



**CITY OF SUNNYVALE  
REPORT  
Planning Commission**

**October 12, 2009**

**SUBJECT:**           **2009-0599 - Clearwire LLC** [Applicant] **J J and W CO:**  
Application for a project located at **1175 Aster Avenue** in  
an M-3/ITR/R-3/PD (General Industrial/Industrial to  
Residential/Medium Density Residential/Planned  
Development) Zoning District (APN: 213-01-034)

Motion               Special Development Permit to allow installation of three  
panels and three microwave dishes on an existing 65' tall  
telecommunications monopole and associated ground  
equipment

**REPORT IN BRIEF**

**Existing Site Conditions**           Industrial manufacturer and retailer (Calstone and  
Peninsula Building Material Supply)

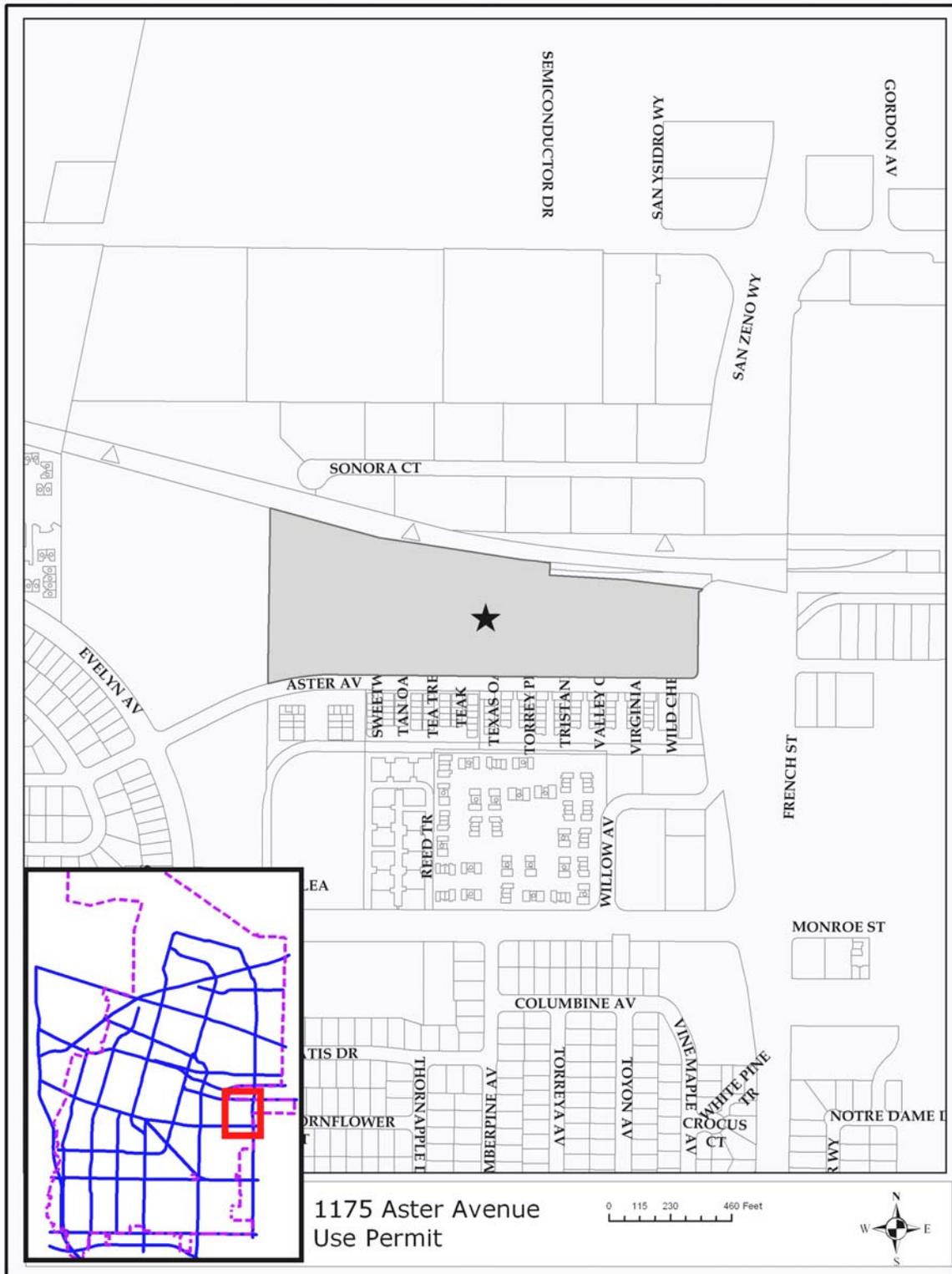
**Surrounding Land Uses**

North	Industrial
South	Residential Medium Density and Light Industrial
East	Lawrence Expressway (City of Santa Clara multi-family housing development across Lawrence Expressway)
West	Multi-family Residential

**Issues**                               Aesthetics

**Environmental Status**           A Class 1 Categorical Exemption relieves this project from California Environmental Quality Act provisions and City Guidelines.

**Staff Recommendation**           Approve with conditions



1175 Aster Avenue  
Use Permit

**PROJECT DATA TABLE**

	<b>EXISTING</b>	<b>PROPOSED</b>	<b>REQUIRED/ PERMITTED</b>
<b>General Plan</b>	Industrial to Residential	Same	Industrial to Residential
<b>Zoning District</b>	M-3/ITR/R-3/PD (General Industrial/ Industrial to Residential/ Medium Density Residential/Planned Development)	Same	M-3/ITR/R-3/PD (General Industrial/ Industrial to Residential/ Medium Density Residential/Planned Development)
<b>Lot Size (s.f.)</b>	708,826	Same	22,500 min.
<b>Height of Monopole</b>	65'	Same	65' max. <sup>1</sup>
<b>Setbacks to Equipment Enclosure (Facing Property)</b>			
<b>Front</b>	190'	Same	130' min. <sup>1</sup>
<b>Left Side</b>	440'	Same	100' min.
<b>Right Side</b>	235'	Same	0' min.
<b>Rear</b>	20'	Same	0' min.

<sup>1</sup> The maximum height is 65' when located adjacent to residentially zoned properties and is required to be set back at a ratio of two horizontal feet for every one foot in height. The existing site meets this current requirement.

**ANALYSIS****Description of Proposed Project**

The proposed project is to allow the collocation of three panel antennas, three microwave dishes and three RF (radio frequency) heads on an existing 65'-tall monopole located at 1175 Aster Avenue (Calstone and Peninsula Building Material Supply). Additional ground equipment will be added near the base of the monopole within a fenced enclosure.

According to Sunnyvale Municipal Code (SMC) Section 19.54.080, telecommunications projects in industrial zoning districts involving three or more facilities or carriers on a single site require a major Special Development Permit (SDP). The proposed project would result in three telecommunications facilities on the existing monopole; therefore Planning Commission review is required for this project.

**Background**

**Previous Actions on the Site:** The following table summarizes previous planning applications related to the subject site.

<b>File Number</b>	<b>Brief Description</b>	<b>Hearing/Decision</b>	<b>Date</b>
2007-0627	Variance to allow 24-hour noise levels up to 75 dBA, where 60 dBA/day and 50 dBA/night are maximum levels when adjacent to residential.	Planning Commission/ Approved	6/24/06
2005-0826	SDP to allow a second carrier to install three antennas on existing monopole (Sprint).	Administrative Hearing/Approved	9/28/05
2001-0771	SDP to allow a new 65'-tall monopole with four antennas (Nextel).	Administrative Hearing/Approved	1/16/02

**Environmental Review**

A Class 1 Categorical Exemption relieves this project from California Environmental Quality Act provisions and City Guidelines. Class 1 Categorical Exemptions include minor additions to existing facilities.

**Special Development Permit**

**Site Layout:** The 16-acre site is located in an area that is transitioning from industrial to residential. Neighboring properties to the south and west have already transitioned to residential, with three-story townhomes and an apartment complex, respectively. The subject site has been used by Calstone and Peninsula Building Material Supply since 1964 and continues as a legal conforming industrial use.

The existing telecommunication facility was built in 2002 and is located towards the back of the property abutting railroad tracks to the north. The facility is more than 200' away from the nearest townhome and more than 500' away from the nearest apartment building. SMC 19.54 does not allow telecommunication facilities to operate on residential properties. Therefore, the facility would be required to be removed if the property transitions into residential use in the future.

**Pole Design & Ground Equipment:** The existing 65'-tall monopole currently supports two carriers, for a total of seven panel antennas. Existing antennas

have been painted to match the monopole, and all coaxial cables are currently located inside the pole. The existing 6'-tall enclosure is made of chain link inserted with vinyl slats and is located near the base of the pole. A 10'-tall shelter is located inside the enclosure and houses existing equipment, including antenna cabinets.

Clearwire proposes to add three 4'-tall antennas, three 1' to 2' diameter microwave dishes and three 1'-tall RF heads below existing antennas on the monopole. All pole cables would be located inside the pole. According to the applicant, the microwave dishes link all Clearwire sites together by providing point-to-point connections and the RF heads are similar to amplifiers that boost the signal to the antennas. Both are necessary to the technology Clearwire uses to provide wireless service.

New antenna cabinets and a global positioning system (GPS) antenna would be added to the existing enclosure and would not exceed the height of existing equipment. A permanent generator is not proposed at this time; however, a generator may be used in the future for emergencies subject to standard noise-reducing requirements (Attachment B, Recommended Conditions of Approval).

**Landscaping:** Existing landscaping provides partial screening. No changes are proposed to the existing landscaping.

**Parking/Circulation:** No additional parking is required for the proposed use. The site can be accessed by the existing driveways on Aster Avenue. The site will be visited once or twice a month by the service provider for general maintenance following completion of the construction.

**Radio Frequency (RF) Emissions Exposure:** The Federal Communications Commission (FCC) is the final authority on safety of telecommunications facilities. If the facility meets FCC standards, the City is not permitted to make additional judgments on health and safety issues. An RF report was prepared by Hammett & Edison, Inc., which concludes that the individual exposure level for all new Clearwire equipment will be 0.13% of the limit for general public exposure and 0.31% for all carriers on-site for anywhere on the ground. The study also states that the microwave dishes make no significant contribution to the RF exposure (Attachment E, RF Study). The project complies with Federal requirements; therefore the proposed application can be considered on design and location criteria only.

