

Case File Number: PLN15-004**February 18, 2015****Location:** 1221 E. 20th Street. (See map on reverse)**A.P.N. :** (021-0262-00-01)

Installation of a Wireless Telecommunications facility involving twelve (12) new antennas and a generator located inside a 28'-7"x14'-6" penthouse screening enclosure located above the rooftop of an existing four-story residential building. The associated mechanical equipment cabinet will be located within a basement of the building.

Applicant: Complete Wireless for Verizon Wireless.**Contact Person:** Maria Kim**Phone Number:** (916)247-6087**Owner:** Pacific View Investments. LLC.

Planning Permits Required: Major Conditional Use Permit and Regular Design Review to install new roof-top antennas and associated equipment (Macro Telecommunications Facility); and a Minor Variance to waive the required 1:1 setback height ratio for the antennas from the roof edge of a building located in a residential zone.

General Plan: Mixed Housing Type Residential**Zoning:** RM-2 Mixed Housing Type Residential.

Environmental Determination: Exempt, Section 15301 and 15303 of the State CEQA Guidelines: minor alterations to existing facilities and small structure; Section 15183 of the State CEQA Guidelines: projects consistent with a Community Plan, General Plan or Zoning.

Historic Status: Not a Potential Designated Historic Property; Survey Rating: N/A**Service Delivery District:** 3**City Council District:** 2**Status:** Pending**Finality of Decision:** Appealable to City Council

For Further Information: Contact case planner Jason Madani at (510) 238-4790 or jmadani@oaklandnet.com

SUMMARY

The proposed project is to install a wireless Telecommunications Macro facility involving twelve (12) new antennas and associated equipment cabinet on existing four-story residential building. The site is located within the Mixed Housing Type Residential General Plan designation and the RM-2 Mixed Housing Type Residential zone. A Major Conditional Use Permit and Design Review are required to install a Macro Telecommunications Facility and a Minor Variance is necessary to waive the required 1:1 setback height ratio for the antennas from the roof edge of a building located in a residential zone. The proposal will provide enhanced Telecommunications service to support the residential, commercial and civic uses in the neighborhood. The project meets all of the applicable findings for approval (see findings sections). Therefore, staff recommends approval of the project subject to the attached conditions of approval.

PROJECT DESCRIPTION

The applicant, (Complete Wireless, for Verizon Wireless) is proposing to install twelve (12) new antennas and a generator located inside a 28'-7"x14'-6" penthouse screening enclosure located above rooftop stairwell of the existing four-story residential building. The proposed telecommunication facility will occupy approximately 276 s.f. area on the roof and 204 s.f. within a building basement area for associated mechanical equipment cabinets.

(See attachment A)

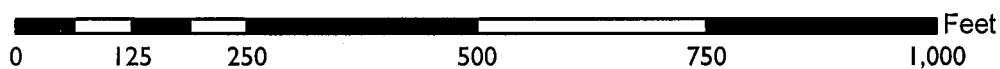
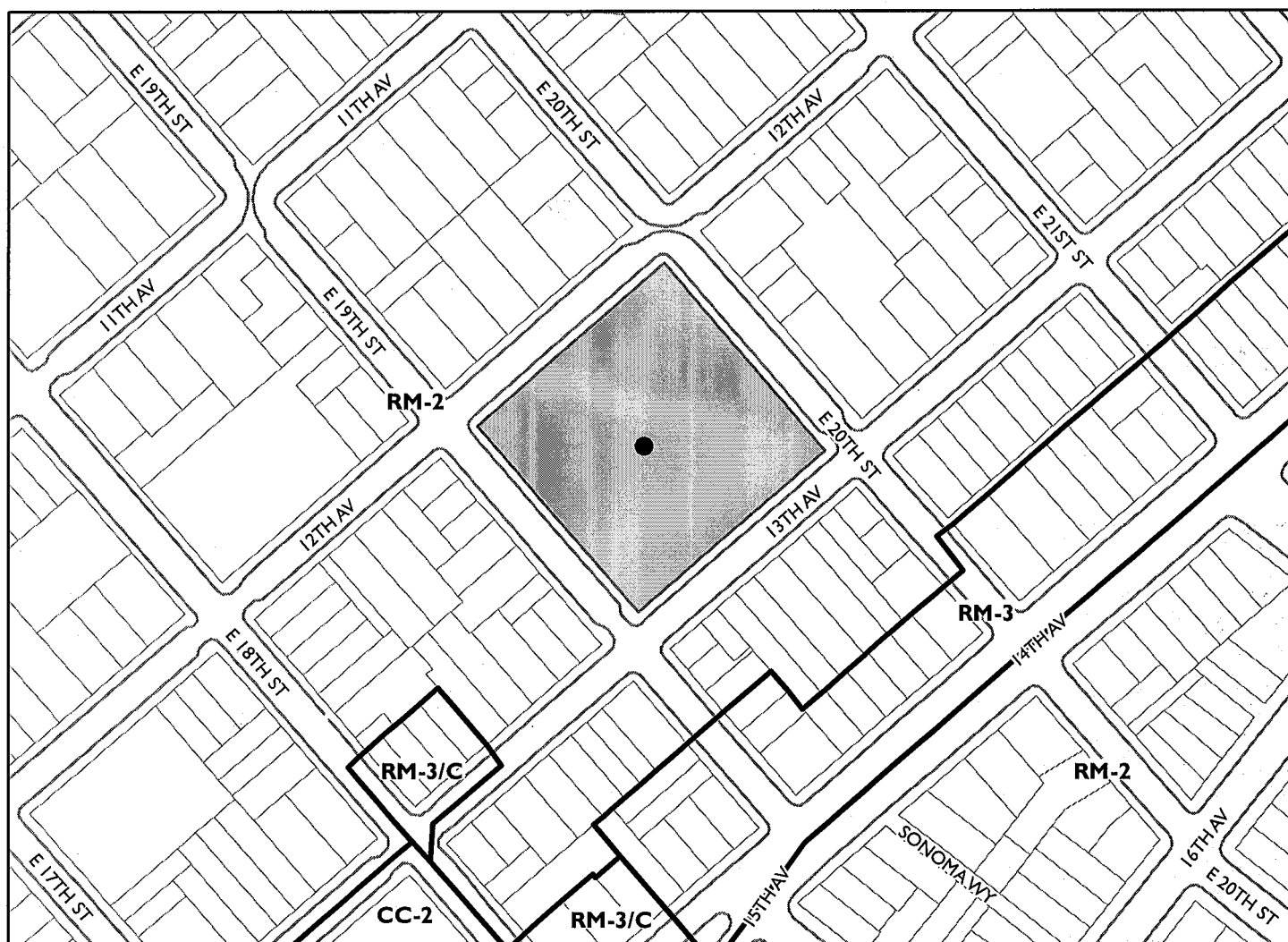
PROPERTY DESCRIPTION

The subject property is an approximately 2, 07 acres parcel with a four-story residential building. The subject property is located on E.12th Street near 13th Avenue, and is bounded with residential properties.

BACKGROUND

Limitations on Local Government Zoning Authority under the Telecommunications Act of 1996 Section 704 of the Telecommunications Act of 1996 (TCA) provides federal standards for the siting of "Personal Wireless Services Facilities." "Personal Wireless Services" include all commercial mobile services (including personal communications services (PCS), cellular radio mobile services, and paging); unlicensed wireless services; and common carrier wireless exchange access services. Under Section 704, local zoning authority over personal wireless services is preserved such that the FCC is prevented from preempting local land use decisions; however, local government zoning decisions are still restricted by several provisions of federal law. Under Section 253 of the TCA, no state or local regulation or other legal requirement can prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service. Further, Section 704 of the TCA imposes limitations on what local and state governments can do. Section 704 prohibits any state and local government action which unreasonably discriminates among personal wireless providers. Local governments must ensure that its wireless ordinance does not contain requirements in the form of regulatory terms or fees which may have the "effect" of prohibiting the placement, construction, or modification of personal wireless services. Section 704 also preempts any local zoning regulation purporting to regulate the placement, construction and modification of personal wireless service facilities on the basis, either directly or indirectly, on the environmental effects of radio frequency emissions (RF) of such facilities, which otherwise comply with FCC standards in this regard. See, 47 U.S.C. 332(c) (7) (B) (iv) (1996). This means that local authorities may not regulate the siting or construction of personal wireless facilities based on RF standards that are more stringent than those promulgated by the FCC. Section 704 mandates that local governments act upon personal wireless service facility siting applications to place, construct, or modify a facility within a reasonable time. 47 U.S.C.332(c) (7) (B) (ii). See FCC Shot Clock ruling setting forth "reasonable time" standards for applications deemed complete. Section 704 also mandates that the FCC provide technical support to local governments in order to encourage them to make

CITY OF OAKLAND PLANNING COMMISSION



Case File: PLN15-004

Applicant: Complete Wireless Consulting for Verizon Wireless

Address: 1221 E. 20th Street

Zone: RM-2

property, rights-of-way, and easements under their jurisdiction available for the placement of new spectrum-based telecommunications services. This proceeding is currently at the comment stage. For more information on the FCC's jurisdiction in this area, contact Steve Markendorff, Chief of the Broadband Branch, Commercial Wireless Division, Wireless Telecommunications Bureau, at (202) 418-0640 or e-mail "smarkend@fcc.gov".

