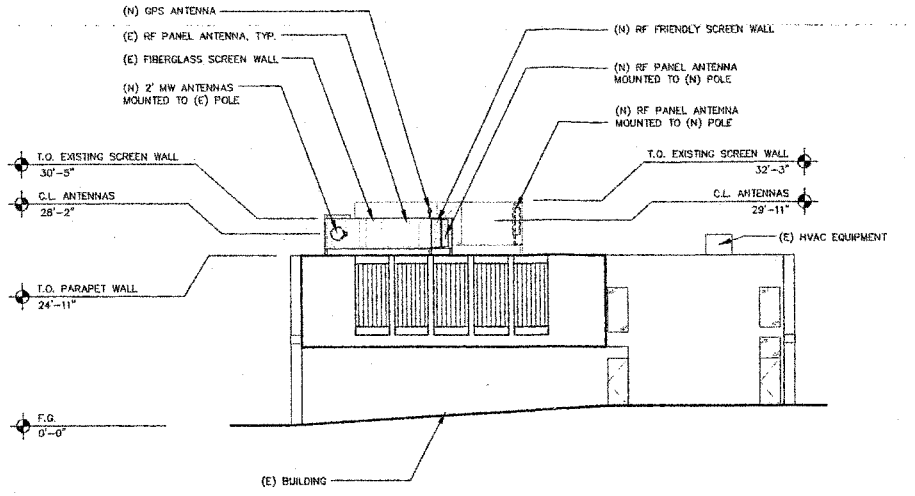
SEAL OF APPROVAL:

SHEET TITLE: ELEVATIONS

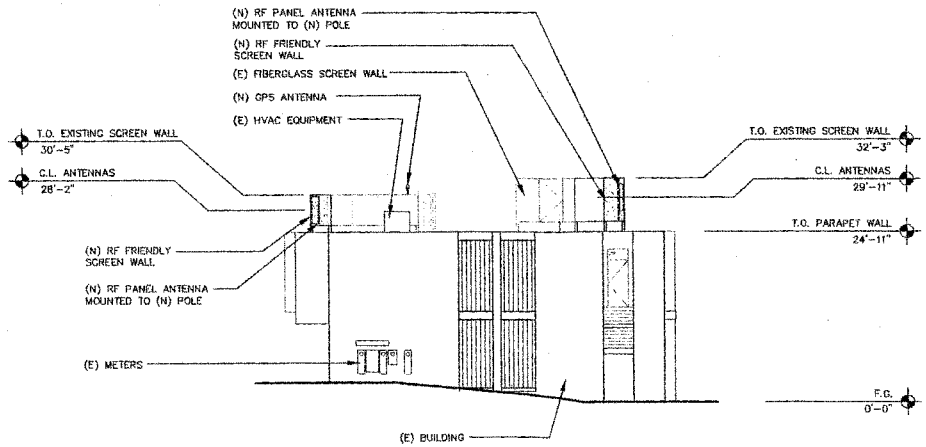
SHEET NUMBER: A3 REVISION: XXXXXXX

SCALE NOTE:
IF DIMENSIONS SHOWN ON PLAN DO NOT SCALE CORRECTLY, CHECK FOR REDUCTION OR ENLARGEMENT FROM ORIGINAL PLANS.



NORTHEAST ELEVATION

SCALE 1/8" = 1'-0" | 1



NORTHWEST ELEVATION

SCALE 1/8" = 1'-0" | 2

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5805 LAKE WASHINGTON BLVD.
NE, SUITE 300
KIRKLAND, WA 98033

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CA-SF00604
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OAKLAND, CA 94611
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CURRENT ISSUE DATE:
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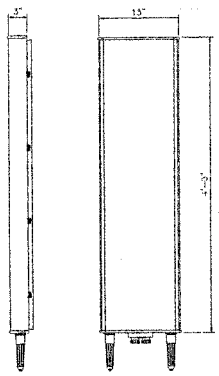
SEAL OF APPROVAL:

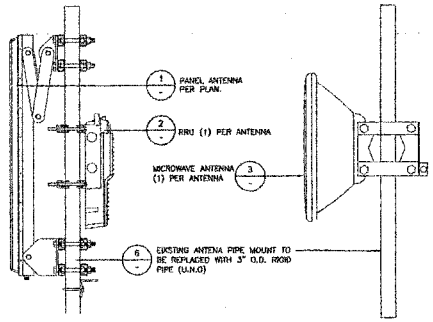
SHEET TITLE:
ELEVATIONS

SHEET NUMBER: A4
REVISION: XXXXXXX



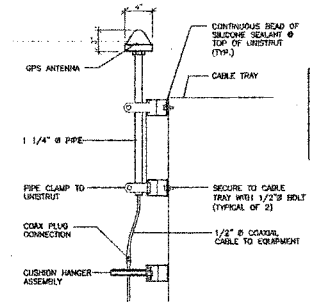
MANUFACTURER: POWERWAVE PANEL ANTENNA
LENGTH: 4'-4"
WIDTH: 1'-1"
DEPTH: 3"
WEIGHT: 23.5 LBS

PANEL ANTENNA DETAIL 1



NOTE:
ANTENNAS, RF EQUIPMENT AND HARDWARE TO BE INSTALLED PER MANUFACTURES SPECIFICATIONS

ANTENNA LAYOUT 2



LENGTH: 3" (82 MM)
WIDTH: 4" (102 MM)
WEIGHT: 11 OZ (312 G)

NOTES:

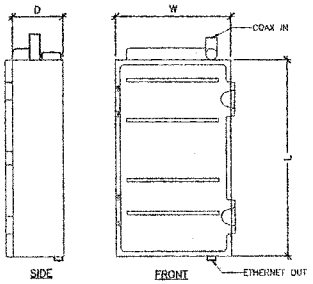
1. LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SOUTHERN SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
2. ALL GPS ANTENNA LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS ANTENNA.
3. IF ICE BRIDGE OR SIMILAR POST IS NOT GROUNDED, GROUND WITH #2 AWG TINNED BARE COPPER WIRE EXOTHERMICALLY BONDED TO POST AND CONNECTED TO GROUND RING.
4. THE WEIGHT OF THE ANTENNA MOUNT IS 6.5 LBS.

GPS ANTENNA MOUNT 3

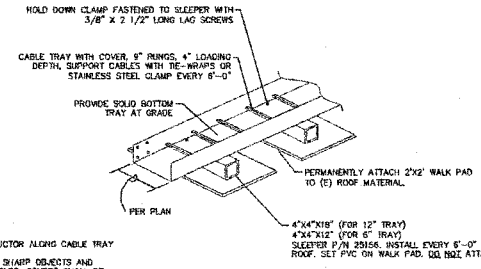
MANUFACTURER: HUAWEI
LENGTH: 18.9"
WIDTH: 14"
DEPTH: 4.7"
WEIGHT: 33.0 LBS

RRU GROUNDING NOTES:

1. THE RRU SHALL BE GROUNDED WITH A #2 AWG COPPER STRANDED GROUND CABLE TO THE TERMINATION POINT LOCATED ON THE RRU. THE #2 WIRE MUST BE STRIPPED TO BARE COPPER TO 1" BEFORE INSERTING INTO THE TERMINATION POINT
2. THE OTHER END OF THE GROUND CABLE WILL BE CONNECTED TO THE TOWER TOP GROUND BUS BAR. THE COPPER LUG BARREL WITH (2) 3/8" HOLES WITH 1" SPACING WILL BE CRIMPED USING THE PROPER CRIMPING TOOL TO THE #2 AWG 2 WIRE. CONNECTION IS BOLTED USING STAINLESS STEEL BOLTS, NUTS, AND WASHERS. NO-OX OR EQUIVALENT NON-OXIDIZING AGENT IS TO BE APPLIED TO BOTH THE LUG AND THE BUSS BAR WHER THE CONNECTION IS MADE.
3. TERMINATION OF #2 AWG INSULATED COPPER WIRE TO 2"X10" COPPER BUS BAR



RRU DETAIL 4

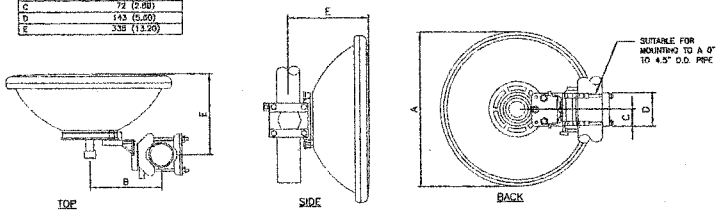


NOTE:
1. RUN #2 AWG BCW GROUND CONDUCTOR ALONG CABLE TRAY AND GROUND AT BOTH ENDS.
2. CABLE TRAYS SHALL BE FREE OF SHARP OBJECTS AND BURRS WHICH COULD DAMAGE CABLES. COVERS SHALL BE FASTENED USING HOLD DOWN CLIPS. SHEET METAL SCREWS ARE NOT ACCEPTABLE.