**Visual Impacts and Project Alternatives:** Although the existing monopole is partially screened by existing landscaping and buildings, the proposed project would increase the visibility of the monopole along the street frontage and nearby residential properties due to the new equipment installed on the pole (Attachment D, Photosimulations).

As currently proposed, the microwave dishes are mounted about 1' off the pole, which contributes to the visual bulk. In order to reduce visual impacts, staff recommends that the microwave dishes be redesigned to be mounted snug against the pole. Staff further recommends that the RF heads be removed from the pole and mounted to the ground equipment enclosure, as routinely done for telecommunication facilities (Attachment B, Recommended Conditions of Approval).

The applicant has confirmed that these recommendations are physically feasible, although it would require re-engineering the equipment and increasing construction costs. The applicant is not in agreement with staff's recommendation and requests to move forward with the proposed design.

The applicant has also explored other sites within the vicinity and concluded that there were no existing telecommunication facilities that could be utilized. Therefore, if the project is denied a new telecommunication facility would have to be built on another site.

**Compliance with Development Standards/Guidelines:** As previously discussed, the project complies with Federal requirements for RF exposure. The project is also subject to the Sunnyvale wireless telecommunications regulations contained in SMC Section 19.54. The proposed project meets applicable height and setback requirements for the zoning district.

In addition, the Code requires that the facility be designed with sensitivity to the surrounding area. The following design standards apply to this project:

*19.54.40 (b) - All facilities shall be designed to minimize the visual impact to the greatest extent feasible, considering technological requirements, by means of placement, screening, and camouflage, to be compatible with existing architectural elements and building materials, and other site characteristics. The applicant shall use the smallest and least visible antennas possible to accomplish the owner/operator's coverage objectives.*

- The three proposed panel antennas would be mounted snug against the pole. As conditioned by staff, the microwave dishes would also be mounted snug and the RF heads would be relocated into the equipment enclosure. The new pole equipment would extend approximately 2' from the pole surface, where the existing antennas currently extend about 1'-6". Therefore, the visual impact of the added equipment would be minimal.

*19.54.40 (c) - SMC 19.54.040 - Colors and materials for facilities shall be chosen to minimize visibility. Facilities shall be painted or textured using colors to match or blend with the primary background*

- The applicant proposes to paint all new pole equipment to match the existing monopole.

*19.54.40 (j) – All monopoles and lattice towers shall be designed to be the minimum functional height and width required to support the proposed antenna installation.*

- The proposed project would not modify the height of the existing monopole. The visual change is limited to the new antennas and microwave dishes, which would be mounted snug against the pole.

*19.54.40 (l) - In order of preference, ancillary support equipment for facilities shall be located either within a building, in a rear yard or on a screened roofs top area. Support equipment pads, cabinets, shelters and buildings require architectural, landscape, color, or other camouflage treatment for minimal visual impact.*

- All proposed ground equipment would be placed within the existing enclosure, which is located behind a building to rear of the property. The ground equipment will not be visible from the street frontage or neighboring residential properties.

**Fiscal Impact**

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No fiscal impacts other than normal fees and taxes are expected.

**Public Contact**

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Notice of Public Hearing	Staff Report	Agenda
<ul style="list-style-type: none"> <li>• Published in the <i>Sun</i> newspaper</li> <li>• Posted on the site</li> <li>• 583 notices mailed to the property owners and tenants adjacent to the project site</li> </ul>	<ul style="list-style-type: none"> <li>• Posted on the City of Sunnyvale's web site</li> <li>• Provided at the Reference Section of the City of Sunnyvale's Public Library</li> </ul>	<ul style="list-style-type: none"> <li>• Posted on the City's official notice bulletin board</li> <li>• Posted on the City of Sunnyvale's web site</li> </ul>

Staff received two letter of opposition from neighboring residents expressing concerns regarding visual and health impacts (Attachment G). Both issues have already been addressed in this report.

## **Conclusion**

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**Findings and General Plan Goals:** As conditioned, staff was able to make the required Findings based on the justifications for the Special Development Permit. Recommended Findings and General Plan Goals are located in Attachment A.

**Conditions of Approval:** Recommended Conditions of Approval are located in Attachment B.

## **Alternatives**

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1. Approve the Special Development Permit with the attached conditions.
2. Approve the Special Development Permit with modified conditions.
3. Deny the Special Development Permit.

## **Recommendation**

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Alternative 1.

Prepared by:

Noren Caliva  
Project Planner

Reviewed by:

Steve Lynch  
Senior Planner

Attachments:

- A. Recommended Findings
- B. Recommended Conditions of Approval
- C. Site and Architectural Plans
- D. Photosimulations
- E. RF Study
- F. Letter from the Applicant & Special Development Permit Justifications
- G. Letters from Neighboring Resident

**Recommended Findings - Special Development Permit**

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Goals and Policies that relate to this project are:

**Telecommunications Policy Goal B:** *Promote universal access to telecommunications services for all Sunnyvale citizens.*

**Land Use and Transportation Element Action Statement N1.1** – *Limit the intrusion of incompatible uses and inappropriate development into city neighborhoods.*

**Land Use and Transportation Element Policy N1.3** – *Support a full spectrum of conveniently located commercial public and quasi-public uses that add to the positive image of the city.*

1. The proposed use attains the objectives and purposes of the General Plan of the City of Sunnyvale. *[Finding met]*

The proposed project will increase telecommunications coverage, while meeting federal emissions requirements for human exposure. Although the site is adjacent to residential uses the project would utilize an existing monopole and would eliminate the need to build a new telecommunications facility elsewhere in the City.

2. The proposed use ensures that the general appearance of proposed structures, or the uses to be made of the property to which the application refers, will not impair either the orderly development of, or the existing uses being made of, adjacent properties. *[Finding met]*

The proposed project would be visible from the street frontage and neighboring residential properties. As conditioned by staff, visual impacts would be minimized by mounting the microwave dishes snug against the pole and relocating the RF heads inside the equipment enclosure. New ground equipment would be located inside the existing enclosure and would not be visible from the street or neighboring properties.

## Standard Requirements

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The following is a list of standard requirements. This list is intended to assist the applicant and public in understanding basic related requirements, and is not intended as an exhaustive list. These requirements cannot be waived or modified.

- A. **Testing Within 15 Days:** The applicant shall test any wireless telecommunications site installed in the City of Sunnyvale within 15 days of operating the tower. The test shall confirm that any Emergency 911 wireless call made through the wireless telecommunications site shall provide Enhanced 911 capability (including phase 2 information when available from the caller's device) and direct the call to the City of Sunnyvale Department of Public Safety dispatcher, ensuring phase 2 information is transferred. If the call is to be directed elsewhere pursuant to State and Federal law the applicant shall ensure that the Enhanced 911 information transfers to that dispatch center. This capability shall be routinely tested to ensure compliance as long as the approved wireless telecommunications site is in service.
- B. **Permit Expiration:** The Special Development Permit for the use shall expire if the use is discontinued for a period of one year or more.
- C. **Permit Lapse if not Exercised (Ordinance 2895-09):** The Special Development Permit shall be valid for three (3) years from the date of approval by the final review authority (as adopted by City Council on April 21, 2009, RTC 09-094). Extensions of time may be considered, for a maximum of two one year extensions, if applied for and approved prior to the expiration of the permit approval. If the approval is not exercised within this time frame, the permit is null and void.
- D. **Building Permits:** Obtain Building Permits.
- E. **Certification:** Before January 31 of each even numbered year following the issuance of any authorizing establishment of a wireless telecommunication facility, an authorized representative for each wireless carrier providing service in the City of Sunnyvale shall provide written certification to the City executed under penalty of perjury that (i) each facility is being operated in accordance with the approved local and federal permits and includes test results that confirm the facility meets city noise requirements and federal RF emissions standards; (ii) each facility complies with the then-current general and design standards and is in compliance with the approved plans; (iii) whether the facility is currently being used by the owner or operator; and (iv) the basic contact and site information supplied by the owner or operator is current.
- F. **Renewal:** Every owner or operator of a wireless telecommunication facility shall renew the facility permit at least every ten (10) years from

the date of initial approval. If a permit or other entitlement for use is not renewed, it shall automatically become null and void without notice or hearing ten (10) years after it is issued, or upon cessation of use for more than a year and a day, whichever comes first. Unless a new use permit or entitlement of use is issued, within one hundred twenty (120) days after a permit becomes null and void all improvements, including foundations and appurtenant ground wires, shall be removed from the property and the site restored to its original pre-installation condition within one hundred eighty (180) days of nonrenewal or abandonment.

- G. **Comply with Applicable Regulations:** The facility must comply with any and all applicable regulations and standards promulgated or imposed by any state or federal agency, including but not limited to the Federal Communications Commission and Federal Aviation Agency.
- H. **RF Emissions:** Certification must be provided that the proposed facility will at all times comply with all applicable health requirements and standards pertaining to RF emissions.
- I. **Business License:** The owner or operator of the facility shall obtain and maintain current at all times a business license as issued by the city.
- J. **Maintain Current Information:** The owner or operator shall maintain, at all times, a sign mounted on the outside fence showing the operator name, site number and emergency contact telephone number. The owner or operator of the facility shall also submit and maintain current at all times basic contact and site information on a form to be supplied by the city. The applicant shall notify city of any changes to the information submitted within thirty (30) days of any change, including change of the name or legal status of the owner or operator. This information shall include, but is not limited to the following:
  - i. Identity, including name, address and telephone number, and legal status of the owner of the facility including official identification numbers and FCC certification, and if different from the owner, the identity and legal status of the person or entity responsible for operating the facility.
  - ii. Name, address and telephone number of a local contact person for emergencies.
  - iii. Type of service provided.
- K. **Good Repair:** All facilities and related equipment, including lighting, fences, shields, cabinets, and poles, shall be maintained in good repair, free from trash, debris, litter and graffiti and other forms of vandalism, and any damage from any cause shall be repaired as soon as reasonably possible so as to minimize occurrences of dangerous conditions or visual blight. Graffiti shall be removed from any facility or equipment as soon as

practicable, and in no instance more than forty-eight (48) hours from the time of notification by the city.