GENERAL PLAN ANALYSIS

The subject property is located within the Mixed Housing Type Residential General Plan Designation. The Mixed Housing Type Residential 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 where appropriate. The proposed unmanned wireless telecommunication facility will not adversely affect and detract from the mixed housing type residential characteristics of the neighborhood. The proposal will preserve a convenient and functional residential building and will not likely affect the general quality and character of the neighborhood. The proposed project will have minimal effect on the existing structure and surrounding area.

ZONING ANALYSIS

The subject property is located in the RM-2 Mixed Housing Type Residential Zone. The intent of the RM-2 is to create, maintain, and enhance residential areas characterized by a mix of single family homes, duplexes, townhouses, small multi-unit buildings at somewhat higher densities than in RM-2, and neighborhood businesses where appropriate. The project requires a Major Conditional Use Permit, Design Review within residential zone, and Minor Variance to waive required 1:1 setback height ratio (7'-0" is required 0' is proposed) for the antennas from the roof edge of subject building within a residential zone. Staff finds that the proposed application meets applicable RM-2 Zoning and City of Oakland Telecommunications Regulations as discussed under the "Key Issues" and Section of "Findings" of this report.

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 Section 15301, 15303 for additions and alterations to existing facilities, and small structure. In addition, the project is also exempt per Section 15183, for projects consistent with a community plan, general plan or zoning.

KEY ISSUES AND IMPACTS

1. Conditional Use Permit, Design Review and Minor Variance

Section 17.17.02 of the City of Oakland Planning Code requires a Conditional Use Permit and Design Review to install a Macro Telecommunication facility in the RM-2 Mixed Housing Type Residential Zone. Furthermore, pursuant to Section 17.134.020 (A) (3) (i) and

17.148.050A, 17.136.050B of the Oakland Planning Code, a Major Conditional Use Permit and Design Review is required for any telecommunication facility in or within one hundred (100) feet of the boundary of any residential zone. A Minor Variance is also necessary to waive the required 1:1 setback height ratio for the antennas from the roof edge of building. The required findings for a major conditional use permit and minor variance are listed and included in staff's evaluation as part of this report.

2. Project Site

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

- A. Co-located on an existing structure or facility with existing wireless antennas.
- B. City owned properties or other public or quasi-public facilities.
- C. Existing commercial or industrial structures in non-residential zones.
- 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 installation new antennas on an existing residential structure within a residential zone, the proposed project meets (G).

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 does not require a site design alternatives analysis. Facilities designed to meet a A through B 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:

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

City of Oakland Planning staff have reviewed the applicant's written evidence of alternative sites analysis (see attachment A) and determined that the site selected conforms to the telecommunication regulation requirements. The project has met design criteria (A) and (B) since the twelve (12) new antennas will be located within the penthouse enclosure located on top of roof stairwell of the existing four-story residential building.

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. The Telecommunications regulations require that the applicant submit written documentation demonstrating that the emission from the proposed project are within the limits set by the Federal Communications Commission. In the document (attachment B) prepared by HAMMETT & EDISON, INC, Consulting Engineers, the proposed project was evaluated for compliance with appropriate guidelines limiting human exposure to radio frequency electromagnetic fields. According to the report on the proposal, the project will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, the proposed site will operate within the current acceptable thresholds as established by the Federal Government or any such agency that may be subsequently authorized to establish such standards.

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

The information submitted with the initial application was an RF emissions report, prepared by HAMMETT & EDISON, INC, Consulting Engineers (Attachment B). 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 final building permit sign off; the applicant submits certified RF emissions report stating that the facility is operating within acceptable thresholds established by the regulatory federal agency.

CONCLUSION

Staff believes that the new telecommunication facility will not have significant visual impacts on the operating characteristic of the existing residential building. It will provide an essential telecommunication services to the community and the City of Oakland at large. It will also be available to emergency services such as Police, Fire and Health response teams. Staff believes that the findings for approval can be made to support the Conditional Use Permit, Design Review and Minor Variance.

RECOMMENDATIONS:

1. Affirm staff's Environmental Determination
2. Approve the Conditional Use Permit, Design Review, and Minor Variance application (PLN15-004) subject to the attached Findings and Conditions of Approval

Prepared by:



Jason Madani
Planner II

Approved by:



Scott Miller,
Zoning Manager

Approved for forwarding to the
City Planning Commission



Darin Ranelletti Deputy Director
Bureau of Planning

ATTACHMENTS:

- A. Project Plans & Alternative site selection & Photo simulations
- B. Hammett & Edison, Inc. Consulting Engineer RF Emissions Report

FINDINGS FOR APPROVAL

This proposal meets the required findings under Sections 17.134.050 (General Use Permit criteria); and 17.136.050 (B) (Non-Residential Design Review criteria); and 17.148.050A (Minor Variance); 17.128.060(B) (Telecommunications Macro Facilities 17.128.060 (C), as set forth below. Required findings are shown in **bold** type; reasons proposal satisfies them are shown in normal type.

SECTION 17.134.050 – GENERAL USE PERMIT FINDINGS:

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

The purpose of the project is to enhance wireless telecommunications service in the area. The installation of new antennas will not adversely affect the operating characteristics or livability of the existing area because the proposed antennas will be inside of a penthouse screening enclosure located on the roof above stairwell of the residential building. The facility will be unmanned and will not create additional vehicular 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 location, design and site planning of the proposed development will provide enhanced telecommunication service for the area. It will maintain the use of the residential building. The proposal will preserve the use of the existing residential building and not expected to negatively 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 Telecommunications facility for the community and will be available to the Police, Fire Services, and the 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 subject property is located within the Mixed Housing Type Residential General Plan Designation. The proposed unmanned wireless Telecommunications facility will be screened and will not adversely affect and detract from the Mixed Housing Type Residential characteristics of the neighborhood. It will rather provide wireless services in support of the residential and civic activities encouraged by the General Plan.

17.136.050(B) – NONRESIDENTIAL DESIGN REVIEW CRITERIA:

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

The proposed twelve (12) new antennas are located inside the penthouse enclosure and will be camouflaged and blend in with the existing HVAC equipment located on the roof of residential building and surrounding residential buildings. Photo simulations submitted for the project show the view of the proposed antennas and screen, as seen from the street, with minimum visual impacts. Therefore, the proposal will not have significant impacts on the operating characteristic of the existing residential building and surrounding neighborhood.

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

See above #1 findings

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

See above #E

SECTION 17.148.050A VARIANCE FINDINGS REQUIRED:

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

The placement of twelve (12) antennas and generator within a penthouse enclosure above the stairwell is less visually obtrusive than meeting the required 1:1 setback height ratio for equipment from the edge of the building roof line.

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

See finding #1 above.

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

The variance will not adversely affect the properties or surrounding properties because the proposed antennas are screened. The proposed new penthouse enclosure is designed to blend in with the existing stairwell of the residential building. Photo simulations submitted for the project show the view of the proposed antennas and screen as seen from the street with minimum visual impacts.

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

See above findings #3.

5. **That the elements of the proposal requiring the variance (e.g., elements such as buildings, walls, fences, driveways, garages and carports, etc.) conform with the regular design review criteria set forth in the design review procedure at Section 17.136.;**

Other than the 1:1 setback height ratio for the antennas, all other design components of this project are consistent with design review criteria. Therefore, the proposal will comply with the design review procedure at Section 17.136.050.

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

See above finding E.

17.128.070(B) DESIGN REVIEW CRITERIA FOR MACRO FACILITIES

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

The proposed screening enclosures are compatible with the existing building material, and blends in with the architectural style of the residential building.

- 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 and a generator are located inside the penthouse enclosure and will be camouflaged and blend in with the existing rooftop stairwell of residential building and surrounding residential buildings.

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

See findings above.

- 4. Equipment shelters or cabinets shall be screened from the public view by using landscaping, or materials and colors consistent with surrounding backdrop:**

The proposed screening enclosures are compatible with the existing building material, and blend in with the architectural style of the building.

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

See above findings.

- 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 placement of the antennas and generator within the rooftop penthouse located above the stairwell of residential building is less visually obtrusive than meeting the 1:1 ratio for equipment setback from the edge of building roof line.

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 proposed panel antennas will be mounted on the roof of the building and will not be accessible to the public due to its location. The associated equipment cabinets located in the basement are fully concealed from public access.

Section 17.128.070(C) CONDITIONAL USE PERMIT (CUP) FINDINGS FOR MACRO FACILITIES

1. The project must meet the special design review criteria listed in subsection B of this section (17.128.070B):

The proposed project meets the special design review criteria listed in section 17.128.070B. (see above).

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

The proposed Telecommunications facility is fully screened from public view and, therefore the proposal will not disrupt the overall community character surrounding the subject site.

CONDITIONS OF APPROVAL**PLN15-004****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, **PLN15-004**, and the plans dated **October 10, 2014** and submitted on **January 8th, 2015** 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: **Installation of a Wireless Telecommunications facility involving twelve (12) new antennas and a generator located inside a 28'-7"x14'-6" penthouse screening enclosure located above the rooftop of an existing four-story residential building. The associated mechanical equipment cabinet will be located within a basement of the building.**

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** 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
- c) 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**Ongoing**

- i. To the maximum extent permitted by law, the applicant shall defend (with counsel acceptable to the City), indemnify, and hold harmless the City of Oakland, the Oakland City Council, the City of Oakland Redevelopment Agency, the Oakland City Planning Commission and its respective agents, officers, and employees (hereafter collectively called City) from any liability, damages, claim, judgment, loss (direct or indirect) action, causes of action, or proceeding (including legal costs, attorneys' fees, expert witness or consultant fees, City Attorney or staff time, expenses or costs) (collectively called "Action") against the City to attack, set aside, void or annul, (1) an approval by the City relating to a development-related application or subdivision or (2) implementation of an approved development-related project. The City may elect, in its sole discretion, to participate in the

defense of said Action and the applicant shall reimburse the City for its reasonable legal costs and attorneys' fees.