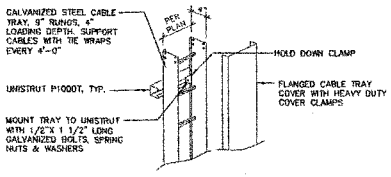
CABLE TRAY ON SLEEPERS 5

ANTENNA DIMENSIONS, MM (IN)

A	663 (26.10)
B	358 (14.10)
C	72 (2.83)
D	143 (5.63)
E	338 (13.30)

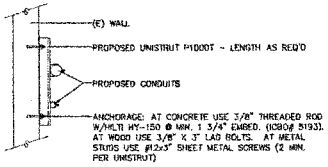


MICROWAVE DETAIL 6



NOTE:
1. CABLE TRAYS SHALL BE FREE OF SHARP OBJECTS AND BURRS WHICH CAN DAMAGE CABLES. COVERS SHALL BE FASTENED USING HOLD DOWN CLIPS. SHEET METAL SCREWS ARE NOT ACCEPTABLE.

VERTICAL CABLE TRAY 7



CONDUIT ON WALL 8

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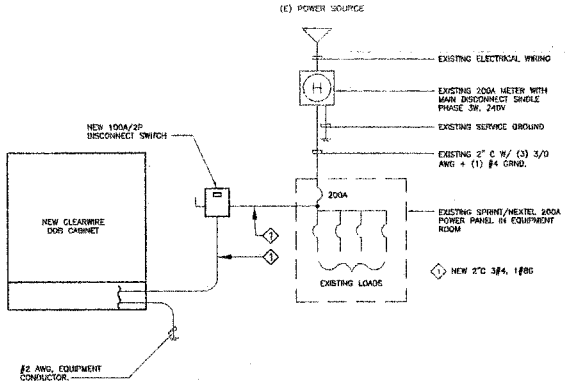
SEAL OF APPROVAL:

SHEET TITLE:
ANTENNA AND RRU DETAILS

SHEET NUMBER: A5
REVISION: XXXXXXX



NOTES:

1. SUBCONTRACTOR SHALL INSTALL 100A/2P DISCONNECT SWITCH FOR BUS TAP OF (E) SPRINT
2. MECHANICAL SUPPORT FOR NEW LOAD PANEL 'DP' TO INCLUDE SUPPORT FOR NEW SUB-METER ENCLOSURE. SEE DETAIL 7/E3 FOR SUB-METER CONNECTIONS.
3. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT REFER TO DRAWINGS PROVIDED BY SSC MANUFACTURER, PER DETAIL 1/A2.1.
4. SUBCONTRACTOR SHALL INSTALL SUFFICIENT LENGTHS OF CONDUCTORS INCLUDING ALL CONDUIT FITTINGS (NUTS, REDUCING BUSHINGS, ELBOWS, COUPLINGS, ETC.) NECESSARY FOR CONNECTIONS FROM SSC CONDUIT TO THE INTERIOR OF THE DOB CABINET.
5. SUBCONTRACTOR SHALL PROVIDE ELECTRICAL SERVICE EQUIPMENT WITH FAULT CURRENT RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT FROM THE POWER UTILITY.
6. CUT, COIL AND TAPE A 3 FOOT PIGTAIL FROM END OF CONDUIT FOR TERMINATING BY SSC EQUIPMENT MANUFACTURER.
7. SUBCONTRACTOR SHALL VERIFY THAT THE MAIN BONDING JUMPER AND GROUNDING ELECTRODE CONDUCTOR IS INSTALLED PROPERLY WHEN PANEL IS SERVICE ENTRANCE EQUIPMENT.
8. E-MOND-MON SUB METER, CL1000, NEMA 4X, MODEL #320BS0-SAR-KIT

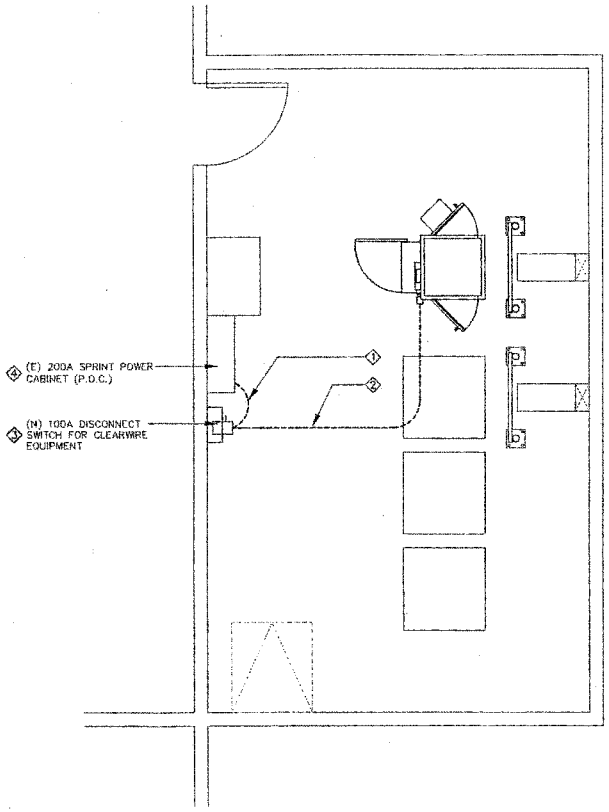
TYP. SINGLE LINE DIAGRAM 1

NAMEPLATE:	NEXTEL CABINET	BLDG:	CABINET	LOC:	SITE
ENCLOSURE:	NEMA 3R	MTG:	FLUSH	AICS RATING:	65,000
MAIN:	200A	BUS AMPS:	200	VOLTS:	240/120V 1PH

CKT NO.	DESCRIPTION	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	VOLT-AMPERES A	VOLT-AMPERES B	CB AMP	CB POLE
1	SURGE PROTECTION						60	
3	SURGE PROTECTION							2
5	MODULE CELL #1				4680		60	
7	MODULE CELL #1					4680		2
9	MODULE CELL #2				4680		60	
11	MODULE CELL #2					4680		2
13	GENERATOR						20	1
15								
17								
19								
21								
23								
2	TELCO FAN				420		20	1
4	RECEPTACLE GFCI					360	20	1
6	LIGHTS				180		20	1
8	MODULE CELL #3					2544	8	
10	MODULE CELL #3				2184			2
12	SPACE							
14								
16								
18								
20								
22								
24								
				SUBTOTAL	12144	12264		

CONNECTED TOTAL kVA:	24.4	TOTAL (CONN+LCLX0.25) kVA:	30.5
LCL X 0.25kVA	6.1	1 PHASE AMPERES:	127.1

PANEL SCHEDULE - NEXTEL EQUIPMENT CABINET 2



SHEET NOTES:

1. 2"C, 3#4, 1#6 GND TO O/S MOUNTED ON WALL +42" AFF.
2. 2"C, 3#4, 1#8 GND TO NEW CLEARWIRE SSC VIA T-BAR CEILING, 1"C 2#8, 1#8 GND FOR GENERATOR
3. NEW NEMA 1 DISCONNECT SWITCH, 100A @ 240V, 3 WIRE
4. INSTALL NEW LUGS IN SPRINT CABINET TO SUPPORT A SUB-FEED TO CLEARWIRE SSC.

NEW EQUIPMENT LAYOUT 4

clearwire
5805 LAKE WASHINGTON BLVD. NE, SUITE 320
KIRKLAND, WA 98033

PROJECT INFORMATION:
COMMERCIAL ROOFTOP
PLEASANT VALLEY AVE.
CA-SF00604
1880 PLEASANT VALLEY AVE.
OAKLAND, CA 94611
ALAMEDA COUNTY

CURRENT ISSUE DATE: 4/22/10

ISSUED FOR: ZD

REV.:	DATE:	DESCRIPTION:	BY:
	4/22/10	100% ZD	NR

PLANS PREPARED BY:

Stantec
Stantec Architecture Inc. Tel. 707.765.1660
1137 N. McDowell Blvd. Fax. 707.765.9905
Petaluma, CA U.S.A. 94954 www.stantec.com

CONSULTANT:

NSA Wireless, Inc.
2000 CROW CANYON PL., STE 400
SAN RAMON, CA 94583
TEL: (925) 244-1890
FAX: (925) 355-0672

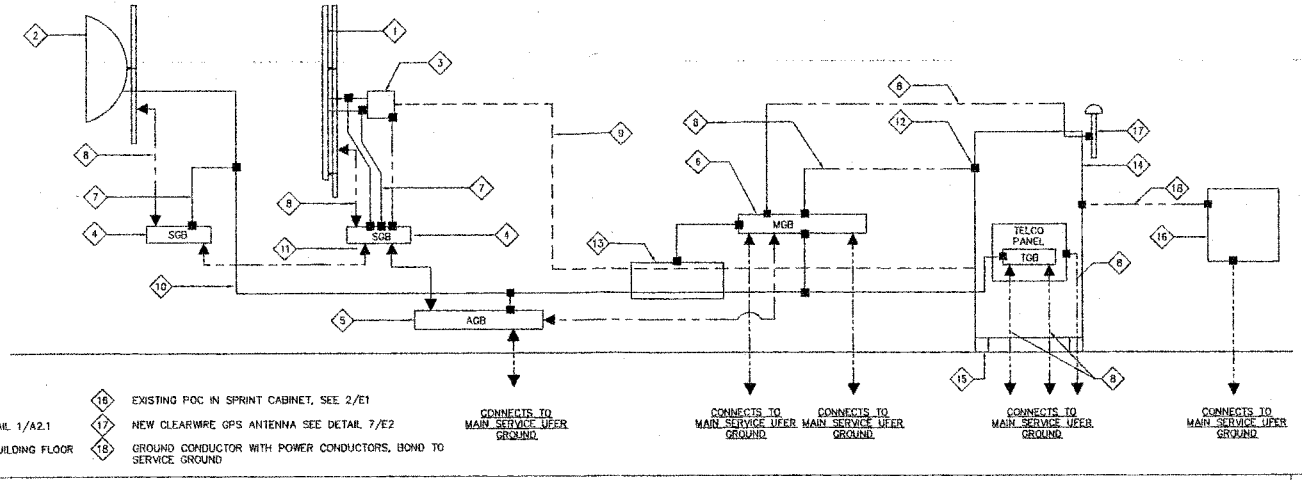
SEAL OF APPROVAL:

SHEET TITLE: SINGLE LINE DIAGRAM AND PANEL SCHEDULE

SHEET NUMBER: E1

REVISION: XXXXXXX

1. NEW CLEARWIRE PANEL ANTENNA (TOTAL OF 3)
2. NEW CLEARWIRE MICROWAVE DISH (TOTAL OF 3)
3. NEW PULL BOX FOR FIBER CABLE
4. NEW 4" x 12" x ¼" SECTOR GROUND BUS (SGB)
5. NEW ANTENNA GROUND BUS (AGB). SEE DETAIL 4/E2
6. NEW MASTER GROUND BUS (MGB). SEE DETAIL 3/E2
7. NEW ANTENNA CABLE GROUNDING KIT (TYP.)
8. NEW #2 STRANDED INSULATED GROUND WIRE (TYP.)
9. NEW CONDUIT FOR FIBER CABLE ROUTING
10. NEW COAXIAL CABLE ROUTING FOR NEW ANTENNAS
11. NEW CADWELD CONNECTION (TYP.)
12. NEW MECHANICAL CONNECTION (TYP.)
13. NEW CABLE TRAY (TYP.)
14. NEW CLEARWIRE EQUIPMENT RACK, SEE DETAIL 1/A2.1
15. NEW RACK SUPPORT FRAME MOUNTED TO BUILDING FLOOR
16. EXISTING POC IN SPRINT CABINET, SEE 2/E1
17. NEW CLEARWIRE GPS ANTENNA SEE DETAIL 7/E2
18. GROUND CONDUCTOR WITH POWER CONDUCTORS, BOND TO SERVICE GROUND



GROUNDING SCHEMATIC DIAGRAM 1

1. PROVIDE A COMPLETE GROUNDING SYSTEM PER NATIONAL ELECTRICAL CODE ARTICLE 250 AND EQUIPMENT MANUFACTURER'S REQUIREMENTS. USE THESE DRAWINGS AS MINIMUM GUIDELINE TO IMPLEMENT CARRIER AND EQUIPMENT CABINET MANUFACTURER SPECIFICATIONS.

2. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION AND MOUNTING MAY VARY DUE TO SITE SPECIFIC CONDITIONS.

3. ALL GROUNDING CONDUCTORS SHALL BE COPPER. ALL GROUND WIRE ABOVE GRADE IS STRANDED, SIZE AS SHOWN ON PLANS

4. ALL GROUNDING WIRE BELOW GRADE SHALL BE BARE #2 TINNED SOLID COPPER WIRE BURIED @ 24" MINIMUM, OR 6" BELOW MIN. FROST LINE. ALL CONDUIT BELOW GRADE SHALL BE PVC SCHEDULE 80.

5. ALL GROUNDING FOR ANTENNAS SHALL BE CONNECTED SO THAT IT WILL BYPASS MGB.

6. USE MINIMUM #2/0 AWG COPPER CONDUCTORS FOR COMMUNICATION SERVICE GROUNDING CONDUCTORS.

7. ALL GROUND CONNECTIONS SHALL BE LISTED FOR THE PURPOSE INTENDED. ALL GROUNDING INSTALLATIONS AND CONNECTIONS SHALL BE MADE BY ELECTRICAL CONTRACTOR

8. ALL LUGS SHALL BE 2-HOLE LONG-BARREL SOLID COPPER BURNDY THOMAS & BETTS OR EQUAL.

9. MINIMUM BEND RADIUS FOR GROUNDING CONDUCTORS #2 AND LARGER SHALL BE 12", 8" MINIMUM RADIUS FOR SMALL CONDUCTORS.

10. ALL IRREVERSIBLE COMPRESSION TYPE CONNECTORS SHALL BE INSTALLED USING A 12 TON HYDRAULIC PRESS MINIMUM.

11. INSTALL GROUNDING AND BONDING CONDUCTORS WITH SUFFICIENT SLACK TO AVOID BREAKING DUE TO SETTLEMENT AND MOVEMENTS OF CONDUCTORS AT ATTACHED POINTS.

12. COAT ALL BOLTED LUG & BUS GROUND CONTACT SURFACES WITH KOPR-SHIELD, NO-OX, OR PRIOR TO ATTACHMENT.

13. CONTRACTOR SHALL TEST GROUND RESISTANCE AT "MGB" TO VERIFY THAT RESISTANCE SHALL NOT EXCEED 5 OHMS AND SHALL SUBMIT AN INDEPENDENT TESTING REPORT TO ATTFWS REPRESENTATIVE, OR CONSTRUCTION MANAGER INDICATING RESISTANCE VALUE OBTAINED. CONTRACTOR SHALL PROVIDE GROUNDING SYSTEM AS PART OF ITS BID, AS REQUIRED TO ATTAIN A 5 OHM VALUE OR LESS.

14. FINAL GROUND TEST SHALL BE MADE IN PRESENCE OF THE CARRIER REPRESENTATIVE, OR CONSTRUCTION MANAGER.

15. REFER TO CARRIER AND EQUIPMENT CABINET MANUFACTURER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL GROUNDING REQUIREMENTS.

16. POWER AND TELCO CABINETS MUST BE BONDED TOGETHER.

17. MAIN GROUND BUS (MGB) IS TYPICALLY LOCATED BEHIND OR ADJACENT TO POWER CABINET OR AS SHOWN.

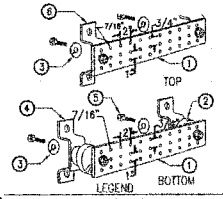
18. ANTENNA GROUND BUS (AGB) SHALL BE LOCATED AT TOP OF ANTENNA MOUNTING STRUCTURE, ADJACENT TO THE ANTENNA MOUNT(S).

19. TOWER GROUND BUS (TGB) SHALL BE LOCATED AT THE BASE OF THE ANTENNA MOUNTING STRUCTURE, ADJACENT TO WHERE THE COAXIAL CABLES ARE ROUTED.

20. SEAL ALL GROUND KITS AND CONNECTIONS WITH "ANDREW" WEATHER SEAL

21. PROVIDE STAINLESS STEEL CLAMP AND BRASS TAGS ON COAX AT ANTENNAS AND STRUCTURE.

GENERAL GROUNDING NOTES 2

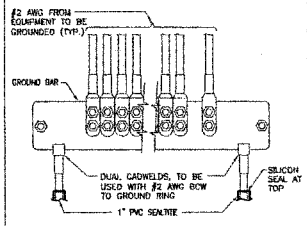


LEGEND

1. COPPER GROUND BAR, 1/4"X 4"X 10", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION. (ACTUAL GROUND BAR SIZE WILL VARY BASED ON NUMBER OF GROUND CONNECTIONS)
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
3. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUAL
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6059 OR EQUAL
5. 5/8-11 X 1" NHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1 OR EQUAL
6. INSULATORS SHALL BE ELIMINATED WHEN BONDING DIRECTLY TO TOWER/MONOPOLE STRUCTURE. CONNECTION TO TOWER/MONOPOLE STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

NOTE: ALL HARDWARE TO BE STAINLESS STEEL.