- L. **Minimize Noise:** The facility shall be operated in such a manner so as to minimize any possible disruption caused by noise. Backup generators shall only be operated during periods of power outages, and shall not be tested on weekends or holidays, or between the hours of 10:00 p.m. and 7:00 a.m. on weekday nights. At no time shall equipment noise from any source exceed an exterior noise level of 60 dB at the property line.
- M. **Responsibility to Maintain:** The owner or operator of the facility shall routinely and regularly inspect each site to ensure compliance with the standards set forth in the Telecommunications Ordinance.
- N. **Hold Harmless:** The wireless telecommunication facility provider shall defend, indemnify, and hold harmless the city or any of its boards, commissions, agents, officers, and employees from any claim, action or proceeding against the city, its boards, commission, agents, officers, or employees to attack, set aside, void, or annul, the approval of the project when such claim or action is brought within the time period provided for in applicable state and/or local statutes. The city shall promptly notify the provider(s) of any such claim, action or proceeding. The city shall have the option of coordinating in the defense. Nothing contained in this stipulation shall prohibit the city from participating in a defense of any claim, action, or proceeding if the city bears its own attorney's fees and costs, and the city defends the action in good faith.
- O. **Liability:** Facility lessors shall be strictly liable for any and all sudden and accidental pollution and gradual pollution resulting from their use within the city. This liability shall include cleanup, intentional injury or damage to persons or property. Additionally, lessors shall be responsible for any sanctions, fines, or other monetary costs imposed as a result of the release of pollutants from their operations. Pollutants include any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals, and waste. Waste includes materials to be recycled, reconditioned or reclaimed.
- P. **No Interference with City Communication Systems:** The facility operator shall be strictly liable for interference caused by the facility with city communication systems. The operator shall be responsible for all labor and equipment costs for determining the source of the interference, all costs associated with eliminating the interference, (including but not limited to filtering, installing cavities, installing directional antennas, powering down systems, and engineering analysis), and all costs arising from third party claims against the city attributable to the interference.
- Q. **No Threat to Public Health:** The facility shall not be sited or operated in such a manner that is poses, either by itself or in combination with other

such facilities, a potential threat to public health. To that end, the subject facility and the combination of on-site facilities shall not produce at any time power densities in any inhabited area that exceed the FCC's Maximum Permissible Exposure (MPE) limits for electric and magnetic field strength and power density for transmitters or any more restrictive standard subsequently adopted or promulgated by the federal government.

### **Recommended Conditions of Approval**

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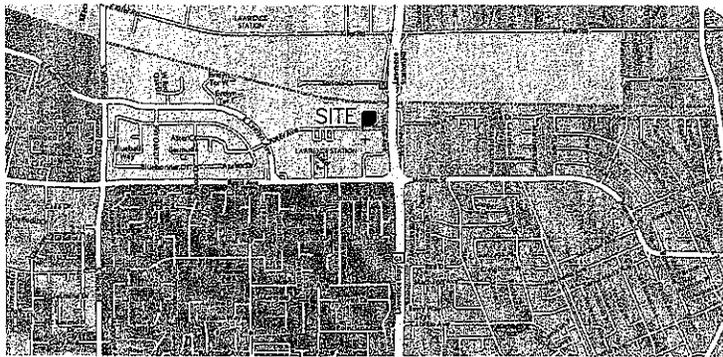
In addition to complying with all applicable City, County, State and Federal Statutes, Codes, Ordinances, Resolutions and Regulations, Permittee expressly accepts and agrees to comply with the following conditions of approval of this Permit:

1. **Project Conformance:** Project shall be in conformance with the plans approved at the public hearing(s). Minor changes may be approved by the Director of Community Development, major changes may be approved at a public hearing.
2. **Execute Permit Document:** Execute a Special Development Permit document prior to issuance of the building permit.
3. **Conditions of Approval on Plans:** The Conditions of Approval shall be reproduced on a page of the plans submitted for a Building permit for this project.
4. **Pole Design:** All new antennas and microwave dishes shall be painted to match the existing monopole.
5. **Microwave Dishes:** All new microwave dishes shall be redesigned to be snug against the pole as much as physically feasible.
6. **RF Heads:** All new RF heads shall be relocated from the pole into the existing ground enclosure.
7. **Ground Equipment:** All new equipment inside the ground enclosure shall not exceed the height of existing equipment.
8. **Tree Removal:** No trees shall be removed as part of this application.

# clearw'ire<sup>®</sup>

## TOWERCO CALSTONE CA-SJC0109A 1176 ASTER AVENUE SUNNYVALE, CA 94086

### VICINITY MAP - N.T.S.



### DRIVING DIRECTIONS

FROM: CLEARWIRE REGIONAL OFFICE  
2999 OAK ROAD, SUITE 10  
WALNUT CREEK, CA 94597

TO: 1176 ASTER AVENUE  
SUNNYVALE, CA 94086

DISTANCE: 49.7 MILES

1. HEADSOUTHEAST ON OAK ROAD.
2. TURN RIGHT AT TREAT BLVD.
3. SLIGHT LEFT TO STAY ON TREAT BLVD.
4. TURN RIGHT AT N MAIN STREET.
5. TAKE THE RAMP ONTO I-880 SOUTH.
6. TAKE EXIT 12 TO MERGE ON TO CA-262 SOUTH/MISSION BLVD. TOWARD I-880.
7. TAKE THE RAMP ONTO I-880 SOUTH.
8. TAKE THE EXIT ONTO CA-237 WEST TOWARD MOUNTAIN VIEW.
9. EXIT ONTO COUNTY RTE.-02/LAWRENCE EXPY.
10. TURN RIGHT AT REED AVE.
11. TURN RIGHT WILLOW AVE.
12. TURN RIGHT TO STAY ON WILLOW AVE.
13. TURN LEFT AT ASTER AVE.
14. ARRIVE AT 1176 ASTER AVE. SUNNYVALE, CA.

### 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) | 6. ANSI/ISA-222-F LIFE SAFETY CODE NFPA-101 |
| 2. 2007 CALIFORNIA BUILDING CODE                        | 7. 2007 CALIFORNIA PLUMBING CODE            |
| 3. CITY/COUNTY ORDINANCES                               | 8. 2007 CALIFORNIA ELECTRICAL CODE          |
| 4. BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)    | 9. LOCAL BUILDING CODE CALIFORNIA CODE      |

### BUILDING/ SITE DATA LEGEND

- LATITUDE:** 37° 22' 13.00" N (NAD83)  
**LONGITUDE:** 121° 59' 56.00" W (NAD83)  
**ELEVATION:** 67' AMSL (NOVD 29)  
**A.P.N.:** 213-01-034  
**ZONING:** M3, INDUSTRIAL  
**PROPOSED USE:** U, UNMANNED  
**TYPE OF CONSTRUCTION:** WN  
**LEASE AREA:** 4 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

PROPOSED UNMANNED WIRELESS FACILITY, INCLUDING THE INSTALLATION OF A (1) EQUIPMENT CABINET, (3) MICROWAVE DISHES, (3) PANEL ANTENNAS, AND (1) GPS. ALL PROPOSED EQUIPMENT WILL BE STEALTHED BY PAINTING TO MATCH THE EXISTING BUILDING.

### SIGNATURE BLOCK

ZONING MANAGER	DATE
SITE ACQ. MANAGER	DATE
RF MANAGER	DATE
CONSTRUCTION MANAGER	DATE
MICROWAVE MANAGER	DATE

### PROJECT SUMMARY

**PROPERTY OWNER:** PENINSULA BUILDING MATERIALS P.O. BOX 607 REDWOOD CITY, CA 94063-0807  
**CONTACT:** (408) 246-0550  
**APPLICANT:** CLEARWIRE 2999 OAK ROAD, SUITE 10 WALNUT CREEK, CA 94597  
**CONTACT:** TOM DEKAS (925) 202-3333  
**LEASING MANAGER:** GOODMAN NETWORKS 204 FOREST CREEK LANE, SAN RAMON, CA. 94583  
**CONTACT:** DAVID SHYPES (530) 208-9097  
**ZONING MANAGER:** GOODMAN NETWORKS 204 FOREST CREEK LANE, SAN RAMON, CA. 94583  
**CONTACT:** GORDON BELL (530) 847-1932

**ARCHITECT:** DELTA GROUPS ENGINEERING, INC. 5635 WEST LAS POSITAS, SUITE 403 PLEASANTON, CA 94588  
**CONTACT:** HAROLD TRIMAS (925) 468-0115  
**STRUCTURAL ENGINEER:** DELTA GROUPS ENGINEERING, INC. 5635 WEST LAS POSITAS, SUITE 403 PLEASANTON, CA 94588  
**CONTACT:** ALBERT TENG (949) 622-0333  
**CONSTRUCTION MANAGER:** GOODMAN NETWORKS 204 FOREST CREEK LANE, SAN RAMON, CA. 94583  
**CONTACT:** ANDREW OGLIVIE (301) 318-2780

### SHEET INDEX

- |    |   |
|----|---|
| T1 | TITLE SHEET   |
| A1 | OVERALL SITE PLAN                                       |
| A2 | EQUIPMENT AREA PLAN, ANTENNA LAYOUT, & EQUIPMENT LAYOUT |
| A3 | NORTH & EAST ELEVATIONS                                 |
| A4 | SOUTH & WEST ELEVATIONS                                 |

clearw'ire

4400 CARILLON POINT  
KIRKLAND, WA 98033

### PROJECT INFORMATION:

**TOWERCO CALSTONE  
CA-SJC0109A**  
1176 ASTER AVENUE  
SUNNYVALE, CA 94086  
SANTA CLARA COUNTY

### CURRENT ISSUE DATE:

8/20/09

### ISSUED FOR:

ZONING (100%)

### REV. DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
△	8/20/09	ZONING (100%)	CC
△	7/2/09	ZONING (100%)	CL
△	6/22/09	ZONING (100%)	CL
△	6/12/09	ZONING (90%)	JS

### PLANS PREPARED BY:

**DELTA GROUPS ENGINEERING, INC.**  
CONSULTING ENGINEERS  
5635 WEST LAS POSITAS, SUITE 403  
PLEASANTON, CA 94588  
TEL: (925) 468-0115 FAX: (925) 468-0355

### CONSULTANT:

### SEAL OF APPROVAL:

### SHEET TITLE:

### SHEET

ATTACHMENT  
Page 1 of 5

PROJECT INFORMATION:

**TOWERCO CALSTONE**  
CA-SJC0109A  
1176 ASTER AVENUE  
SUNNYVALE, CA 94086  
SANTA CLARA COUNTY

CURRENT ISSUE DATE:

8/20/09

ISSUED FOR:

ZONING (100%)

REV.: DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
△	6/20/09	ZONING (100%)	CC
△	7/2/09	ZONING (100%)	CL
△	6/22/09	ZONING (100%)	CL
△	6/12/09	ZONING (90%)	JS

PLANS PREPARED BY:

**DELTA GROUPS**  
**ENGINEERING, INC.**  
CONSULTING ENGINEERS

5435 WEST LAG POSTING, SUITE 403  
PLEASANTON, CA 94566  
TEL: (925) 466-0115 FAX: (925) 466-0356

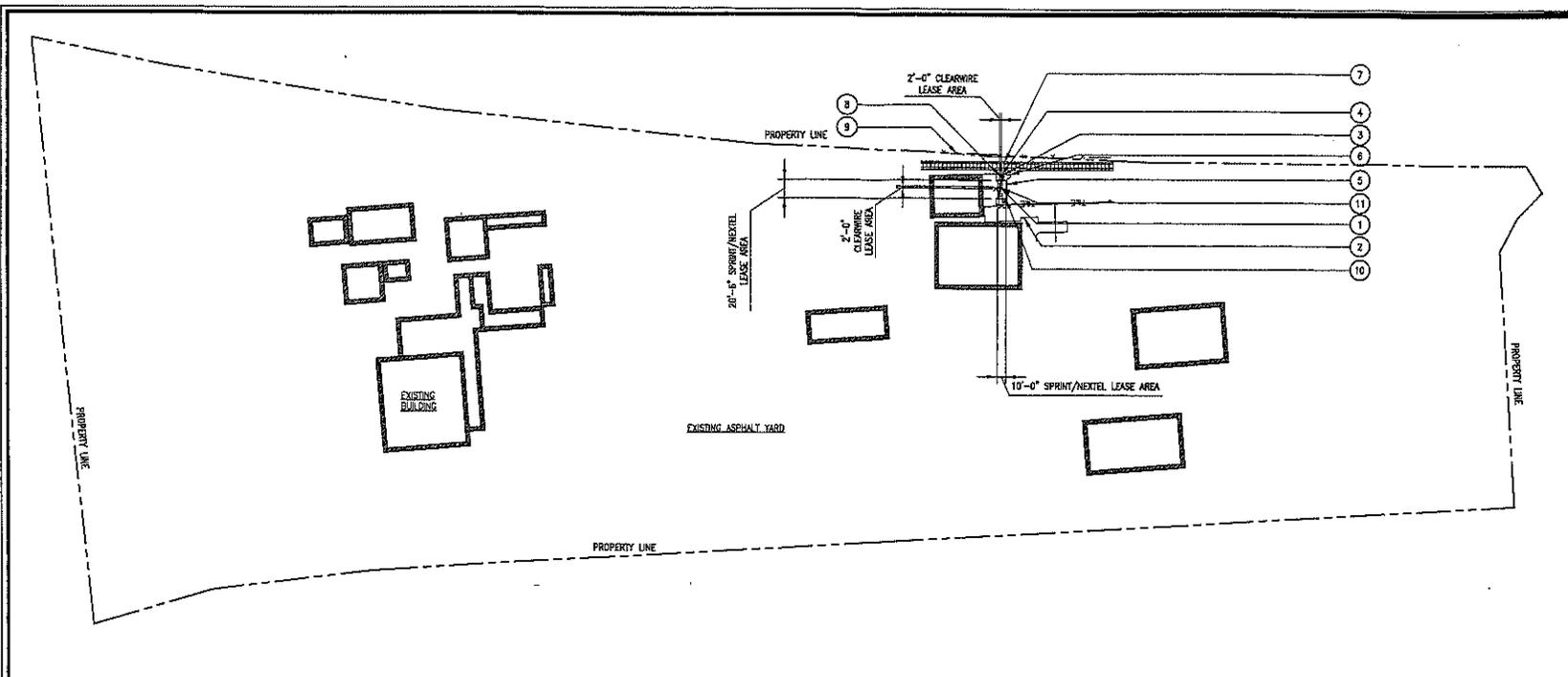
CONSULTANT:

SEAL OF APPROVAL:

SHEET TITLE:

SHEET

ATTACHMENT  
Page 2 of 5



KEY NOTES:

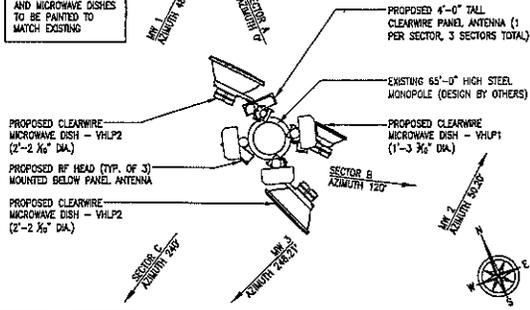
- ① PROPOSED 2'-0"x2'-0" CLEARWIRE LEASE AREA (4 SQ. FT. TOTAL)
- ② EXISTING CONCRETE PAD (TYP.)
- ③ PROPOSED CLEARWIRE PANEL ANTENNAS (TYP. OF 3) MOUNTED TO EXISTING MONOPOLE
- ④ PROPOSED CLEARWIRE MICROWAVE DISHES (TYP. OF 3) MOUNTED TO EXISTING MONOPOLE
- ⑤ EXISTING SPRINT/NEXTEL EQUIPMENT SHELTER
- ⑥ EXISTING 4'-0" WIDE ACCESS GATE (TYP.)
- ⑦ EXISTING RAILROAD TRACKS
- ⑧ EXISTING SPRINT/NEXTEL PANEL ANTENNAS (TYP.)
- ⑨ EXISTING CHAIN LINK FENCE (TYP.)
- ⑩ EXISTING 20'-6"x10'-0" SPRINT/NEXTEL LEASE AREA (205 SQ. FT. TOTAL)
- ⑪ PROPOSED 2'-0"x2'-0" CLEARWIRE EQUIPMENT RACK

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

OVERALL SITE PLAN

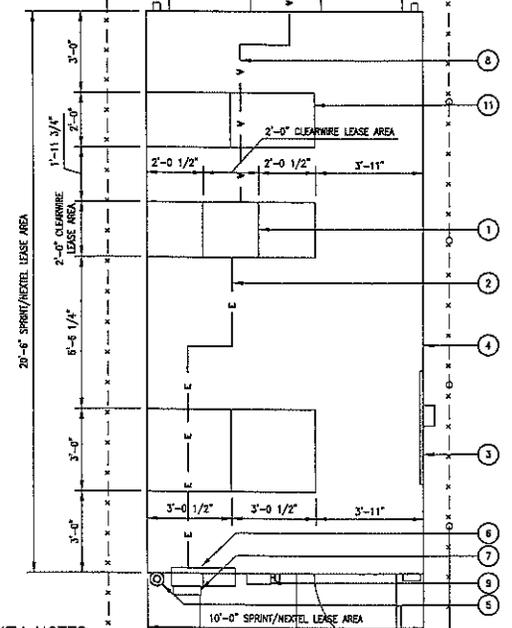
SCALE: 1 inch = 60 ft. 1

NOTES:  
ALL PANEL ANTENNAS AND MICROWAVE DISHES TO BE PAINTED TO MATCH EXISTING



ANTENNA LAYOUT

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



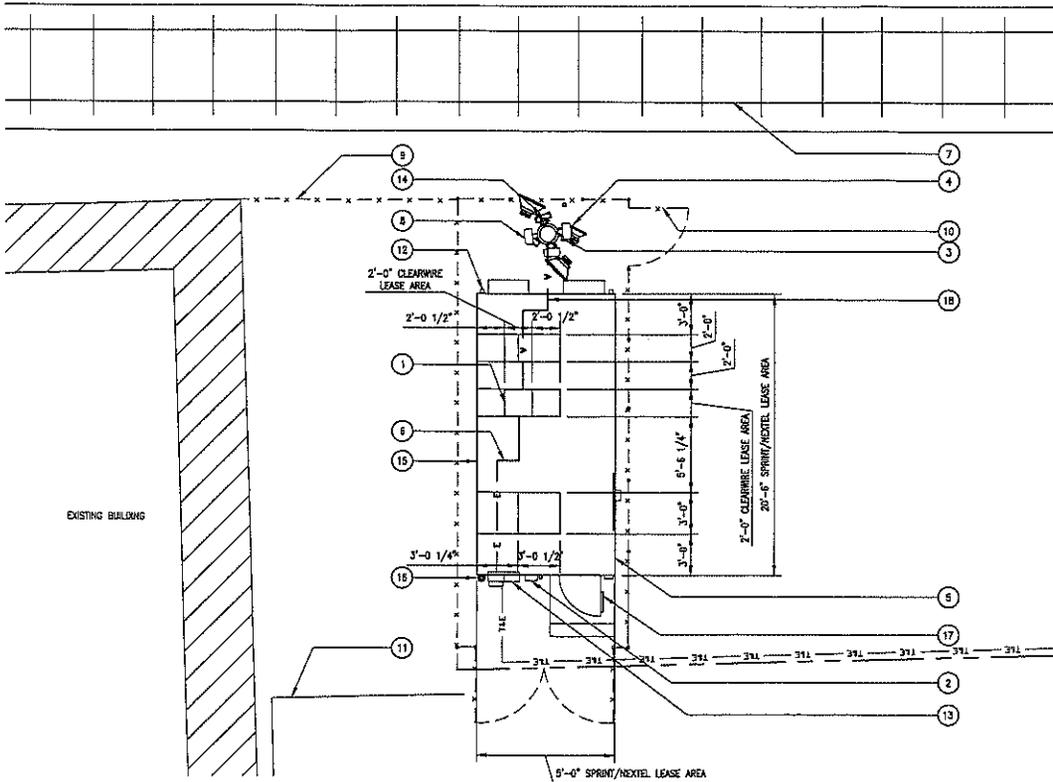
KEY NOTES:

- 1 PROPOSED 2'-0"x2'-0" CLEARWIRE EQUIPMENT RACK
- 2 PROPOSED CLEARWIRE ELECTRICAL ROUTING - CONNECT TO EXISTING SPRINT/NEXTEL POWER PANEL
- 3 EXISTING SPRINT/NEXTEL TELCO BACKBOARD
- 4 EXISTING 20'-6"x10'-0" SPRINT/NEXTEL EQUIPMENT SHELTER (205 SQ. FT. TOTAL)
- 5 PROPOSED CLEARWIRE GPS MOUNTED TO EQUIPMENT SHELTER
- 6 EXISTING POWER PANEL P.O.C.
- 7 EXISTING SPRINT/NEXTEL METER
- 8 PROPOSED CLEARWIRE ANTENNA CABLE ROUTING WITHIN EXISTING OVERHEAD CABLE TRAY
- 9 EXISTING SPRINT/NEXTEL GENERATOR PLUG
- 10 EXISTING SPRINT/NEXTEL EMERGENCY CONTACT SIGN
- 11 EXISTING SPRINT/NEXTEL EQUIPMENT RACKS

EQUIPMENT LAYOUT

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

NOTES:  
ALL PANEL ANTENNAS AND MICROWAVE DISHES TO BE PAINTED TO MATCH EXISTING



KEY NOTES:

- 1 PROPOSED 2'-0"x2'-0" CLEARWIRE EQUIPMENT RACK
- 2 EXISTING SPRINT/NEXTEL GENERATOR PLUG
- 3 PROPOSED CLEARWIRE 4'-0" TALL PANEL ANTENNAS (TYP. OF 3) MOUNTED TO EXISTING MONOPOLE
- 4 PROPOSED CLEARWIRE MICROWAVE DISHES (TYP. OF 3) MOUNTED TO EXISTING MONOPOLE
- 5 EXISTING 20'-6"x10'-0" SPRINT/NEXTEL EQUIPMENT SHELTER (205 SQ. FT. TOTAL)
- 6 PROPOSED CLEARWIRE ELECTRICAL ROUTING - CONNECT TO EXISTING SPRINT/NEXTEL POWER PANEL
- 7 EXISTING RAILROAD TRACKS
- 8 EXISTING SPRINT/NEXTEL PANEL ANTENNAS (TYP.)
- 9 EXISTING CHAIN LINK FENCE (TYP.)
- 10 EXISTING 4'-0" WIDE ACCESS GATE (TYP.)
- 11 EXISTING CONCRETE PAD (TYP.)
- 12 EXISTING GPS (TYP. OF 2)
- 13 EXISTING SPRINT/NEXTEL ELECTRICAL PANELS (TYP.)
- 14 PROPOSED RF HEAD (TYP. OF 3) MOUNTED BELOW PANEL ANTENNA
- 15 EXISTING 20'-6"x10'-0" SPRINT/NEXTEL LEASE AREA (205 SQ. FT. TOTAL)
- 16 PROPOSED CLEARWIRE GPS MOUNTED TO EQUIPMENT SHELTER
- 17 EXISTING SPRINT/NEXTEL EMERGENCY CONTACT SIGN
- 18 PROPOSED CLEARWIRE ANTENNA CABLE ROUTING

NOTES:

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

EQUIPMENT AREA PLAN

SCALE: 1/4" = 1'-0"

clearw're

4400 GARILLON POINT  
KIRKLAND, WA 98033

PROJECT INFORMATION:

**TOWERCO CALSTONE**  
CA-SJC0109A  
1178 ASTER AVENUE  
SUNNYVALE, CA 94086  
SANTA CLARA COUNTY

CURRENT ISSUE DATE:

8/20/09

ISSUED FOR:

ZONING (100%)

REV.: DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
1	8/20/09	ZONING (100%)	CC
2	7/2/09	ZONING (100%)	CL
3	6/22/09	ZONING (100%)	CL
4	6/12/09	ZONING (90%)	JS

PLANS PREPARED BY:

**DELTA GROUPS ENGINEERING, INC.**  
CONSULTING ENGINEERS  
8932 WEST LAS POSITAS, SUITE 403  
PLEASANTON, CA 94566  
TEL: (925) 468-0118 FAX: (925) 468-0355

CONSULTANT:

SEAL OF APPROVAL:

SHEET TITLE:

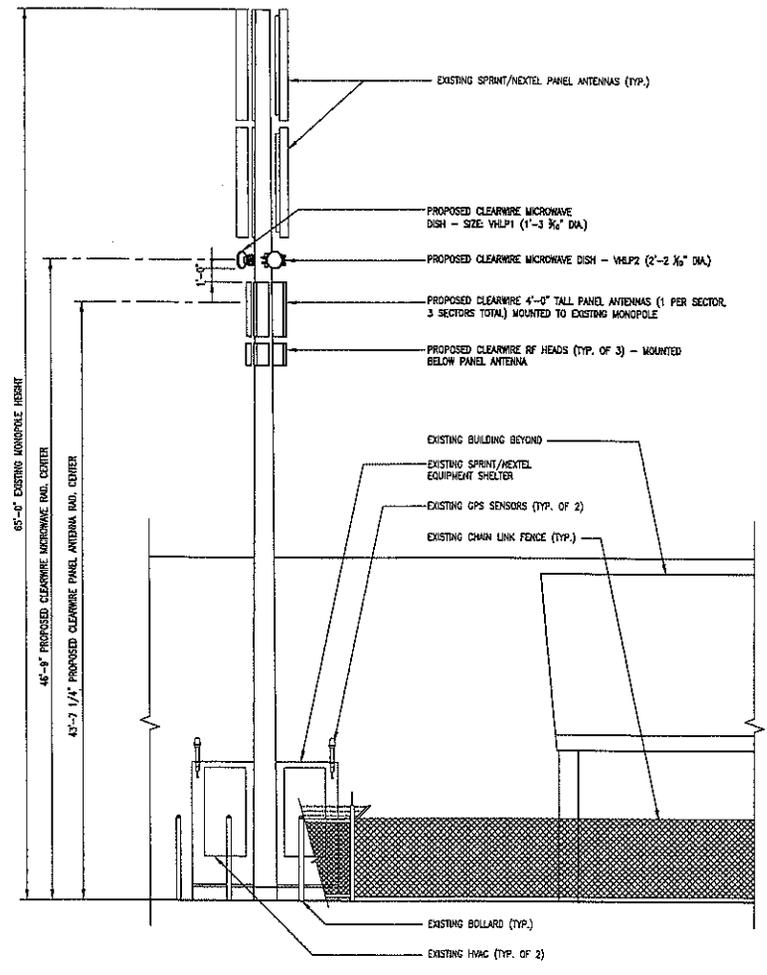
EQUIPMENT AREA PLAN

SHEET NO.



ATTACHMENT  
Page 3 of 5

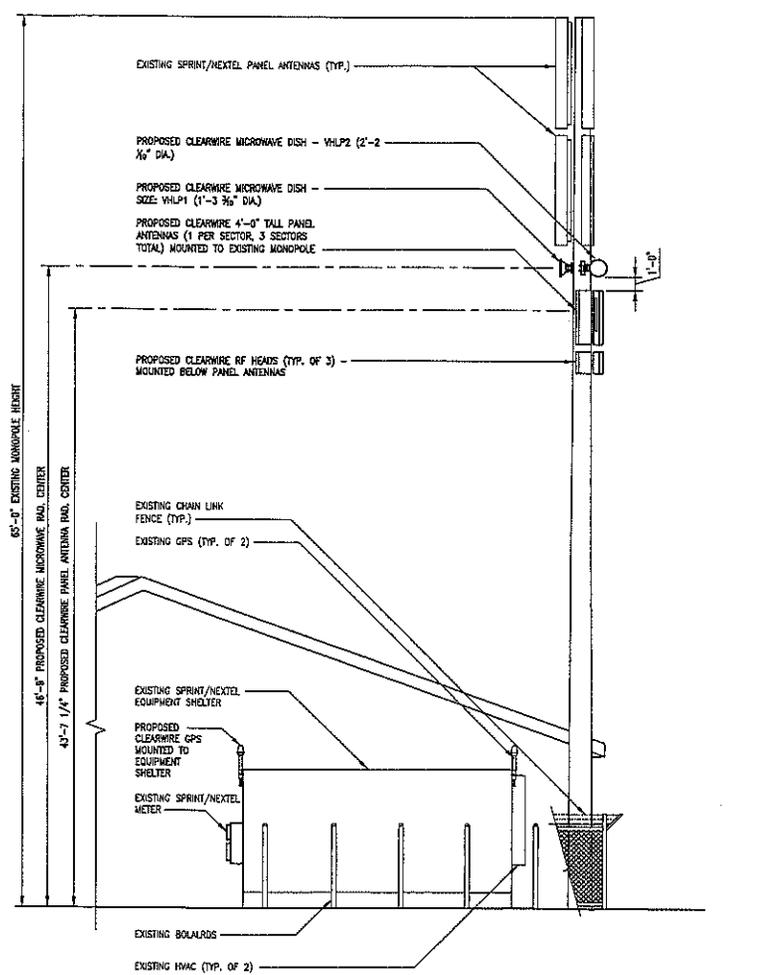
NOTES:  
ALL PANEL ANTENNAS AND MICROWAVE DISHES TO BE PAINTED TO MATCH EXISTING



NORTH ELEVATION

SCALE: 1/4" = 1'-0"  
2

NOTES:  
ALL PANEL ANTENNAS AND MICROWAVE DISHES TO BE PAINTED TO MATCH EXISTING



EAST ELEVATION

SCALE: 1/4" = 1'-0"  
1

**clearw're**  
4400 CARILLON POINT  
KIRKLAND, WA 98033

PROJECT INFORMATION:  
**TOWERCO CALSTONE**  
CA-SJC0109A  
1175 ASTER AVENUE  
SUNNYVALE, CA 94088  
SANTA CLARA COUNTY

CURRENT ISSUE DATE:  
8/20/09

ISSUED FOR:  
ZONING (100%)

REV. - DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
△	8/20/08	ZONING (100%)	CC
△	7/2/09	ZONING (100%)	CL
△	6/22/09	ZONING (100%)	CL
△	6/12/09	ZONING (90%)	JS