- ii. Within ten (10) calendar days of the filing of any Action as specified in subsection A above, the applicant shall execute a Letter of Agreement with the City, acceptable to the Office of the City Attorney, which memorializes the above obligations. These obligations and the Letter of Agreement shall survive termination, extinguishment or invalidation of the approval. Failure to timely execute the Letter of Agreement does not relieve the applicant of any of the obligations contained in this condition or other requirements or Conditions of Approval that may be imposed by the City.

8. Compliance with Conditions of Approval

Ongoing

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

9. Severability

Ongoing

Approval of the project would not have been granted but for the applicability and validity of each and every one of the specified conditions, 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 plan check 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.

12. Days/Hours of Construction Operation

Ongoing throughout demolition, grading, and/or construction

The project applicant shall require construction contractors to limit standard construction activities as follows:

- a) Construction activities are limited to between 7:00 AM and 7:00 PM Monday through Friday, except that pile driving and/or other extreme noise generating

activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday.

- b) Any construction activity proposed to occur outside of the standard hours of 7:00 am to 7:00 pm Monday through Friday for special activities (such as concrete

pouring which may require more continuous amounts of time) shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior written authorization of the Building Services Division.

- c) Construction activity shall not occur on Saturdays, with the following possible exceptions:

i. Prior to the building being enclosed, requests for Saturday construction for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. Such construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division.

ii. After the building is enclosed, requests for Saturday construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division, and only then within the interior of the building with the doors and windows closed.

- d) No extreme noise generating activities (greater than 90 dBA) shall be allowed on Saturdays, with no exceptions.

- e) No construction activity shall take place on Sundays or Federal holidays.

- f) Construction activities include but are not limited to: truck idling, moving equipment (including trucks, elevators, etc) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.

PROJECT SPECIFIC CONDITIONS:

13. Radio Frequency Emissions

Prior to the final building permit sign off.

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

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.

Clinton

1221 E 20th Street
Oakland CA 94606

verizonwireless

Aerial photograph showing the viewpoints for the neighborhood photographs.

ATTACHMENT A



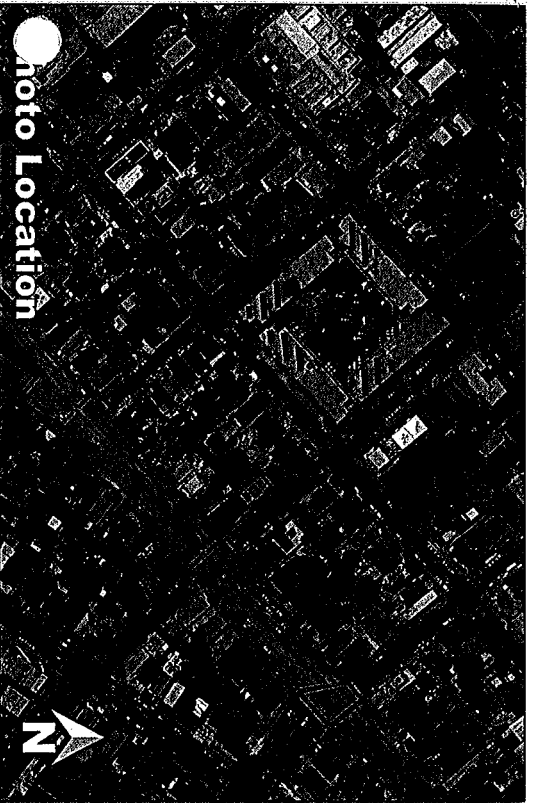
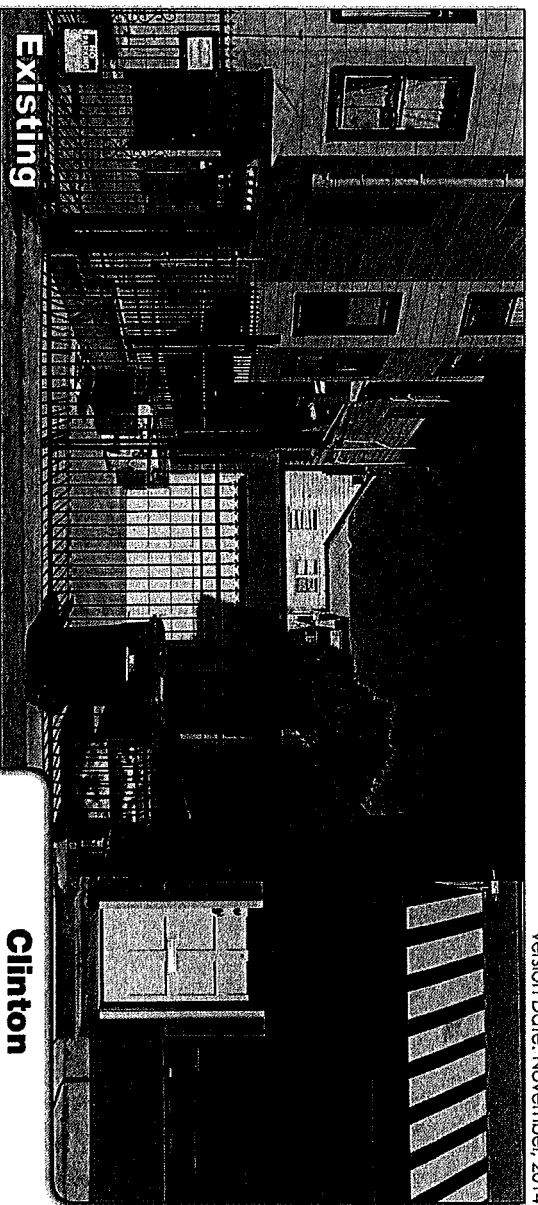
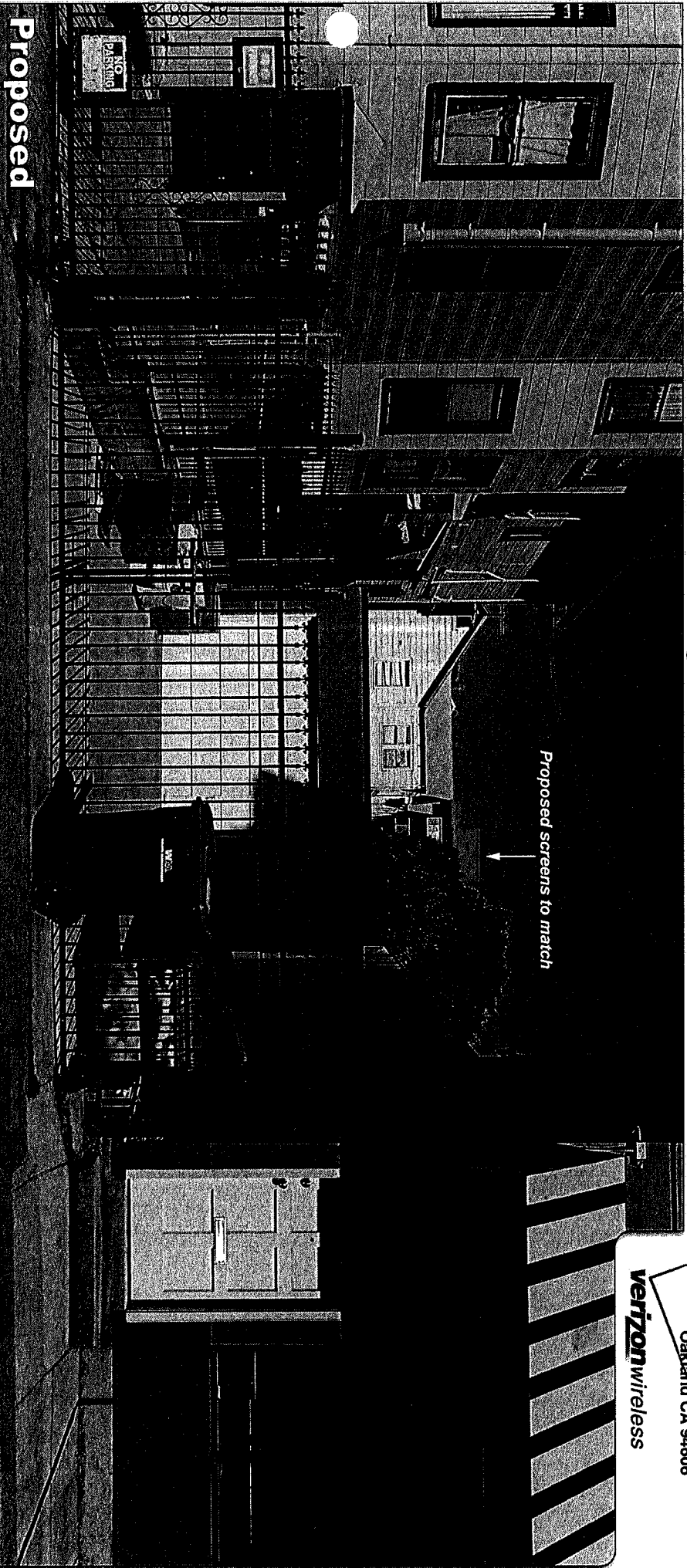


Photo Location



Existing

Photosimulation of the view looking northeast from E 18th Street.