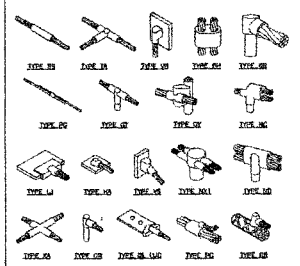
GROUND BAR DETAIL 3



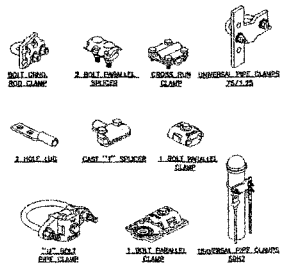
NOTE:

1. CONTRACTOR TO UTILIZE KOPR-SHIELD (THOMAS & BETTS) ON ALL LUG CONNECTIONS, OR APPROVED EQUAL.

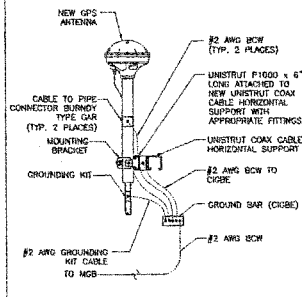
GROUNDING DETAIL 4



CADWELD CONNECTIONS 5



MECHANICAL CONNECTIONS 6



TYP. GPS GROUNDING 7

NOT USED 8

clearwire
5805 LAKE WASHINGTON BLVD. NE, SUITE 300
KIRKLAND, WA 98033

PROJECT INFORMATION:
COMMERCIAL ROOFTOP
PLEASANT VALLEY AVE.
CA-SF00604
1880 PLEASANT VALLEY AVE,
OAKLAND, CA 94611
ALAMEDA COUNTY

CURRENT ISSUE DATE: 4/22/10

ISSUED FOR: ZD

REV.:	DATE:	DESCRIPTION:	BY:
	4/22/10	100% ZD	MR

PLANS PREPARED BY:

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1137 N. McDowell Blvd.
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CONSULTANT:

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FAX: (925) 355-0872

SEAL OF APPROVAL:

SHEET TITLE: GROUNDING SCHEMATIC DIAGRAM & NOTES

SHEET NUMBER: E2

REVISION: XXXXXXX

MQ1800

FEATURES

- Flame-arresting, one-way pressure-relief valve for safety and long life.
- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and liquidate from standpoint maintenance.
- Advanced grid design optimized for high energy density.
- Geometric-designed lead, low-calcium alloy grid for minimal cycling and ease of recycling.
- Molded design for convenient installation and maintenance.
- Can be mounted in any orientation. Upright, side or end mounting recommended.
- Not restricted for air transport — complies with IATA/ICAO Special Provision A67.
- Not restricted for surface transport — classified as nonhazardous material as related to DOT-CFR Title 49 parts 171-189.
- UL-recognized component.
- Case and cover: flame-retardant compound with UL 1778 oxygen index greater than 28%.
- Manufactured in ISO9001-certified facility.
- Made in North America.
- Fully recyclable: Call 888-615-5049 to coordinate EPA-approved recycling.

Battery Type	Nominal Voltage (V)	Height (in) (±0.0 in)	Length (in) (±0.0 in)	Width (in)	Terminal	Weight (lbs)	Volume (in³)	Volume (gal)
MQ1800	12	3.94	7.68	5.94 (5.94 in)	Insertion	3.90 (3.90 lb)	0.00 (0.00 in³)	0.00 (0.00 gal)

Interstate PowerCare
Corporate Office
1615 Hume Drive, Suite 400
Dallas, TX 75234
Toll Free: 1-800-810-1549
FAX: 1-972-556-0180

MQ1800

Model Specifications

Battery Type	Pole Configuration	Weight	Electrolyte	Max Discharge Current (2 sec)	Max Charge Current (Amps)	Terminal Resistance at 77°F (25°C)
4	12ml	3.9 lbs. (1.8 kg)	Immobilized Glass Mat (IGM)	300 Amps	100 Amps (0.1 C)	4.20 mOhm

UNIFORM SPECIFICATIONS

Constant Power Ratings, Watts per Cell at 77°F (25°C) — in Minutes

Minutes	5	10	15	30	60	90	120	180	240	360	480	720
1.67	33	27	23	16	10	7.5	6	4.5	3.7	2.7	2.1	1.5
1.75	31	25	21	15	9.5	7.1	5.7	4.3	3.5	2.6	2	1.4

Capacity	300 watts per cell at the 15-minute rate to 1.67 volts per cell at 77°F (25°C) 73.8 Ah @ 20-hour rate to 1.75 volts per cell at 77°F (25°C)
Operating Temperature Range	Discharge: -40°F (-40°C) to +140°F (+60°C), Charge: -40°F (-40°C) to +140°F (+60°C) (with temperature compensation)
Temperature Compensation	Apply for temperatures range 32°F (0°C) to 104°F (40°C) Subtract 3.3mV/°F/cell or 3mV/°C/cell above 77°F (25°C) Add 3.3mV/°F/cell or 3mV/°C/cell below 77°F (25°C)
Nominal Operating Temperature Range	+77°F (25°C) to +90°F (27°C)
Float Charging Voltage	2.27 to 2.30 VDC/cell, average at 77°F (25°C)
Recommended Maximum Charging Current Limit	0.4 Amps @ 20 hr. rate to 1.75 VPC @ 77°F (25°C)
Air Ripple From Charging Source	1.5% peak to peak or float charge voltage maximum
Self-Discharge	Internal's UPS batteries may be stored for up to 6 months at 77°F (25°C), and then a trickle-charge is required. For longer periods, the time interval will be shorter.
Accessories	Side-wire connectors, cross and cabinet systems are available.
Terminal	Threaded copper alloy insert terminal, 1/4"-20 UNC bolt
Terminal Hardware Torque Range	120 in. lbs. (13.6 Nm)
Anti-oxidant Re-torque Value	115 in. lbs. (13.0 Nm)

Constant Current Ratings, Amperes at 77°F (25°C) — in Hours

Minutes	5	10	15	30	60	90	120	180	240	360	480	720
1.67	40.1	32.4	27.8	19.2	11.9	8.9	7.1	5.4	4.4	3.2	2.5	1.8
1.75	38.1	30.4	25.8	18.0	11.2	8.4	6.7	5.1	4.1	3.0	2.4	1.7

Note: Failure to be exposed to 40.0 to 0.75 mm quality minimum and may be available. Specifications subject to change without notice.

Material Safety Data Sheet (U.S.) Workplace Hazardous Material Information System (Canada)

Page 1 of 2
Rev 1: 4/01/08
Print: 4/01/08

Product Name:	Marquis Sealed Lead Acid Battery (VRLA)
Product Information:	(888) 615-5049 Interstate PowerCare, Inc. 15200 Hume Road, Suite 400 Dallas, Texas 75234 Fax: (469) 221-4623
Manufacturer:	

24 HOUR EMERGENCY TELEPHONE: (888) 615-5049
1-800-535-5053
IN CASE OF MEDICAL EMERGENCY, CALL 911 FOR EMERGENCY SERVICE

Section 1: Material Identification

Battery Type: SLA
Common Name: Sealed Lead Acid Battery, Valve Regulated Lead Acid Battery (VRLA), Absorbent Glass Mat Battery, Gel Battery, NICD, NiMH, PCD, WCD Dry
Chemical Family: Lead and Compound Material Mixtures
Synonyms: Sealed Storage Battery
CAS No.: Mixture
CFR49: Nonspillable Wet Battery (Sealed Lead Acid Battery) Not Restricted
D. O. T.: Hazard: Battery wet, non-spillable, hazard class 8, UN2800, PGIII Corrosive
Class: Batteries, wet, non-spillable, electric storage, UN2800 8, UN2800
Shipping: D. O. T., IATA and IMO: Battery wet, non-spillable, hazard class 8, UN2800, PGIII Corrosive or Batteries, wet, non-spillable, electric storage, UN2800 8, UN2800
NFPA: Nonspillable Powercare VRLA batteries are Exempt CFR49. Reference 173
1) Batteries are protected against Short Circuit
2) Each Battery and the outer packaging must be plainly marked "Non-Spillable Battery"
Hazardous Uses: Battery cases, terminals and electrolyte contain lead, arsenic, and lead compounds, substances known to cause Cancer or Reproductive Harm. Hazardous acid solution when electrolyte comes to air. Contact State of California to obtain current, Prop 65 lists after Poisoning.

Section 2: Hazardous Ingredients — NIHS Rating for Battery Acid: Health (Blue): 3 Fire (Red): 1

Ingredient	CAS Number	% Weight	LD50 Oral	LD50 Inhalation	LD50 Dermal	TLV	STEL	3410/12	313	Air Contaminant Levels PEL (OSHA)	OSHA PEL (mg/m³)
Lead Lead Dioxide Lead Sulfate	7439-92-1 1309-60-0 7446-14-2	60-75 %	>5000mg/kg	>2mg/m³	N/A	N	N	Y	Y	0.150	0.050
Sulfuric Acid	7664-93-9	17-20 %	2.14 g/kg	16 mg/m3	Eye irritant 250 mg/kg Dermal	Y Respirable Dy. 1 mg/m³	Y	Y	N	TWA 1 mg/m³ (Listed, not in base only)	1.0

* Only sulfuric acid aerosols are respirable. These include mists, vapors, gas, fog, and other airborne forms of any particle size.
All ingredients are listed with EPA TSCA Inventory of Chemical Substances.