PLANS PREPARED BY:  
**DELTA GROUPS**  
ENGINEERING, INC.  
CONSULTING ENGINEERS  
2535 WEST LAS POSITAS, SUITE 403  
PLEASANTON, CA 94553  
TEL: (925) 468-0115 FAX: (925) 468-0355

CONSULTANT:

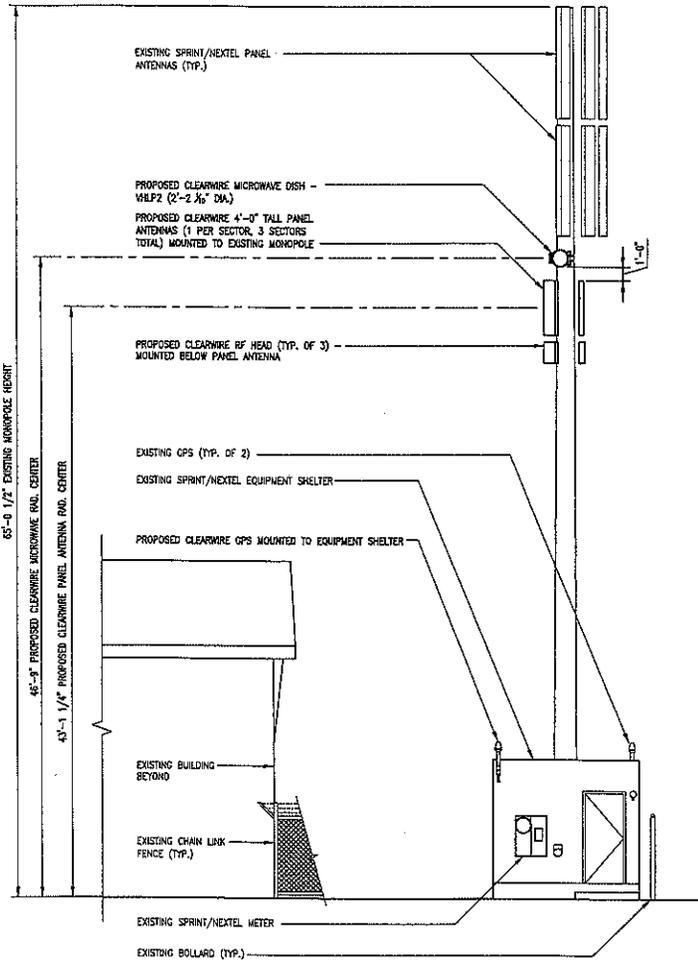
SEAL OF APPROVAL:

SHEET TITL

SHEET N/A

ATTACHMENT  
Page 4 of 5

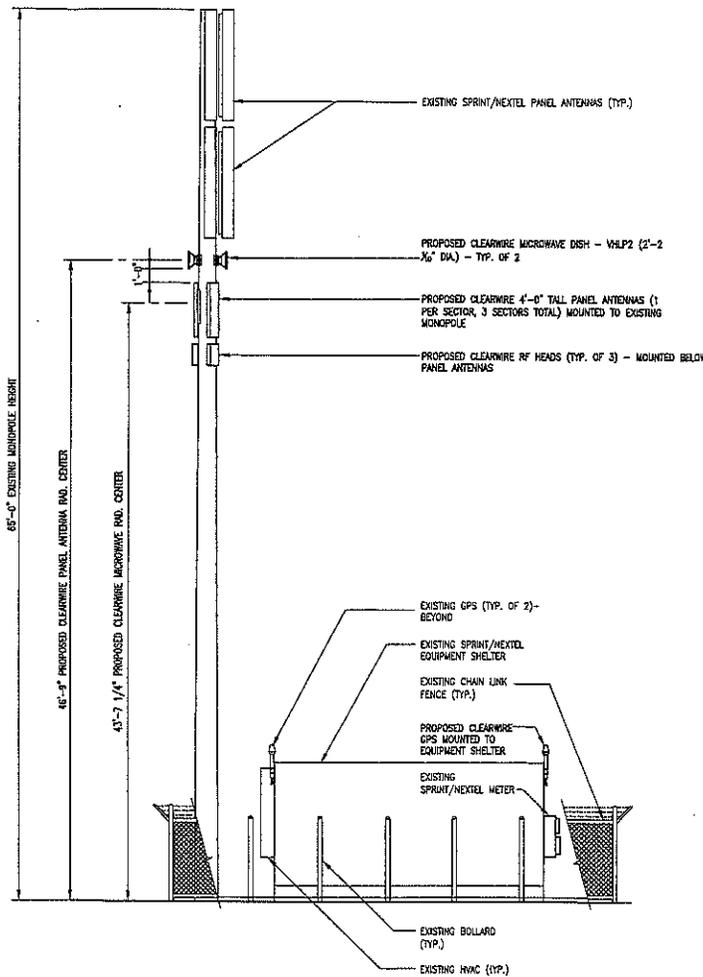
NOTES:  
ALL PANEL ANTENNAS AND MICROWAVE DISHES TO BE PAINTED TO MATCH EXISTING



SOUTH ELEVATION

SCALE: 1/4" = 1'-0"  
4 0 4 8 2

NOTES:  
ALL PANEL ANTENNAS AND MICROWAVE DISHES TO BE PAINTED TO MATCH EXISTING



WEST ELEVATION

SCALE: 1/4" = 1'-0"  
4 0 4 8 1

clearw're

4400 CARILLON POINT  
KIRKLAND, WA 98033

PROJECT INFORMATION:

**TOWERCO CALSTONE**  
**CA-SJC0109A**  
1176 ASTER AVENUE  
SUNNYVALE, CA 94086  
SANTA CLARA COUNTY

CURRENT ISSUE DATE:

8/20/09

ISSUED FOR:

ZONING (100%)

REV.: DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
△	8/20/09	ZONING (100%)	CC
△	7/2/09	ZONING (100%)	CL
△	6/22/09	ZONING (100%)	GL
△	6/12/09	ZONING (90%)	JS

PLANS PREPARED BY:



8635 WEST LAS POSITAS, SUITE 403  
PLEASANTON, CA 94588  
TEL: (925) 468-0115 FAX: (925) 468-0350

CONSULTANT:

SEAL OF APPROVAL:

SHEET TITLE:

S  
ATTACHMENT  
Page 5 of 5  
SHEET NUM  
A

EXISTING

(view Looking Northwest to Site)

ATTACHMENT D  
Page 1 of 2



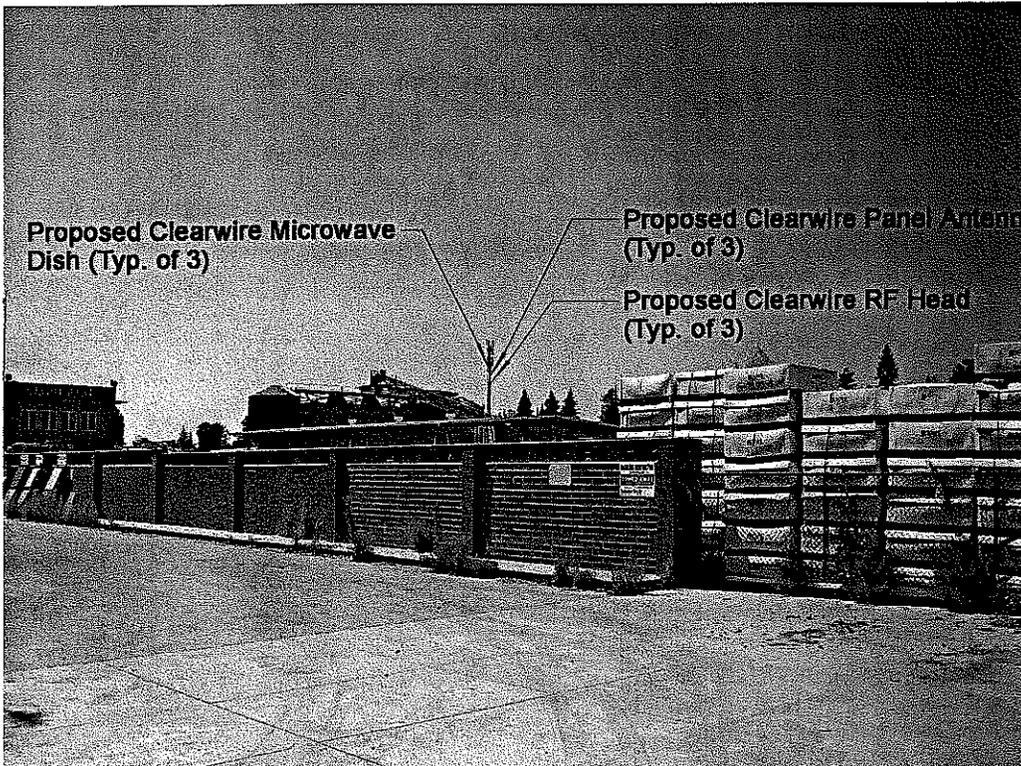
**clearwire**

**TOWERCO CALSTONE (CA-SJC0109A)**

1176 ASTER AVENUE, SUNNYVALE, CA 94086

PROPOSED

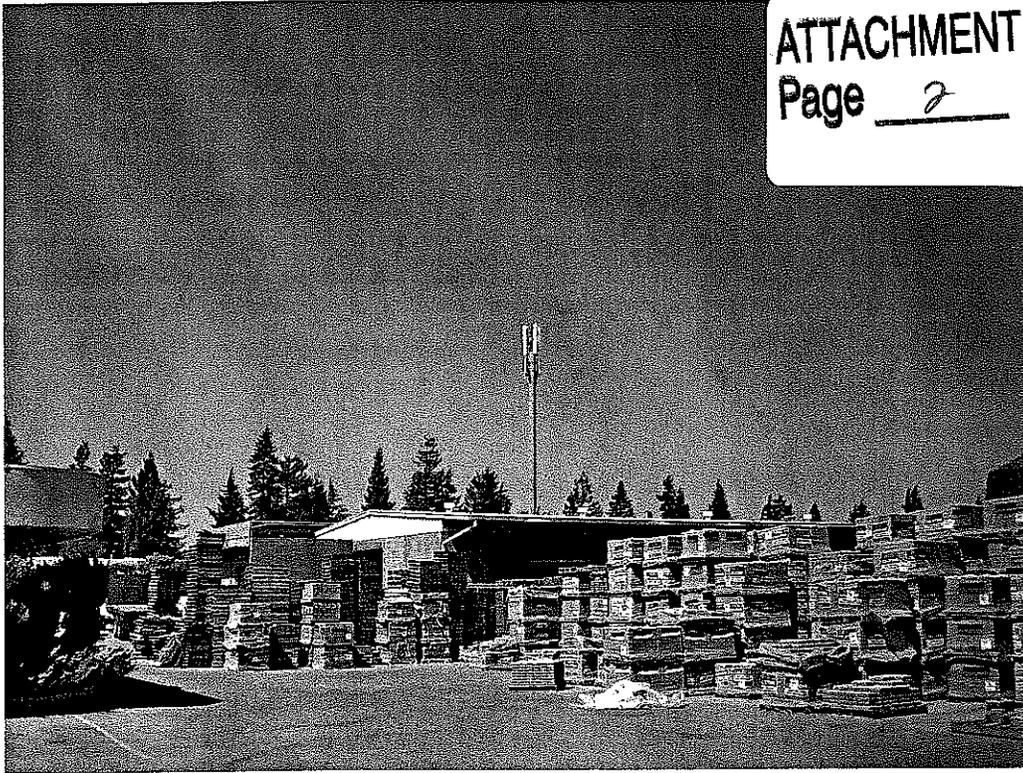
(View Looking Northwest to Site)