Proposed

verizonwireless

Clinton
1221 E 20th Street
Oakland CA 94606

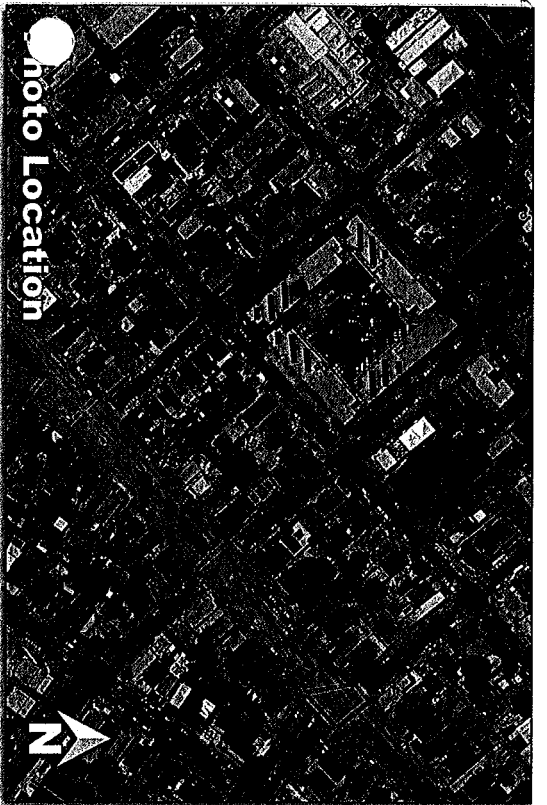
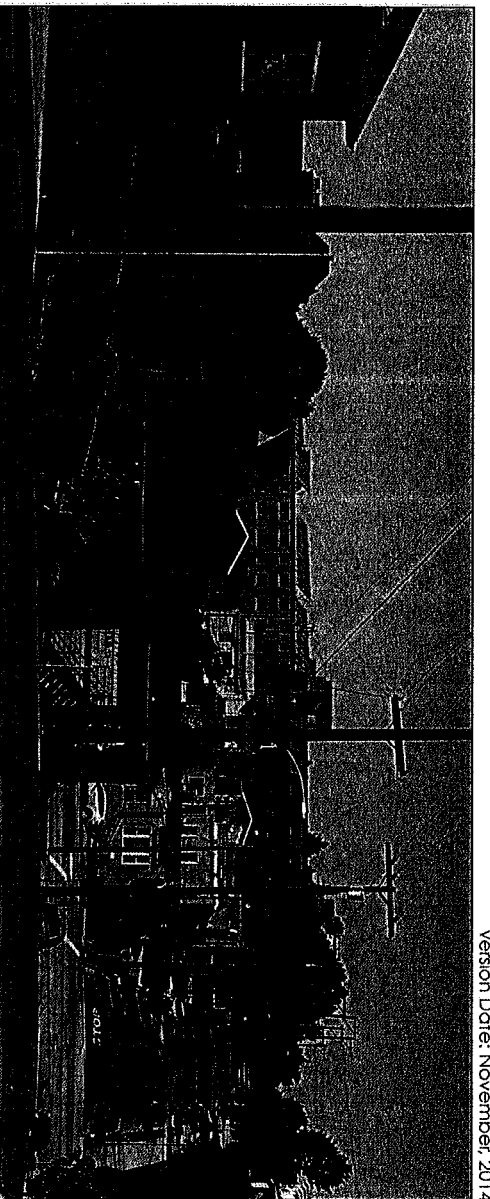


Photo Location

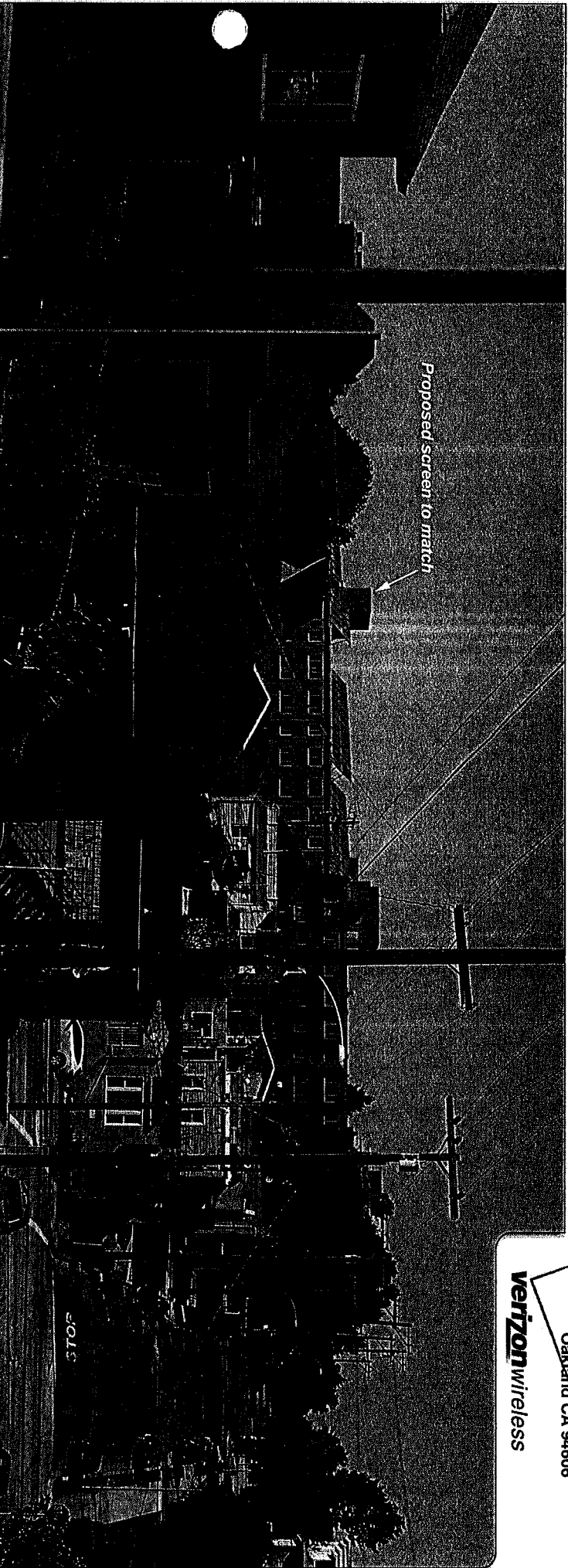
Existing



Photosimulation of the view looking northwest from the corner of E 20th Street and 16th Ave.

Clinton
1221 E 20th Street
Oakland CA 94606
verizonwireless

Proposed screen to match



Proposed

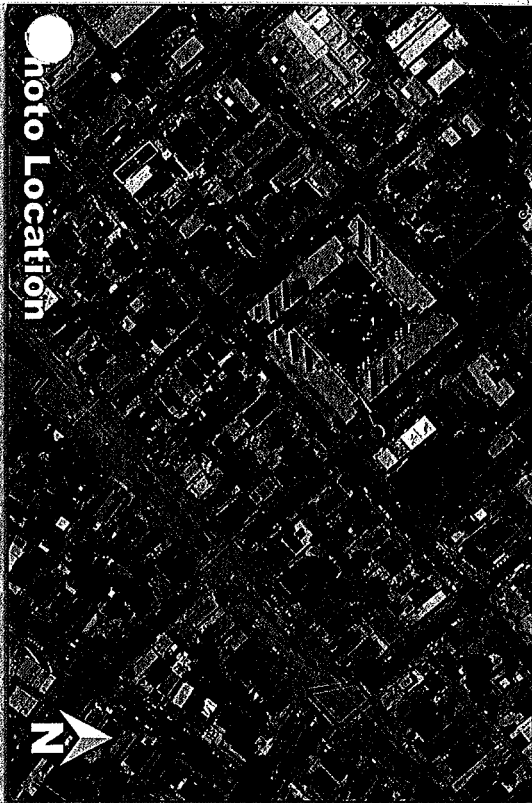
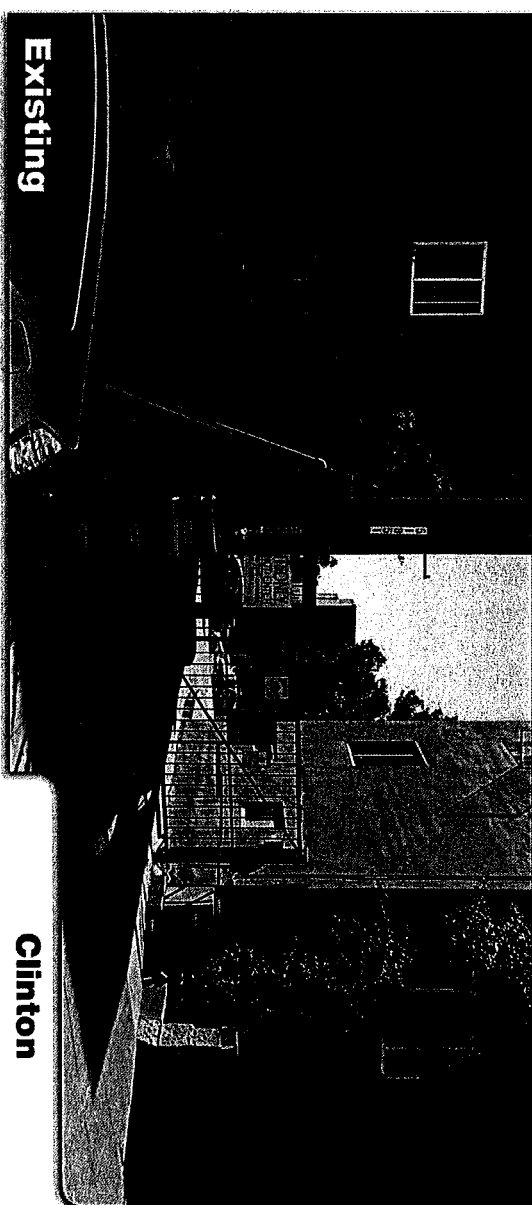