Section 3: Physical Data

VOC content: 0%

	Lead	Antimony	Arsenic	Electrolyte (20 %)	Polypropylene	Plastic Battery Case
Melting Point	1355 °C	1449 °C	Sublimes 218 °C	153 °C	252 °C	N/A
Vapor Pressure	N/A	N/A	N/A	4 mm Hg	N/A	N/A
Vapor Density (Air = 1)	N/A	N/A	N/A	3.4	> 0.97	N/A
Melting Point	327.4 °C	630 °C	814 °C	-64 °C	-189 °C	Polymer dependent 160 °C
Specific Gravity (H2O = 1)	11.3	6.68	5.73	1.3	0.9 g/cm3 at 20 °C	0.9
Solubility in Water	17 ppm @ pH7 (Lead oxide)	Insoluble	Insoluble	100%	N/A	N/A
Appearance and Odor	Silver-gray metal	Silver-gray metal	Silver-gray metal	Clear colorless liquid, odorless, acid odor when hot or charging	Colorless, odorless gas	Solid
pH	N/A	N/A	N/A	< 1	N/A	N/A

Section 4: Fire and Explosion Hazard Data

* Flash Point: Not Applicable * Flammable Limits: Hydrogen LEL 4 % UEL 75.6 % * Hydrogen gas mixture flammable and explosive when mixed with oxygen, air or chlorine. Upon charging, Hydrogen and Oxygen gases are generated by the cells during normal battery operation. Highly flammable hydrogen gas is generated during charging and operation of batteries. Keep sparks and other ignition sources away from the batteries. Ensure proper ventilation of charging area consistent with OSHA (49 CFR 1910). Reference the Fire Protection Guide and other relevant standards. Used cells should be cold and sealed with tape and diffusion. * Special Fire Fighting Procedures: If batteries are on charge, shut off power. Use protective gloves, and complete breathing apparatus and acid resistant clothing. Water applied as continuous generation fine and can cause it to scatter. Use NIOSH Type 1 extinguisher for battery fires. * Hazardous Decomposition: Metal, dry chemical, carbon dioxide. * Unusual or unknown exposure to fire is a medical emergency. Hydrogen gas may be present during charging or at rest. Sulfuric acid fumes generated by battery overcharge and or fire are irritating. Do not allow metals or metal to contact negative and positive terminals simultaneously or cable and terminals. Follow manufacturer's instructions for installation and service.

Section 5: Hazard Data

Medical Conditions Aggravated by Exposure: Not Applicable. Route of Entry: Inhalation: Yes Skin: Yes
Carcinogenicity in Animals: Avoid exposure of pregnant battery. Avoid mixing acid with other chemicals. Avoid high temperatures. Do not allow sparking, open flame or smoke near battery. Use only in well ventilated areas. Keep battery cover and vent caps tight. Keep battery cover dry. Keep battery out of reach of children. Keep electrolyte out of the eyes. Do not allow metals or metal to contact negative and positive terminals simultaneously or cable and terminals. Follow manufacturer's instructions for installation and service.

Section 6: Reactivity Data

Water Reactivity: No. Hazardous Polymerization: Will not occur.
Decomposition in Air/Water: Avoid exposure of pregnant battery. Avoid mixing acid with other chemicals. Avoid high temperatures. Do not allow sparking, open flame or smoke near battery. Use only in well ventilated areas. Keep battery cover and vent caps tight. Keep battery cover dry. Keep battery out of reach of children. Keep electrolyte out of the eyes. Do not allow metals or metal to contact negative and positive terminals simultaneously or cable and terminals. Follow manufacturer's instructions for installation and service.
Incompatibility: Lead and compounds: oxidizers, chlorates, perchlorates, permanganates, sulfur. Sulfuric acid: strong bases, combustible and organic materials, metals, metal oxides, carbides, cyanides. Polypropylene: strong oxidizing agents.
Hazardous Decomposition Products: Sulfur Dioxide, Sulfur Trioxide, Hydrogen Sulfide, Hydrogen. As well as hydrogen and oxygen mixture within the battery may be generated during charging and overcharging. Handling and unloading of battery posts, post cutting and connector bending should be performed in a well ventilated area.

Section 7: Health Hazard Data

Under Normal Conditions of Battery use, battery materials are considered a health hazard.

* Routes of Entry: Sulfuric Acid: Harmful by all routes of entry.
Exposure to lead from a battery can occur through inhalation of dust, fumes or aerosols and ingestion. Inhalation: Potential exposure to lead compounds by contact with lead or lead components of the battery. Ingestion: Lead and lead compounds can be ingested from contaminated hands, food, drinks, or cigarettes. Skin Contact: Inorganic lead compounds are not absorbed through intact skin.
* Health Hazard Effects: Overexposure to lead compounds may cause: Loss of appetite, sleeplessness, and dizziness. Contact with battery electrolyte acids may cause burns. Battery electrolyte may cause severe damage of the eyes or irritation of the tissues mucous membrane and/or inflammation of the upper respiratory system. The toxic effects of lead are cumulative, and slow to appear. Overexposure to lead may cause chronic anemia. Battery and electrolyte fumes (sulfuric, chlorine and gases, etc.) can cause irritation to the eyes, nose, throat. Repeated contact with battery electrolyte may lead to irritation of the skin and may result in dermatitis. Battery electrolyte may cause the plastic battery (Polypropylene) that covers electrolyte. Prolonged contact to and ingestion may cause stomach or bowel irritation.
* Carcinogenicity: Sulfuric Acid: The IARC has classified strong inorganic sulfuric acid as a Category 1 carcinogen, a substance that is carcinogenic to humans. The ACGIH has classified strong inorganic and mist of sulfuric acid as a Category A2, suspected human carcinogen. These classifications do not apply to liquid forms of sulfuric acid. Lead: Inorganic compounds within the sulfuric acid mist, lead sulfate, lead oxide, lead dioxide, lead carbonate, and lead tetroxide are a carcinogen, with respect to generation of sulfuric acid mist. The IARC and OSHA have classified lead as an animal carcinogen (A3) likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking, or considered not likely to cause cancer in humans except under unusual circumstances of exposure.
Regulated Lead Compounds (RLCs): Lead compounds for Reproductive Harm (Reproductive Toxins), Cancer Hazards, CERCLA and NIOSH are carcinogens may also exceed exposure allowable levels.
Battery Electrolyte Acid Mist: Inhalation of acid mist causes irritation of the respiratory tract. Under prolonged exposure or in case of acute exposure or overexposure, the symptoms are: Sense of tightness in chest, Difficulty breathing, Cough, Irritation or burn to the nose, throat, and/or eyes, burns. Other Health Hazards: Contact with battery electrolyte may cause irritation or burns to the skin, and the product could be absorbed. Ingestion: Ingestion of acid vapor may cause respiratory obstruction. Long term exposure: Long term exposure to acid mist causes irritation, Battery Electrolyte Acid Mist causes burns.
* Medical Conditions Generally Aggravated by Exposure: Not Applicable.

Section 7 First Aid Measures

Emergency First Aid: Eyes: Remove from source. Wash thoroughly with cool and warm water. Flush for at least 15 minutes. Immediately contact a medical doctor. Remove immediately and flush. Remove contaminated clothing and bring medical attention.
Skin: Call physician immediately. Flush with cool water (20-25°C) for 15 minutes. Flush for at least 15 minutes.
Inhalation: Remove to fresh air and rest. Call medical attention.
Ingestion: Vomiting is not recommended. Call medical attention. Battery Electrolyte: Do not induce vomiting. Keep quiet, get medical attention immediately. Drink water and milk to dilute the acid. Battery acid medicine: Drink large quantities of water and milk.

Section 8: Preventative Measures

Respiratory Protection: Wear approved acid mist respiratory protection. Lead: Battery formation or charging, and acid mist may be generated. If ventilation control is not adequate, use a respirator for protection. NIOSH respirators should be worn during battery maintenance operations. 4 OSHA 1910. In expanded Ventilation, fumes/mist and batteries is not dry and properly ventilated area. Wear protective batteries in a closed, controlled cabinet. Protect from dirt and. Avoid exposure of eyes or plastic parts.
Eye Protection: Wear chemical safety goggles or face shield during battery maintenance and electrolyte fills.
Clothing Protection or Equipment: Use work and safety clothes suitable over for storage or charging area, safety shoes with rubber or neoprene soles and apron. Handling Precautions: Wash your hand with care right. Do not smoke or use open flames in charging area. Wash your hand before eating and drinking. Control contamination.
Disposal of battery: Do not dispose contaminated INTERSTATE POWERCARE batteries and high general security, high levels of short circuit current can be considered unless the battery terminals. Do not use tools or clothes on the battery. Use insulated tools only. Follow manufacturer's instructions for proper and disposal and handling of contaminated battery parts.

Section 9: Storage and Handling

Storage Temperature: Store your lead batteries in a cool, dry and properly ventilated area. Walls and roof can be in place. Keep the batteries from direct sun light or heat. Place a minimum of two layers of corrugated cardboard or Polypropylene type sheet between battery layers for storage. Protect terminals by using a steel strap. Keep out of reach of children.

Section 10: Spill Clean up and Waste Disposal

Steps to be Taken in Case Material is Released or Spilled: Give fresh air, oxygen. Ventilate the area. Remove battery from the area and put in safe place. Keep the batteries from sparks and other ignition sources. Use protective gloves, face shield and protective clothing. Neutralize with sodium bicarbonate (baking soda), sodium carbonate (soda ash), calcium oxide (lime) or use an absorbent and sweep up. Collect residue in an approved container. Do not neutralize in drains, sewer, etc.
Waste Disposal Method: Various special batteries in distributor, manufacturer of lead recycler. Neutralize and sell or use proper substance and place waste in proper container. Hold waste that is not classified (pH 2-12.5) in hazardous waste. Send CRDT formation. Compact or treated batteries battery remedies and be stored and disposed in a container that is empty, leak resistant, leak proof and lead sealed. Recycle batteries, and concentrate according to local, state and federal regulations. Some states include: Indiana Illinois as hazardous waste, Connecticut (CRD) Connecticut and CRDT (lead) Iowa which recycled. Check with state estimates.