EXISTING

(view Looking Northeast to Site)

ATTACHMENT D  
Page 2 of 2



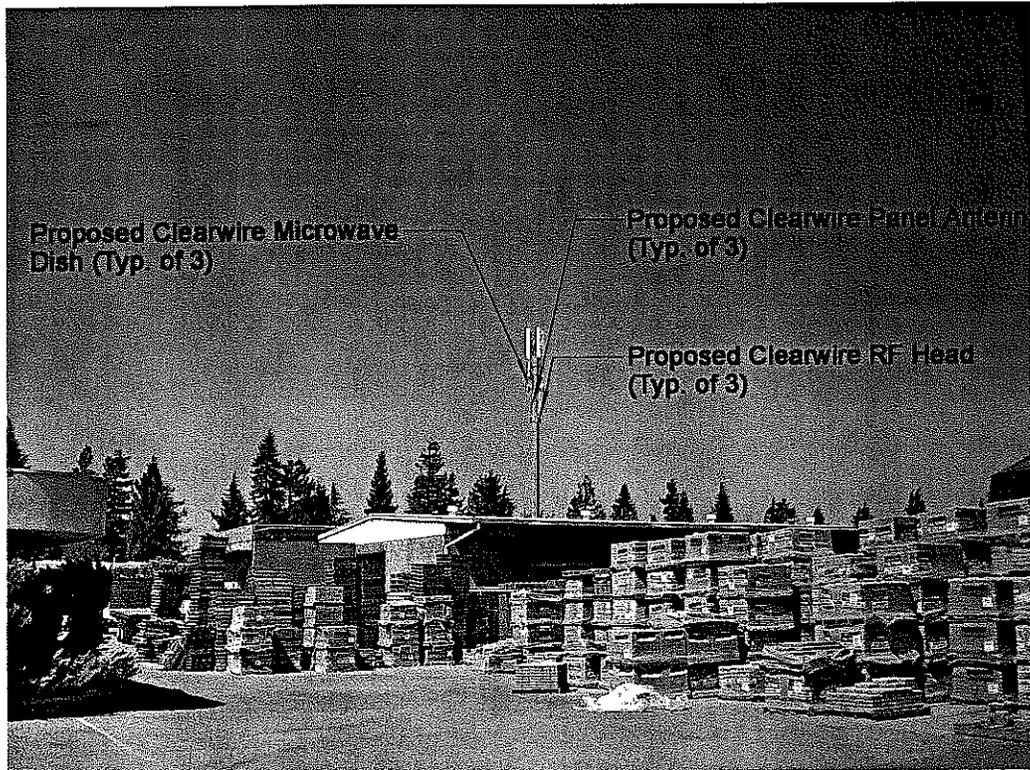
clearwire

**TOWERCO CALSTONE (CA-SJC0109A)**

1176 ASTER AVENUE, SUNNYVALE, CA 94086

PROPOSED

(View Looking Northeast to Site)



### 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-SJC0109) proposed to be located at 1176 Aster Avenue in Sunnyvale, 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:

<u>Personal Wireless Service</u>	<u>Approx. Frequency</u>	<u>Occupational Limit</u>	<u>Public Limit</u>
Broadband Radio (“BRS”)	2,600 MHz	5.00 mW/cm <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Advanced Wireless (“AWS”)	2,100	5.00	1.00
Personal Communication (“PCS”)	1,950	5.00	1.00
Cellular Telephone	870	2.90	0.58
Specialized Mobile Radio (“SMR”)	855	2.85	0.57
Long Term Evolution (“LTE”)	700	2.33	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



**Clearwire, LLC • Proposed Base Station (Site No. CA-SJC0109)  
1176 Aster Avenue • Sunnyvale, California**

about 1 inch thick. 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, including drawings by Delta Groups Engineering, Inc., dated June 22, 2009, it is proposed to mount three Argus Model LLPX310R directional panel antennas on an existing 65-foot pole sited near the industrial building located at 1176 Aster Avenue in Sunnyvale. The antennas would be mounted with 2° downtilt at an effective height of about 43<sup>1</sup>/<sub>2</sub> feet above ground 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 on the pole are three microwave "dish" antennas, for interconnection of this site with others in the Clearwire network.

Presently located on the same pole are similar antennas for use by Sprint Nextel, another wireless telecommunications carrier. Sprint Nextel had proposed to install Andrew Model 932DG90RCE-M PCS antennas, mounted at an effective height of about 47 feet above ground, and Scala Model AP16-880/065/DT6/XP SMR antennas, mounted at an effective height of about 61 feet above ground, and to operate with a maximum effective radiated power in any direction of 1,210 watts, representing simultaneous operation at 1,000 watts for PCS and 210 watts for SMR service.

Clearwire, LLC • Proposed Base Station (Site No. CA-8JG0409)  
1176 Aster Avenue • Sunnyvale, California

### Study Results

For a person anywhere at ground, the maximum ambient level of RF exposure due to the proposed Clearwire operation by itself would be 0.0013 mW/cm<sup>2</sup>, which is 0.13% of the applicable public limit. The maximum calculated cumulative level anywhere at ground, for the simultaneous operation of both carriers, is 0.31% of the applicable public limit; the maximum calculated cumulative level at any nearby building is 0.53% of the applicable public limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels. The microwave antennas would be in point-to-point service and are so directional that they make no significant contribution to RF exposure conditions at ground.

### No Recommended Mitigation Measures

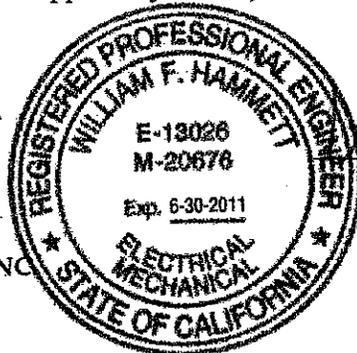
Due to their mounting locations, the Clearwire antennas would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. It is assumed that Clearwire and Sprint Nextel will, as FCC licensees, take adequate steps to ensure that their employees or contractors comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

### Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that the base station proposed by Clearwire, LLC at 1176 Aster Avenue in Sunnyvale, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating base stations.

### 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.



*William F. Hammett*  
William F. Hammett, P.E.

July 28, 2009



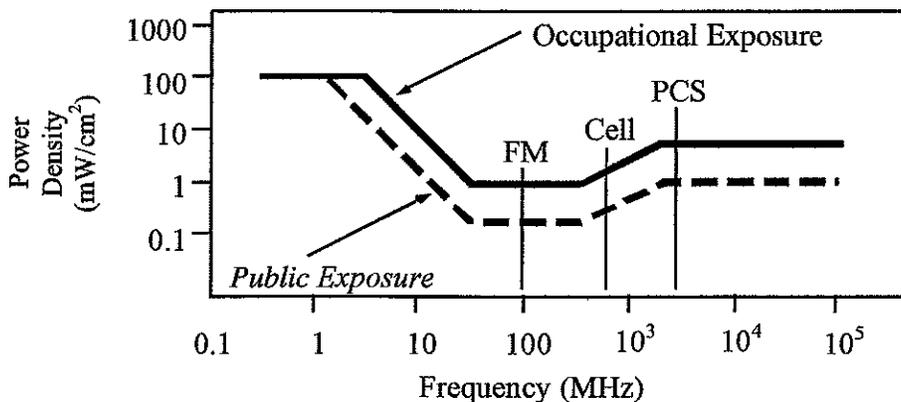
HAMMETT & EDISON, INC.  
CONSULTING ENGINEERS  
SAN FRANCISCO

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



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.



### 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<sup>2</sup>,

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<sup>2</sup>,

- where  $\theta_{BW}$  = 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
- $\eta$  = aperture efficiency (unitless, typically 0.5-0.8).

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

#### Far Field.

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

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

- 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.





July 16, 2009

City of Sunnyvale  
Planning Division  
456 W. Olive Avenue  
Sunnyvale, CA 94088

RE: **ClearWire Site CA-SJC0109:** Application for a Minor Use Permit for a Wireless Communications Facility at 1175 Aster Avenue, Sunnyvale, CA, APN 213-01-034

This letter is hereby submitted in conjunction with an application for a minor use permit for an unmanned wireless communications facility located on an existing monopole and within an existing equipment shelter at a property located at 1175 Aster Avenue in the City of Sunnyvale. The proposed facility is part of a wireless communications network for ClearWire Technologies.