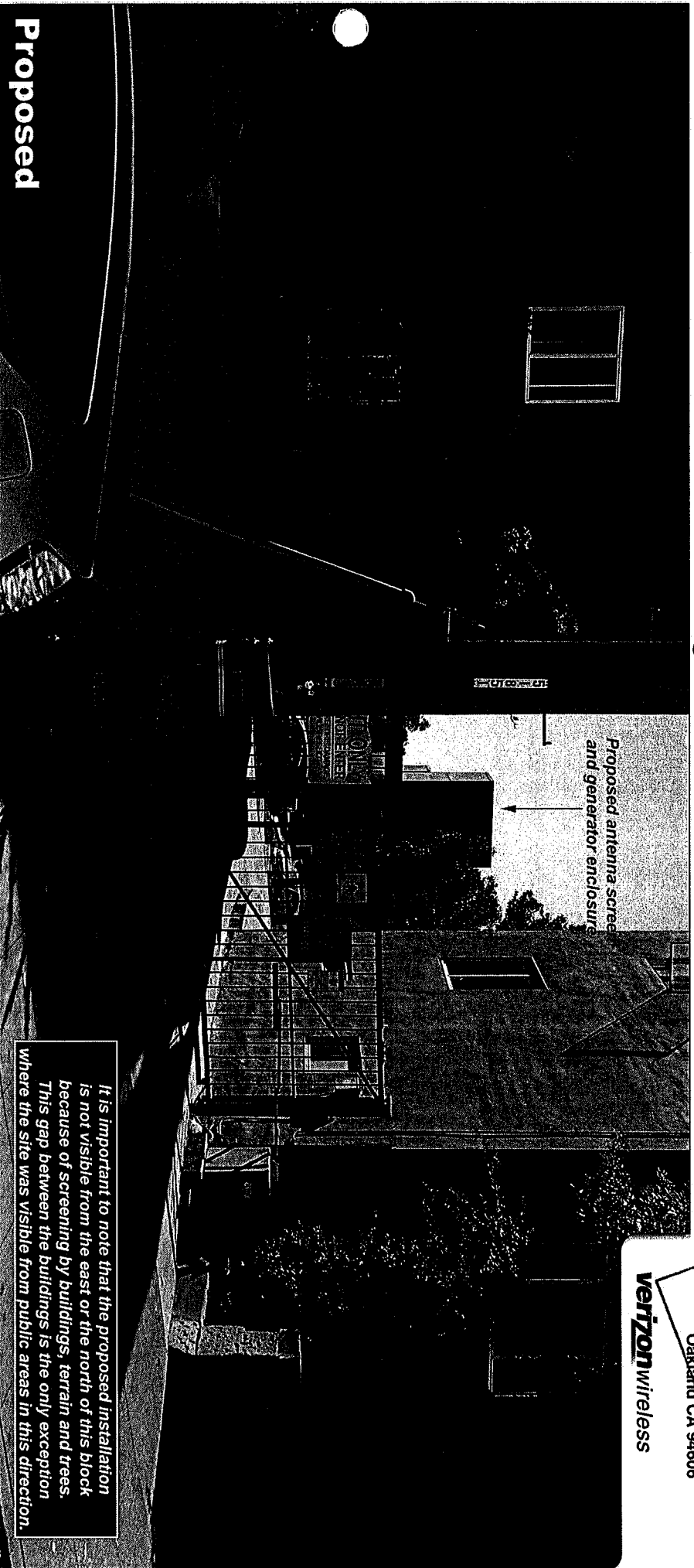
Photo Location

Photosimulation of the view looking southwest from E 20th Street.



Existing

Clinton
1221 E 20th Street
Oakland CA 94606
verizonwireless



Proposed antenna screen and generator enclosure

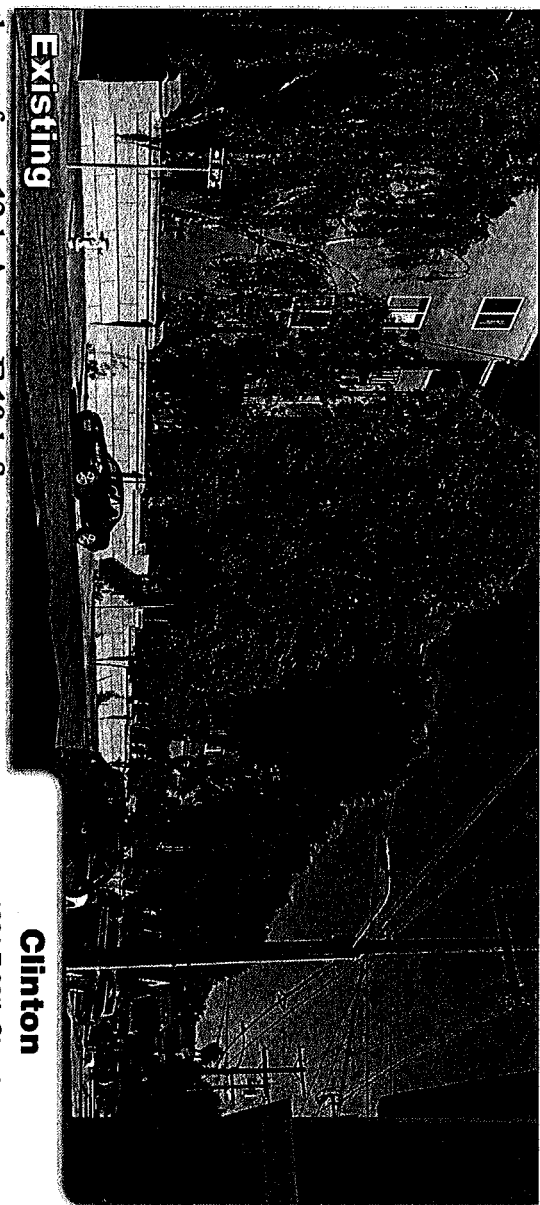
It is important to note that the proposed installation is not visible from the east or the north of this block because of screening by buildings, terrain and trees. This gap between the buildings is the only exception where the site was visible from public areas in this direction.

Proposed



Photo Location

Photosimulation of the view looking southeast from 12th Ave at E 19th Street.



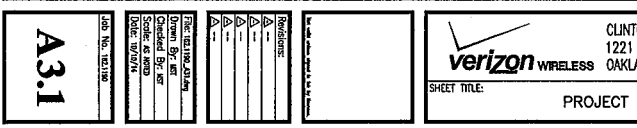
Existing



Proposed changes not visible from this direction

Proposed


Clinton
1221 E 20th Street
Oakland CA 94606
verizonwireless



Job No. 102118

File: 162.1190_A31.dmg
Grown By: KST
Checked By: KST
Score: AS NOTED
Date: 10/10/16