Section 11: Battery Recycling

Battery Disposal
It is illegal to dispose batteries in the trash. State and provincial laws require batteries to be returned to a certified recycling facility. Batteries should be returned to the manufacturer or distributor for recycling, or directly to a permitted recycling facility.

Requirements of recycling batteries for recycling:
1. Plastic batteries should be replaced.
2. Place heavier batteries on bottom layer of crates.
3. Analogs layers to avoid cracks and damage.
4. Place a minimum of two (2) pieces of corrugated cardboard between layers or one (1) thermoformed layer sheet.
5. Keep battery layers measurably flat for top loading.
6. Limit each pallet battery to 8 layers of batteries.
7. Tape battery terminals against adjacent short circuits, no side terminal strapped. No exposed terminals.
8. Shrink wrap or bind with plastic bundles is mandatory. No stack strapping.

Shipping Classification for ALL Sealed or Spent VRLA, Nonspillable batteries
DOT: D.O.T. and IMO: Battery, wet, non-spill, hazard class 8, UN 2800, PG III, Corrosive
IAO: Batteries, wet, filled with acid, hazard class 8, UN 2800, PG III, Corrosive
Classification for shipping battery based on other must be spent and shipped in a container that is empty, dry and non-leaks, non-proof and kept closed. Transport requirements vary by state and province.
A copy of the material safety data sheet, these accompanying shipment and be included in any sized shipment or accompany lead material.
Interstate PowerCare and its distributors can coordinate, collect and recycle all Lead Acid batteries in an EPA approved recycling plant. All transportation, transportation and recollection will be provided. 1-888-615-5049 in USA.

Disclaimer: The information and recommendations contained herein are based upon tests believed to be accurate and reliable. INTERSTATE POWERCARE, Inc makes no representation and disclaims any liability or warranty, express or implied, with respect to the information and recommendations herein. Customer is responsible for determining whether products and the information, recommendations or suggestions herein are suitable for customer's purpose and for ensuring that its employees and others who may handle or use the product or the information, recommendations or suggestions herein are adequately trained and informed as to the hazards and precautions associated with the product. INTERSTATE POWERCARE, Inc. makes no warranty of fitness or merchantability or any other express or implied warranty of INTERCHANGEABILITY OR FITNESS. INTERSTATE POWERCARE, Inc. makes no warranty of fitness for a particular purpose or any other warranty. INTERSTATE POWERCARE, Inc. assumes no liability for any loss, injury, or damage resulting from the use of or reliance upon this information.

INTERSTATE BATTERIES - 15200 Hume Drive, Suite 400, Dallas, TX 75234 - Toll Free 800-615-5049 - 972-221-1444
INTERSTATE POWERCARE - 15200 Hume Road, Suite 400, Dallas, TX 75234 - Toll Free 888-615-5049 - 469-221-4623 - FAX 469-221-4623

Interstate Batteries

Electrolyte, Lead and Sulphric Acid
Marquis Battery Line

BATTERY TYPE	WEIGHT	LEAD				ELECTROLYTE				BATTERY CASE			
		WEIGHT				WEIGHT				WEIGHT			
		LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG
MQ800	25	21	9.5	1.4	0.38	4.19	1.9	0.4	0.11	0.4	0.2		
MQ1200	42.6	38.8	2.34	3.67	6.7	2.64	0.17	2.81	1.28				
MQ 1800	98	45	2.13	6.84	3.12	0.86	0.23	3.68	1.67				
MQ 2100	66.6	57.6	3.62	1.19	11.01	1.06	0.48	4.89	2.22				
MQ 2400	76.5	65.4	4.35	1.14	12.38	1.19	0.52	4.83	2.19				
MQ 2600	100	79.3	5.52	1.46	15.92	1.03	0.4	5.9	2.7				
MQ 4100	92.2	84.5	4.59	1.2	12.99	1.28	0.33	5.06	2.3				

www.interstatepowercare.com

LEAD AND ACID DATA
PER CFC ARTICLE 64 COMPLIANCE

MANUFACTURER: INTERSTATE POWERCARE INC.
MODEL NO.: MQ1800
TYPE: STATIONARY LEAD-ACID BATTERY (12V)

INITIAL INSTALLATION

TYPE	PER UNIT VOLUME LITER	PER UNIT VOLUME GALLON	PER UNIT WEIGHT KG	PER UNIT WEIGHT LBS	NUMBER OF BATTERY UNITS	TOTAL (4 UNITS) VOLUME LITER	TOTAL (4 UNITS) VOLUME GALLON	TOTAL (4 UNITS) WEIGHT KG	TOTAL (4 UNITS) WEIGHT LBS
ELECTROLYTE	3.18	0.84	N/A	9.12	4 **	12.72	3.36	N/A	36.48
ACID	.88	.23	N/A	3.56	4 **	3.52	.92	N/A	14.24
LEAD	N/A	N/A	N/A	49	4 **	N/A	N/A	N/A	196

ULTIMATE INSTALLATION

TYPE	PER UNIT VOLUME LITER	PER UNIT VOLUME GALLON	PER UNIT WEIGHT KG	PER UNIT WEIGHT LBS	NUMBER OF BATTERY UNITS	TOTAL (6 UNITS) VOLUME LITER	TOTAL (6 UNITS) VOLUME GALLON	TOTAL (6 UNITS) WEIGHT KG	TOTAL (6 UNITS) WEIGHT LBS
ELECTROLYTE	3.18	0.84	N/A	9.12	6	19.08	5.04	N/A	54.72
ACID	.88	.23	N/A	3.56	6	5.28	1.38	N/A	21.36
LEAD	N/A	N/A	N/A	49	6	N/A	N/A	N/A	294

** - INITIAL CONFIGURATION MAY VARY DUE TO INDIVIDUAL SITE REQUIREMENTS.

TOTAL WEIGHT PER BATTERY UNIT = 58 LBS.

clearwire
5805 LAKE WASHINGTON BLVD.
NE, SUITE 300
KIRKLAND, WA 98033

PROJECT INFORMATION:
COMMERCIAL ROOFTOP
PLEASANT VALLEY AVE.
CA--SF00604
1880 PLEASANT VALLEY AVE.
OAKLAND, CA 94611
ALAMEDA COUNTY

CURRENT ISSUE DATE: 4/22/10

ISSUED FOR: ZD

REV.:	DATE:	DESCRIPTION:	BY:
	4/22/10	100% ZD	MR

PLANS PREPARED BY:
Stantec
Stantec Architecture Inc. Tel. 707.765.1660
1137 H. McDowell Blvd. Fax. 707.765.9908
Petaluma, CA U.S.A. 94954 www.stantec.com

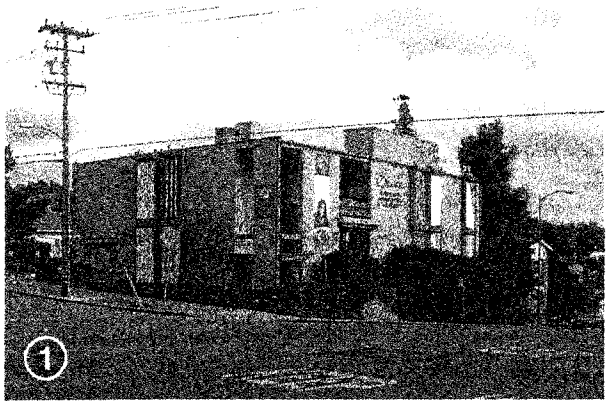
CONSULTANT:
NSA Wireless, Inc.
2000 CROW CANYON PL., STE 400
SAN RAMON, CA 94583
TEL: (925) 244-1890
FAX: (925) 355-0672

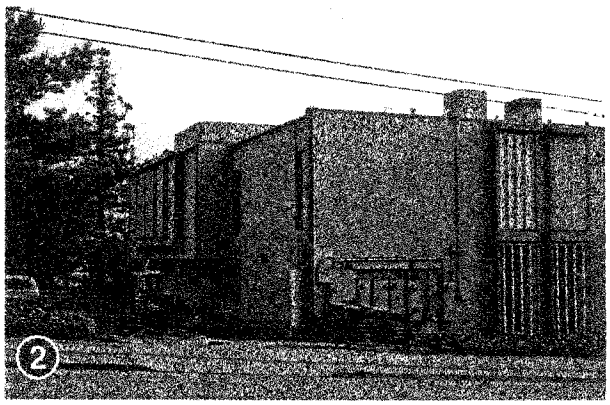
SEAL OF APPROVAL:

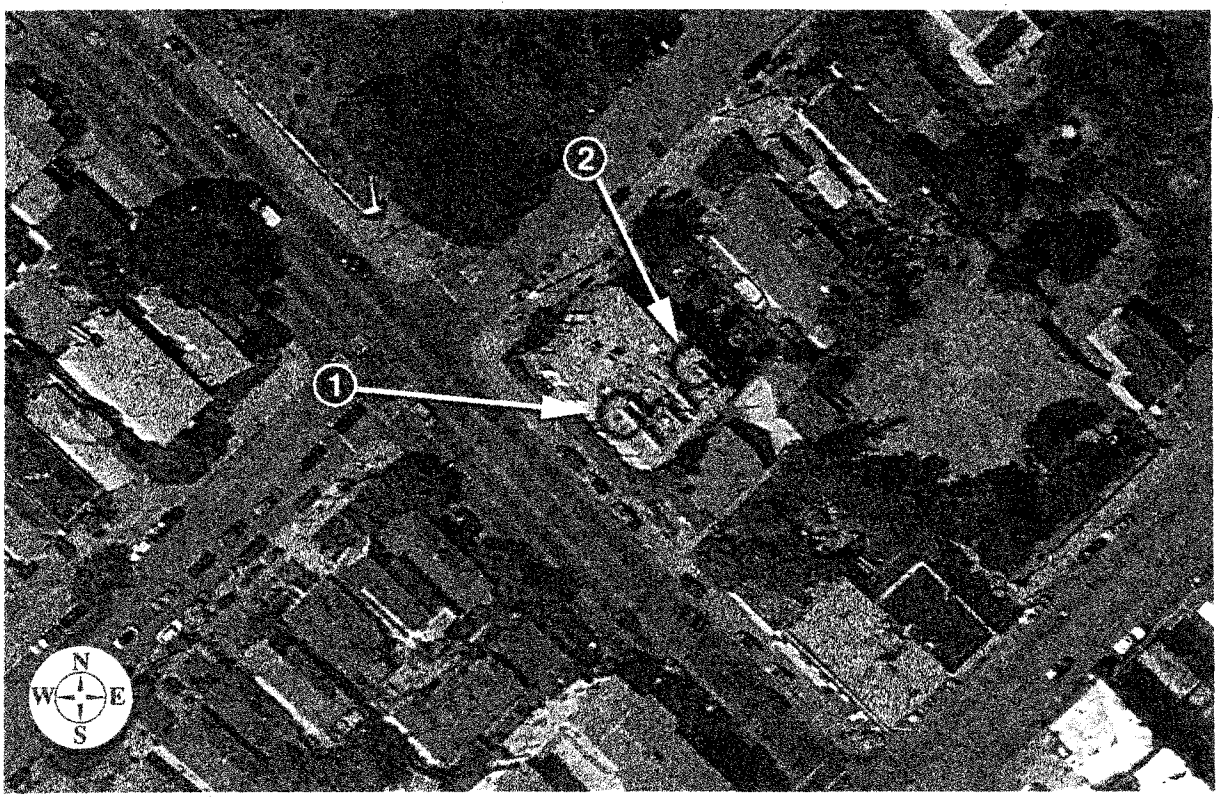
SHEET TITLE:
MATERIAL SAFETY DATA SHEET & BATTERY TABLE

SHEET NUMBER: HAZ
REVISION: XXXXXXX

ATTACHMENT A



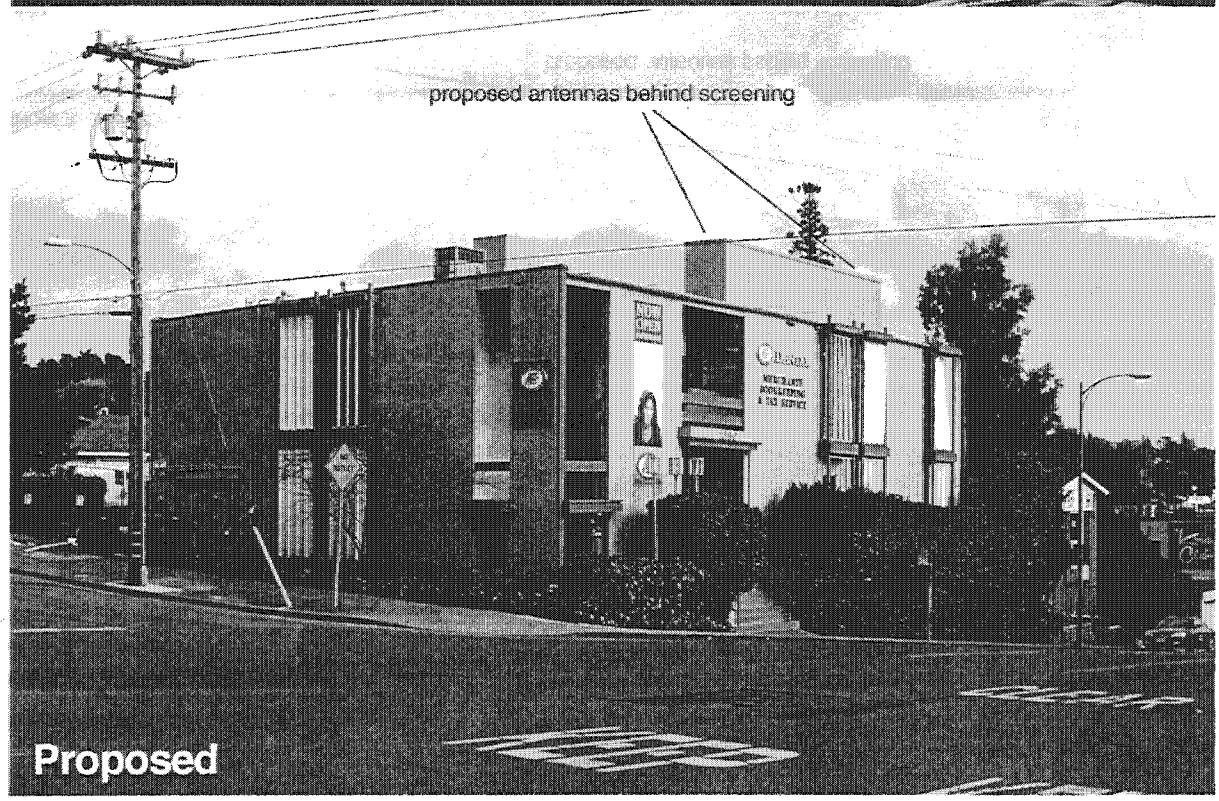




clearwire Pleasant Valley Ave. Site # CA-SFO0604 Aerial Map

4/12/10 1880 Pleasant Valley Avenue
Oakland, CA 94611

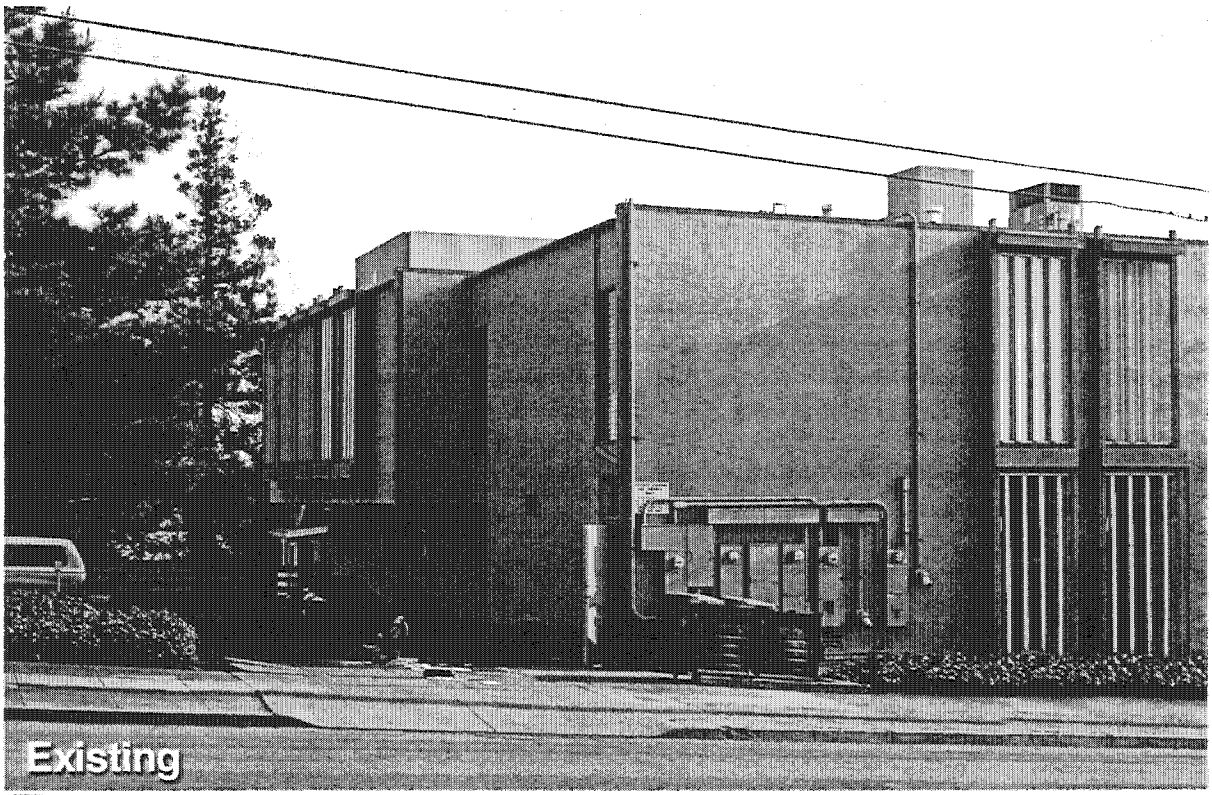
Applied Imagination 510 914-0500

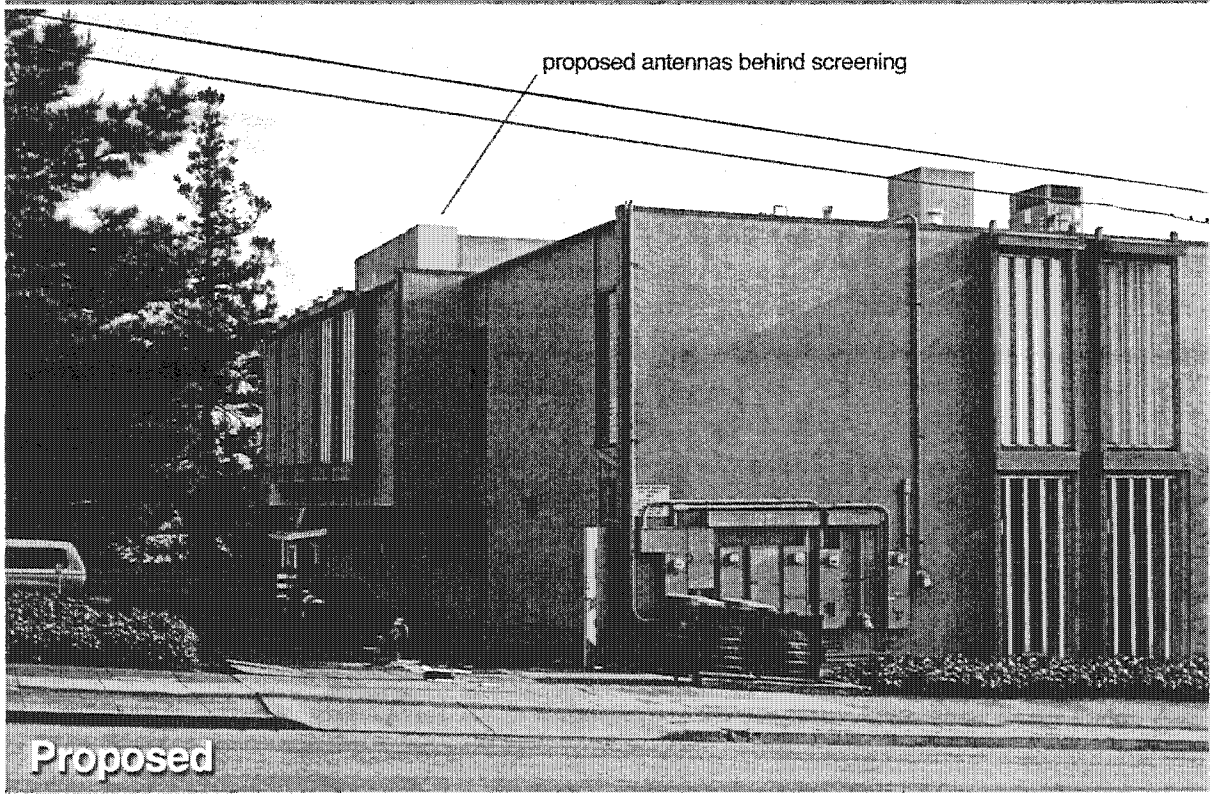


clearwire | Pleasant Valley Ave. | Site # CA-SFO0604 | Looking East from Pleasant Valley Avenue

4/12/10 | 1880 Pleasant Valley Avenue, Oakland, CA 94611 | View #1

Applied Imagination 510 914-0500





clearwire **Pleasant Valley Ave.** **Site # CA-SFO0604** **Looking Southeast from Howe Street**

1880 Pleasant Valley Avenue
Oakland, CA 94611

View #2

4/12/10

Applied Imagination 510 914-0500

ATTACHMENT B

Clearwire, No. CA-SFO0604)
1880 Pleasant Valley Avenue • Oakland, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Clearwire, LLC, a wireless service provider, to evaluate the base station (Site No. CA-SFO0604) proposed to be located at 1880 Pleasant Valley Avenue in Oakland, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. In Docket 93-62, effective October 15, 1997, the FCC adopted the human exposure limits for field strength and power density recommended in Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar exposure limits. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

The most restrictive FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–23,000 MHz	5.00 mW/cm^2	1.00 mW/cm^2
BRS (Broadband Radio)	2,600	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.35	0.47
[most restrictive frequency range]	30–300	1.00	0.20

General Facility Requirements

Base stations typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The

transceivers are often located at ground level and are connected to the antennas by coaxial cables about 1 inch thick. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. Along with the low power of such facilities, this means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 attached describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Clearwire, LLC, including zoning drawings by Stantec Architecture, Inc., dated April 22, 2010, it is proposed to mount three Kathrein Model 840-10054 directional panel BRS antennas behind the existing view screen above the roof of the two-story office building located at 1880 Pleasant Valley Avenue in Oakland. The antennas would be mounted with up to 2° downtilt at an effective height of at least 28 feet above ground, 5 feet above the roof, and would be oriented at about 120° spacing, to provide service in all directions. The maximum effective radiated power in any direction would be 970 watts. Also proposed to be mounted behind view screens are three Andrew microwave "dish" antennas, for interconnection of this site with others in the Clearwire network.

Presently located behind the screens are similar directional panel antennas for use by Sprint Nextel and T-Mobile, other wireless telecommunications carriers. For the limited purpose of this study, the transmitting facilities of those carriers are assumed to be as follows:

Carrier	Service	Maximum ERP	Antenna Model	Height
Sprint Nextel	PCS	1,500 watts	Andrew RR90-17-02	28 ft
	SMR	1,500	Andrew DB844G65	28

Carrier	Service	Maximum ERP	Antenna Model	Height
T-Mobile	PCS	2,000 watts	Andrew TMBX-6516	28 ft
	AWS	1,000		

Study Results