**I. Applicant Information**

Lessee/Applicant  
ClearWire Technologies  
12657 Alcosta Blvd., Ste. 300  
San Ramon, CA 94583  
Attn: Gary Carpenter  
Phone: (808) 741-7200

Agent for Applicant  
bci Communications, Inc (Attn:Gordon Bell)  
4020 Sierra Springs Drive  
Pollock Pines, CA 95726  
Phone: (530) 647-1932  
Fax: (805) 456-3958  
Email: [gbell61639@aol.com](mailto:gbell61639@aol.com)

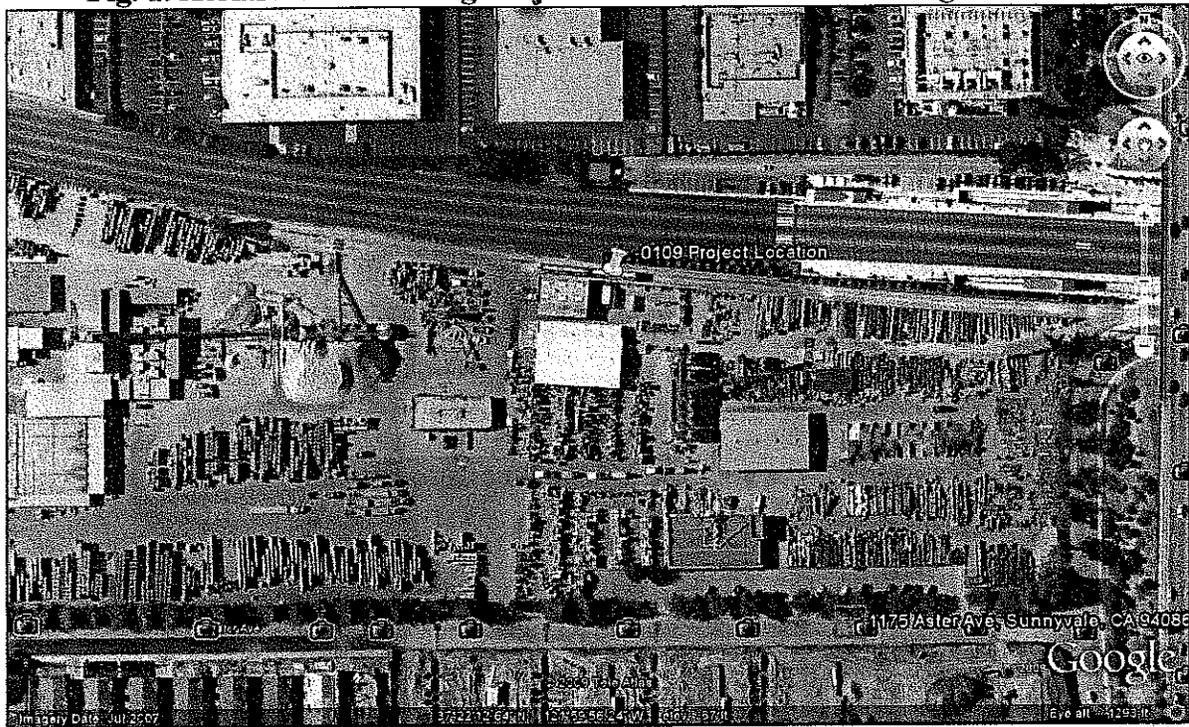
Property Owner  
Peninsula Building Materials  
PO Box 5807  
Redwood City, CA 94063

## II. Project Description

### Project Location

The proposed project is located at 1175 Aster Avenue in the City of Sunnyvale. The proposed communications facility will be located on an existing monopole and on the ground adjacent to the monopole. The project site is located on Assessor's Parcel 213-01-034. Geographic coordinates (NAD 83) for the proposed facility are Latitude: 37°22' 13.61"; Longitude: -121° 59' 56.13", at an elevation of approximately 67' AMSL (above mean sea level). The aerial photo below shows project location and surrounding land uses.

**Fig. 1. Aerial Photo Showing Project Location and Surrounding Land Uses**



### Project Components

The proposed project would consist of the installation of antennas on the existing monopole and radio equipment inside the existing shelter as shown on the attached plans. The proposed project components would consist of the following elements to be contained within a 4.0 (2' x 2') square foot lease area:

- Radio equipment (approx. 2' x 2') to be installed on existing racks within the existing Sprint/Nextel shelter
- Three (3) panel antennas and three (3) microwave dishes mounted on the existing 65'-tall monopole

- A small GPS antenna would be mounted to the on an H-frame mount inside the equipment compound as shown on the plans
- 3 RF heads to be mounted on an H-frame inside the equipment compound as shown on the plans
- Associated fiber/coax cable to be run from the radio equipment in the shelter to the antennas inside the existing monopole. Power would be pulled from existing electrical service for the Sprint facility.

Access is provided by a driveway on Aster Avenue.

#### Collocation

The existing monopole already supports existing communications facilities and may be capable of handling additional antennas should other wireless communications companies be interested in collocation on the monopole.

#### Public Services

Public services such as fire and law enforcement are not required given that the facilities are designed to be vandalism resistant (fenced and located on the monopole) and are uninhabitable. The project does not require school or transit facilities, as it is an unmanned wireless communications facility.

#### Operations

The site is an unmanned facility that will not generate any noise, dust, or odors. It is expected that a service technician may visit the site for routine maintenance once every month to two months if needed. Ample parking is available in the parking lot for this transient visit.

### **III. Land Use**

#### Zoning

The project parcel is zoned M3/ITTRR3, Industrial to Medium Density Residential. The project site is bounded on all sides by industrial uses.

#### Environmental Setting

The project is located on a relatively level, industrially-zoned parcel that has been entirely developed with a lumber yard/building materials facility. There is an existing telecommunications facility consisting of a monopole and shelter upon which the project will locate. There are no sensitive resources within the vicinity of the project site. The proposed antennas will be visible from surrounding public but will not significantly change

the character of the existing monopole, and as such the project will not have an impact on any scenic resources.

#### **IV. Conclusion**

In conclusion, the proposed project is a compatible use with the surrounding land uses as proven by the fact that an existing facility is located on and behind the building. The proposed project will provide valuable communications services to area residents and businesses. Should you have any questions regarding this application, please feel free to call me at (530) 647-1932.

Sincerely,

bciSites, Inc.

*Gordon J. Bell*  
Gordon J. Bell  
Zoning Specialist

Encl.



# USE PERMIT/SPECIAL DEVELOPMENT PERMIT JUSTIFICATIONS

One of the two following findings must be made in order to approve a Use Permit or Special Development Permit application.

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The Sunnyvale Municipal code states that at least one of the following two justifications must be met before granting the Use Permit or Special Development Permit. Please provide us information on how your project meets at least one of the following criteria.

1. The proposed use attains the objectives and purposes of the General Plan of the City of Sunnyvale as the project ...

OR

2. The proposed use ensures that the general appearance of proposed structures, or the uses to be made of the property to which the application refers, will not impair either the orderly development of, or the existing uses being made of, adjacent properties as ...

**The project would be installed on an existing monopole and within an existing equipment shelter and will not significantly change the visual appearance of this monopole located within an industrial area. The project will have no impact on existing operations of the building supply facility.**

If you need assistance in answering either of these justifications, contact the Planning Division staff at the One-Stop Permit Center.

**Noren Caliva - 2009-0599 Use Permit panels & 3 microwave dishes on existing pole**

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**From:** paul melnyk  
**To:** <ncaliva@ci.sunnyvale.ca.us>  
**Date:** 9/22/2009 10:18 PM  
**Subject:** 2009-0599 Use Permit panels & 3 microwave dishes on existing pole

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Hello Noren,

I object to this entire project of any addition of panes, dishes, etc to any pole on the Calstone property at 1155/1175 Aster Ave, Sunnyvale.

Microwave towers are ugly and detract from the property values of everyone who has to look at those unsightly things.

Also, added equipment would increase the EMF/EMP emissions from this tower which are unhealthy and will add to the cancer risk of the Calstone workers and all residents of the Aster Ave neighborhood.

The fact that a Class 1 categorical exemption relieves this project from CA environmental quality act provisions and city guidelines may be so but that does not relieve YOU of the moral obligation that you have as city employees to do your best to protect the quality of life of the residents of the City of Sunnyvale.

Calstone already has variance that allows them to make unlimited noise 24 hr a day 7 days a week. I have to listen to their stone machine grinding process noise day in and day out, put up with beep, beep, beep forklift noise at 4am that wakes me up every night, hear diesel 18 wheeler large trucks go up and down my street, Aster Ave every day and smell the diesel fumes and see the black clouds of smoke from the trucks and see the debris scattered all over Aster ave that falls off those trucks, wood splinters, plastic wrapping, stone fragments, chains, hardware pieces, etc. EVERYDAY!!! I am tired of how bad a neighbor Calstone is and how much they bring down the quality of life for everyone who lives near them. This change would just add insult to injury of letting them do whatever they want and the surrounding residential neighborhood is forced to suffer.

This is not 1909 where big business can do whatever they want and the government does little or nothing to protect the people. This is 2009 and we live in CA, supposedly the most progressive, people friendly and green state in the union. Or do we need a Woodward & Berstein to come in here and do some heavy-duty muckraking to expose how the city of Sunnyvale government is in the back pocket of Calstone and other big business interests?

Approval of this change would do great harm to the quality of life in this neighborhood and is a bad thing that must be denied. I strongly believe that this permit must be denied for the good of the residents of the city of Sunnyvale and for the good of the quality of life in Sunnyvale.

The best answer for the residents of Sunnyvale is that the owners of Calstone sell the 1155/1175 Aster ave property, the Calstone operations at this site shut down and a developer builds homes on the entire piece of land.

Regards,  
Paul Melnyk

**Noren Caliva - Public Notice: Installation of microwave tower at 1175 Aster Avenue.**

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**From:** srujana e  
**To:** <ncaliva@ci.sunnyvale.ca.us>  
**Date:** 10/3/2009 1:13 PM  
**Subject:** Public Notice: Installation of microwave tower at 1175 Aster Avenue.

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Hello Noren Caliva,

We recently got a notice from the Sunnyvale city office regarding the installation of the microwave dish antennas near our property.

We would like to express our concern and submit our requestion to oppose the proposal. I was reading about the microwave radiations over internet and i am very concerned about the health hazards it may cause. We stay very close to the proposed location. I also came to know that according to california laww all telecome tower or microwave dish antenas should not be palced in an residential, school or near hospitals as they are pose health riscks. They are lot of homes and apartments near the proposed location. keeping in mind the number of people living around the location and their health , I deny the proposal or at least relocate the pole further way from residential areas.our propert is very close to the tower and we are also conserned about our property value. this is residential area and we request you to place the tower some where away from the residential properties.

I would like to deny the proposal and like to know whom should we approach and what should we do next to show our denial.

Thanks & regards  
-Srujana