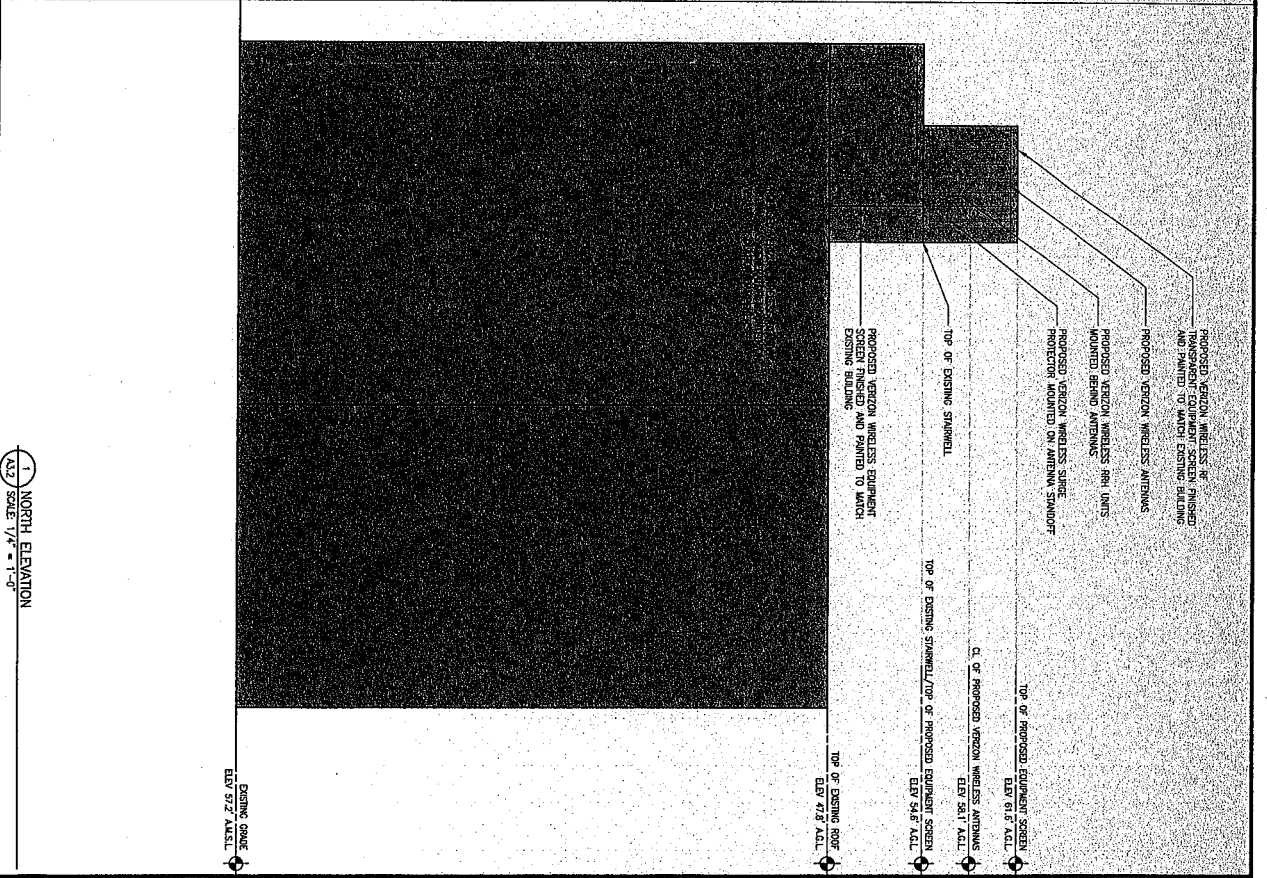
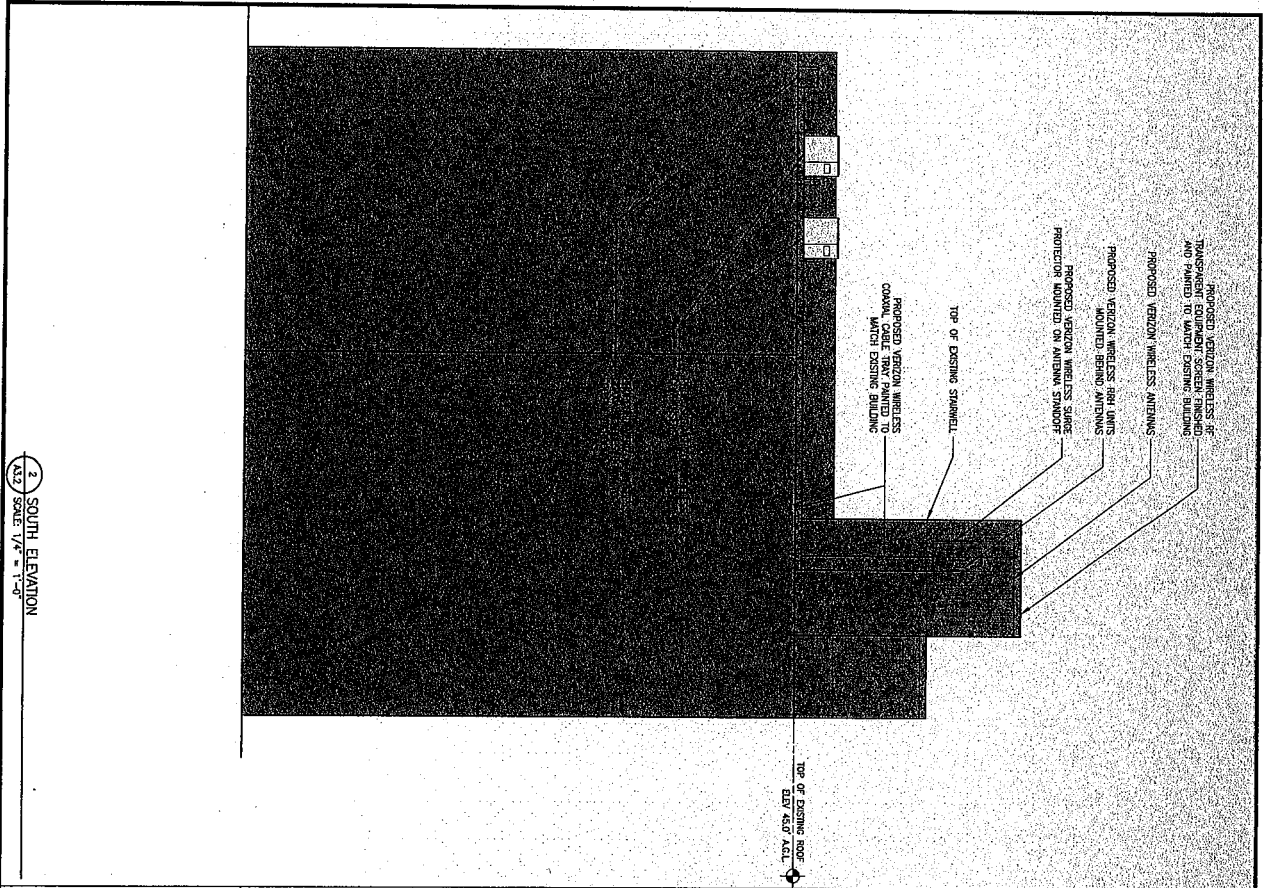
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CLINTON
1221 E 20TH STREET
OAKLAND, CA 95606
SHEET TITLE: PROJECT ELEVATIONS

MST ARCHITECTS
 1520 River Park Drive, Sacramento, CA 95815
 916 557 9630
www.MSTArchitects.com

COMPLETE
 Wireless Consulting, Inc.

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2 SOUTH ELEVATION
SCALE 1/4" = 1'-0"

1 NORTH ELEVATION
SCALE 1/4" = 1'-0"

A3.2

verizon WIRELESS

CLINTON
1221 E 20TH STREET
OAKLAND, CA 95606

SHEET TITLE:
PROJECT ELEVATIONS

MST ARCHITECTS
ARCHITECTS & ENGINEERS
1315 River Park Drive, Sacramento, CA 95815
916 547 9638
www.mstarchitects.com

COMPLETE
Wireless Consulting, Inc.

Z D DRAWING SIGN-OFF

DATE: _____ TIME: _____ % CMC-PLEASE RETURN BY: _____

COMPLETE SIGNATURE: _____ DATE: _____

SITE ACQUISITION: _____

PLANNING: _____

CONSTRUCTION: _____

MANAGEMENT: _____

Verizon WIRELESS SIGNATURE: _____ DATE: _____

CONSTRUCTION: _____

REAL ESTATE: _____

IF ENGINEER: _____

EQUIPMENT ENGINEER: _____

ENV. ENG./TRANSPORT: _____

OTHER (IF APPLICABLE) SIGNATURE: _____ DATE: _____

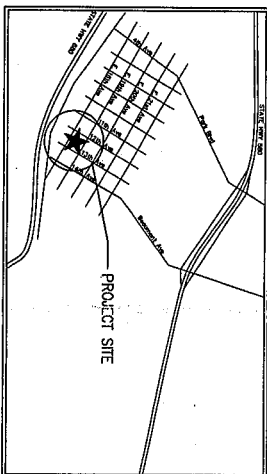
ATTACHMENT A

Verizon WIRELESS

2785 Mitchell Drive, Walnut Creek, CA 94598

CLINTON

1221 E 20TH ST
OAKLAND, CA 95606
APN: 021-0262-001
LOCATION #: 286665



DIRECTIONS

1. FROM WILSON OFFICE @ 2785 MITCHELL DRIVE, WALNUT CREEK, CA 94598.
2. HEAD TOWARD N WIGET LN ON MITCHELL DR. TURN LEFT ONTO N WIGET LN
3. CONTINUE ON WIGET AVE
4. TURN RIGHT ON JAKE RAMP ONTO GROVE STREET HWY/CA-24 W TOWARD OAKLAND
5. KEEP RIGHT ON CALIFORNIA TURNING/CA-24 W
6. TOWARD HARBOR
7. TAKE EXIT 822/PARK BLVD ONTO WACKENHUR BLVD
8. TURN RIGHT ONTO E 20TH ST

INDEX OF DRAWINGS

1. T1.1 TITLE SHEET, LOCATION PLAN, PROJECT DATA
2. C1 ONE SHEET SHEET
3. A1.1 OVERALL SITE PLAN
4. A2.1 EQUIPMENT LAYOUT PLAN
5. A2.2 ANTENNA LAYOUT PLAN
6. A3.1 PROJECT ELEVATIONS
7. A3.2 PROJECT ELEVATIONS

LOCATION PLAN

PROJECT DIRECTORY

APPLICANT:
VERIZON WIRELESS
2785 MITCHELL DRIVE
WALNUT CREEK, CA 94598

PROPERTY OWNER:
PO BOX 1450
ALAMO, CA 94507
510-282-0662

ARCHITECT:
MANUEL S. TERAS
MST ARCHITECTS, INC.
1500 WILSON PARK DRIVE
SACRAMENTO, CA 95815
916-457-5510
mstarchitects.com