For a person anywhere at ground, the maximum ambient RF exposure level due to the proposed Clearwire operation by itself, including the contribution of the microwave antennas, is calculated to be 0.012 mW/cm^2, which is 1.2% of the applicable public exposure limit. The maximum calculated cumulative level at ground, for the simultaneous operation of all three carriers, is 3.4% of the public exposure limit. The maximum calculated cumulative level at the second-floor elevation of any nearby residence* is 12% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

Recommended Mitigation Measures

Due to their mounting locations, the Clearwire antennas would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, no access within 2 feet directly in front of the Clearwire antennas themselves, such as might occur during maintenance work on the screens, should be allowed while the base station is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. Posting explanatory warning signs† on the view screens in front of the antennas, such that the signs would be readily visible from any angle of approach to persons who might need to work within that distance, would be sufficient to meet FCC-adopted guidelines. Similar measures should already be in place for the other carriers at the site; applicable keep-back distances for those carriers have not been determined as part of this study.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that the proposed operation of the Clearwire, LLC base station located at 1880 Pleasant Valley Avenue in Oakland, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment.

---

* Located at least 15 feet away, based on aerial photographs from Google Maps.

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

The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations. Posting of explanatory signs is recommended to establish compliance with occupational exposure limitations.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2011. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

REGISTERED PROFESSIONAL ENGINEER
WILLIAM F. HAMMETT
E-13026
M-20676
Exp. 6-30-2011
ELECTRICAL
MECHANICAL
STATE OF CALIFORNIA

William F. Hammett, P.E.
707/996-5200

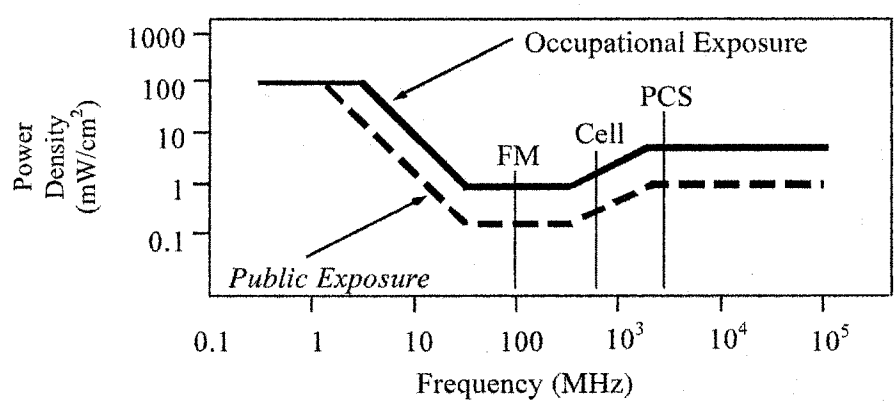
July 9, 2010

FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements ("NCRP"). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," includes similar limits. These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

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



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission ("FCC") to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The maximum permissible exposure limits adopted by the FCC (see Figure 1) apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits.

Near Field.

Prediction methods have been developed for the near field zone of panel (directional) and whip (omnidirectional) antennas, typical at wireless telecommunications base stations, as well as dish (aperture) antennas, typically used for microwave links. The antenna patterns are not fully formed in the near field at these antennas, and the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) gives suitable formulas for calculating power density within such zones.

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm^2,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm^2,

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

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

Far Field.

OET-65 gives this formula for calculating power density in the far field of an individual RF source:

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

where ERP = total ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, and
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.