CONSTRUCTION MANAGER:
COMPLETE WIRELESS CONSULTING, INC.
2009 V STREET
SACRAMENTO, CA 95818
mccofc@completewireless.net

PROJECT SUMMARY

ASSESSOR'S PARCEL NUMBER: 021-0262-001

JURISDICTION: CITY OF OAKLAND

OCCUPANCY: S-2 (UNMANNED TELECOMMUNICATIONS ROOM)
U (ROOFTOP ANTENNAS)

TYPE OF CONSTRUCTION: V-B

ZONING: RM-2

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 PERMITTING AGENCIES. THESE CODES SHALL BE TO BE CONSIDERED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. 2013 CALIFORNIA ADMINISTRATIVE CODE (CAC) (MCL TITLE 24 & 25)
2. 2013 CALIFORNIA ELECTRICAL CODE (CEC)
3. 2013 CALIFORNIA MECHANICAL CODE (CMC)
4. 2013 CALIFORNIA PLUMBING CODE (CPC)
5. 2013 CALIFORNIA ENERGY CODE (CEC)
6. 2013 CALIFORNIA GREEN BUILDING CODE (CALGREEN CODE)
7. 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN CODE)
8. 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN CODE)
9. 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN CODE)
10. LOCAL ORDINANCE OR CITY ORDINANCES
11. LOCAL ORDINANCE OR CITY ORDINANCES

ACCESSIBILITY REQUIREMENTS: THIS FACILITY IS UNMANNED AND NOT FOR HUMAN OCCUPANCY. THEREFORE, IT IS EXEMPT FROM ACCESSIBILITY REQUIREMENTS IN ACCORDANCE WITH THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AND 2010 ADA CHAPTER 119-302.5, AND 119-302.4 EXCEPTION 2.

PROJECT DESCRIPTION

PROPOSED VERIZON WIRELESS UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING:

- A 12'-0"X10'-0" ROOFTOP GENERATOR LEASE AREA, A 18'-0"X6'-0" SHAWNEE ROOFTOP ANTENNA LEASE AREA & A 12'-0"X17'-0" BUSINESS EQUIPMENT LEASE AREA.
- POWER, TELCO & NATURAL GAS UTILITIES FROM EXISTING POINTS OF CONNECTION.
- A STANDBY GENERATOR WITHIN AN EQUIPMENT SCREEN.
- A ROOFTOP CABLE TRAY.
- (2) ROOFTOP HVAC CONDENSERS.
- (2) ANTENNAS W/ASSOCIATED TOWER MOUNTED EQUIPMENT MOUNTED WITHIN AN RF TRANSPARENT EQUIPMENT SCREEN.

PROJECT MILESTONES

04/25/2014 90% ZONING DOCUMENTS
10/10/2014 100% ZONING DOCUMENTS
02/16/2015 90% CONSTRUCTION DOCUMENTS
02/16/2015 100% CONSTRUCTION DOCUMENTS

Verizon WIRELESS CLINTON
1221 E 20TH STREET
OAKLAND, CA 95606

SHEET TITLE:
TITLE SHEET, LOCATION PLAN, PROJECT DATA

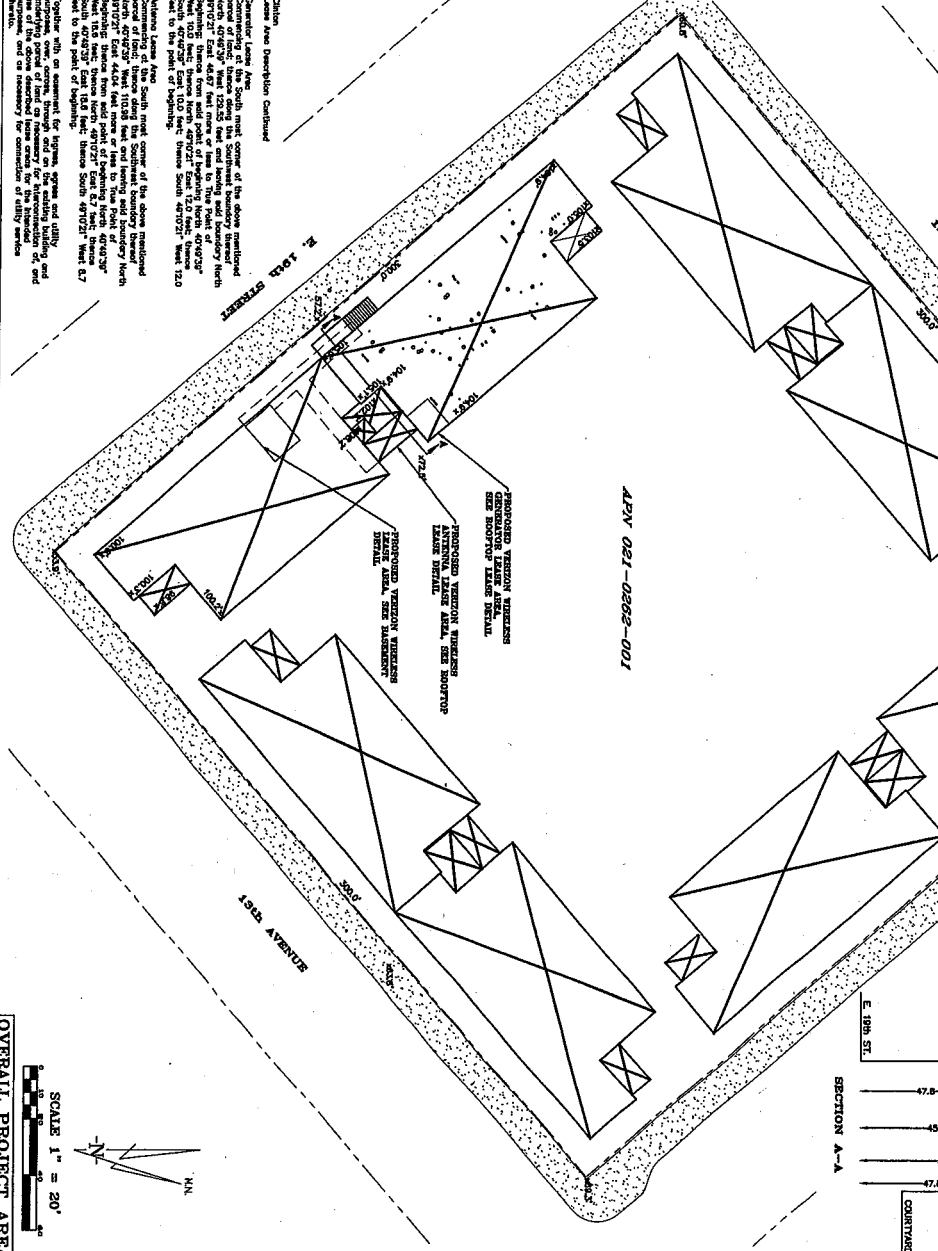
MST ARCHITECTS
1125 River Park Drive, Sacramento, CA 95815
916-457-5510
www.MSTArchitects.com

COMPLETE
Wireless Consulting, Inc.

T1.1

DATE OF SURVEY: 09-12-14
 SURVEYED BY: LARRY R. GRIFFIN, JR., LICENSED SURVEYOR, NO. 12345, COUNTY OF ALAMEDA, STATE OF CALIFORNIA
 THIS SURVEY IS BASED UPON THE RECORDS OF THE COUNTY OF ALAMEDA, STATE OF CALIFORNIA, AND THE RECORDS OF THE CITY OF OAKLAND, STATE OF CALIFORNIA.
 THIS SURVEY IS BASED UPON THE RECORDS OF THE COUNTY OF ALAMEDA, STATE OF CALIFORNIA, AND THE RECORDS OF THE CITY OF OAKLAND, STATE OF CALIFORNIA.
 THIS SURVEY IS BASED UPON THE RECORDS OF THE COUNTY OF ALAMEDA, STATE OF CALIFORNIA, AND THE RECORDS OF THE CITY OF OAKLAND, STATE OF CALIFORNIA.

CONTRACT NO. 021-0262-001
 PROJECT NAME: VERIZON WIRELESS
 PROJECT LOCATION: 1221 E. 20TH STREET, OAKLAND, CA 94606
 PROJECT AREA: 1.00 ACRES
 PROJECT AREA: 1.00 ACRES
 PROJECT AREA: 1.00 ACRES



SECTION A-A
 E. 19th ST
 E. 20th ST
 E. 21st ST
 COUNTY ROAD

CLINTON AREA DESCRIPTION
 The Clinton area is located in the City of Oakland, California, and is bounded by E. 19th Street to the north, E. 21st Street to the south, and E. 12th Street to the west. The area is currently zoned for residential use.

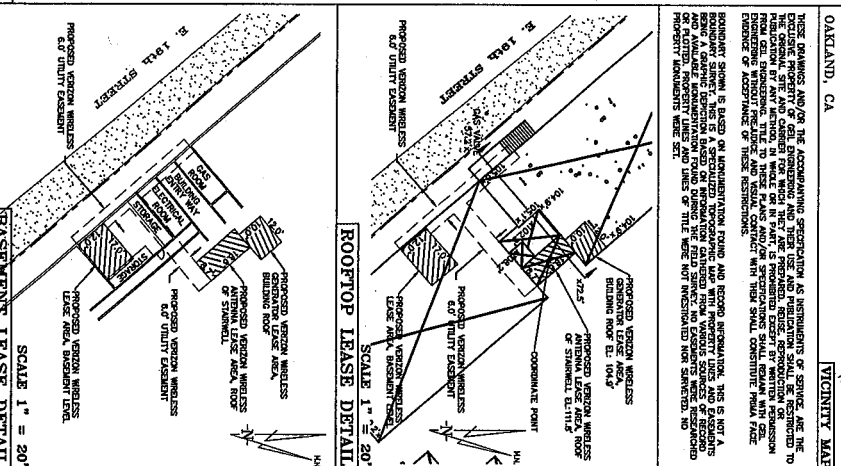
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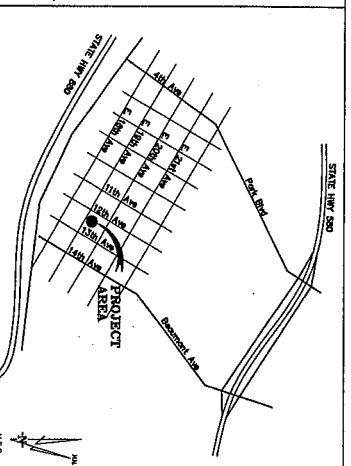
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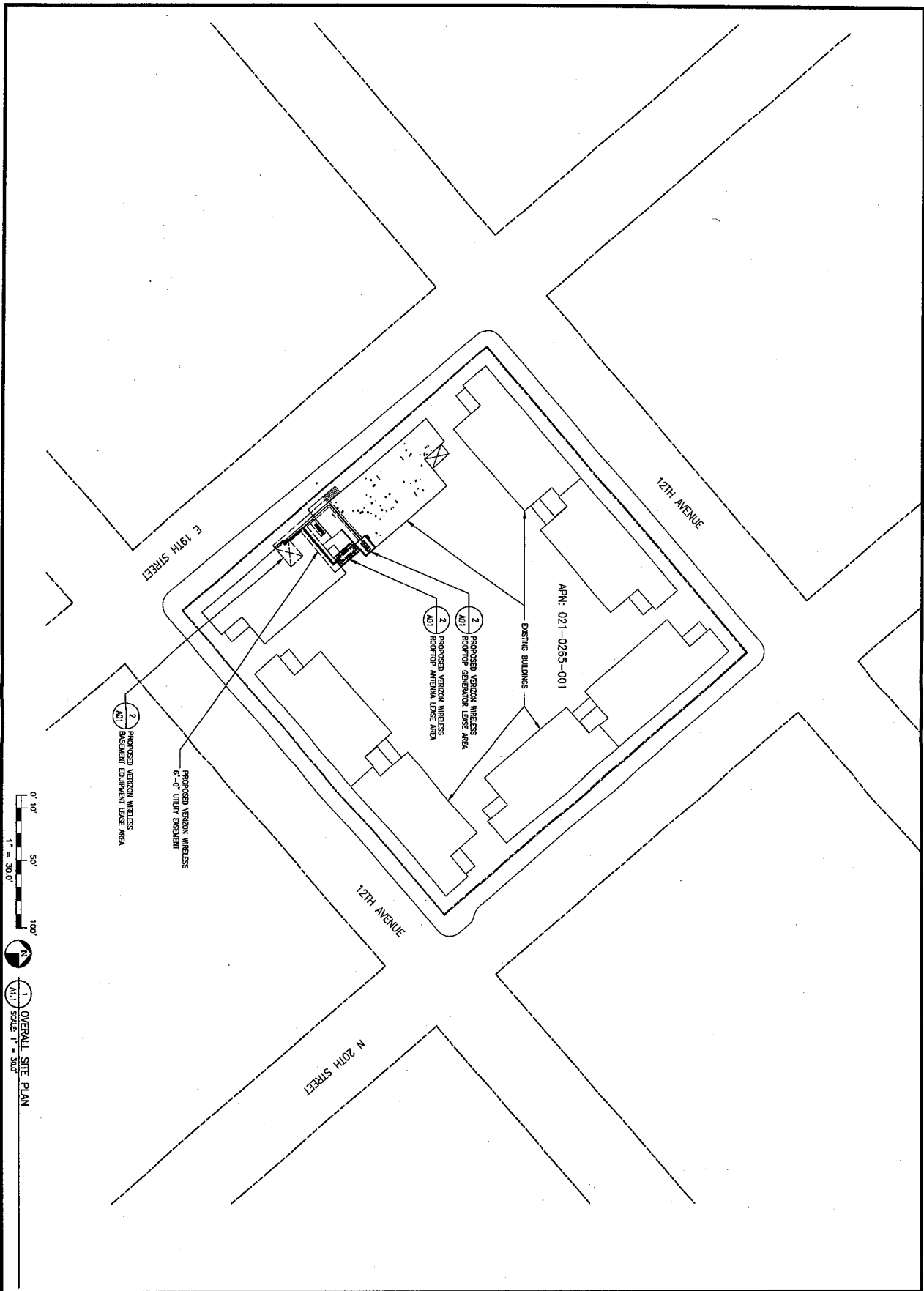
REVISION	DATE	DESCRIPTION
1	09-12-14	Preliminary Drawing
2		
3		
4		
5		
6		
7		
8		
9		
10		

CLINTON
 1221 E. 20th Street
 Oakland, CA 94606
 PLOT PLAN AND
 SITE TOPOGRAPHY



DEPT	APPROVED	DATE
AGC		
SEC		
INT		
ENV		
OPS		
EE/OUT		

GEIL ENGINEERING
 1221 E. 20th Street
 Oakland, CA 94606
 (415) 434-1234
 FAX: (415) 434-1235

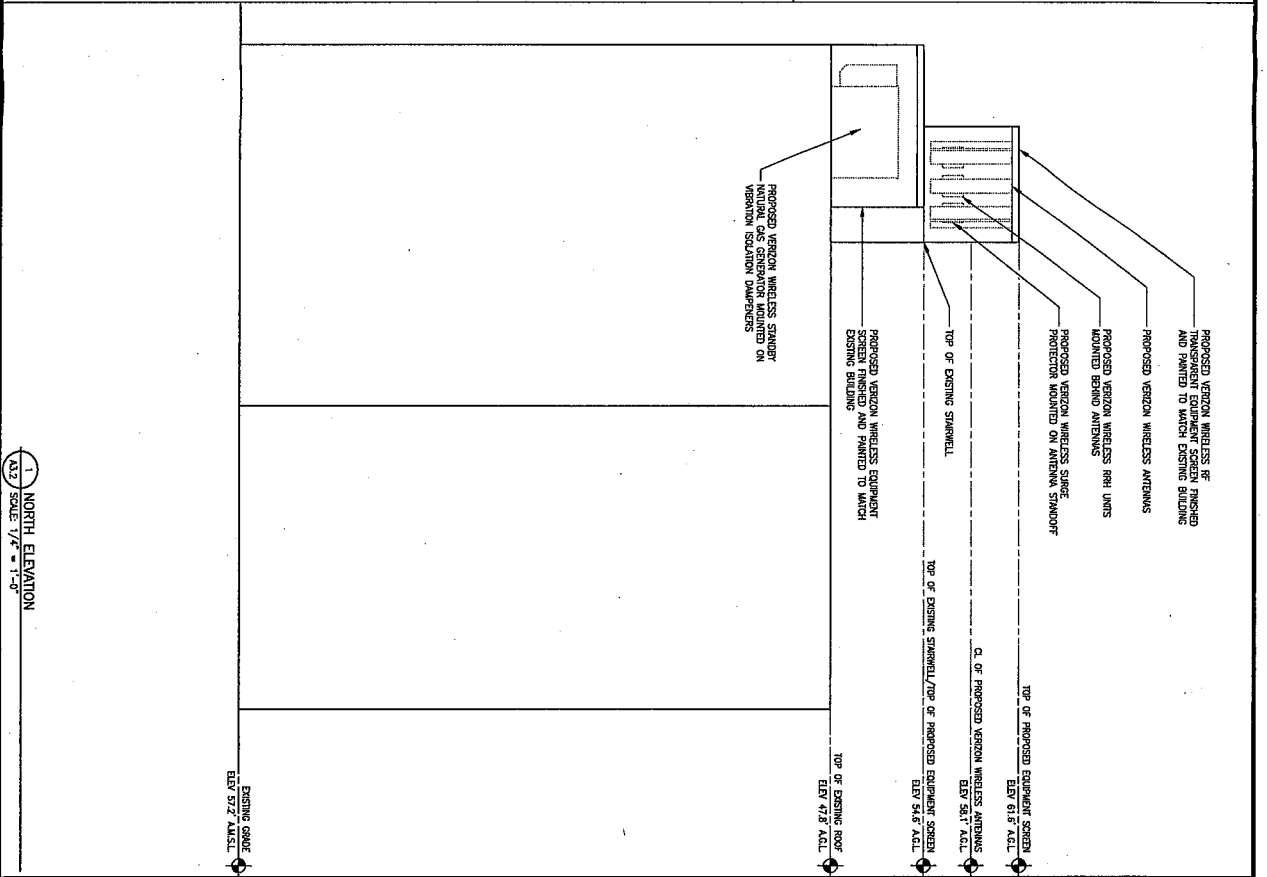
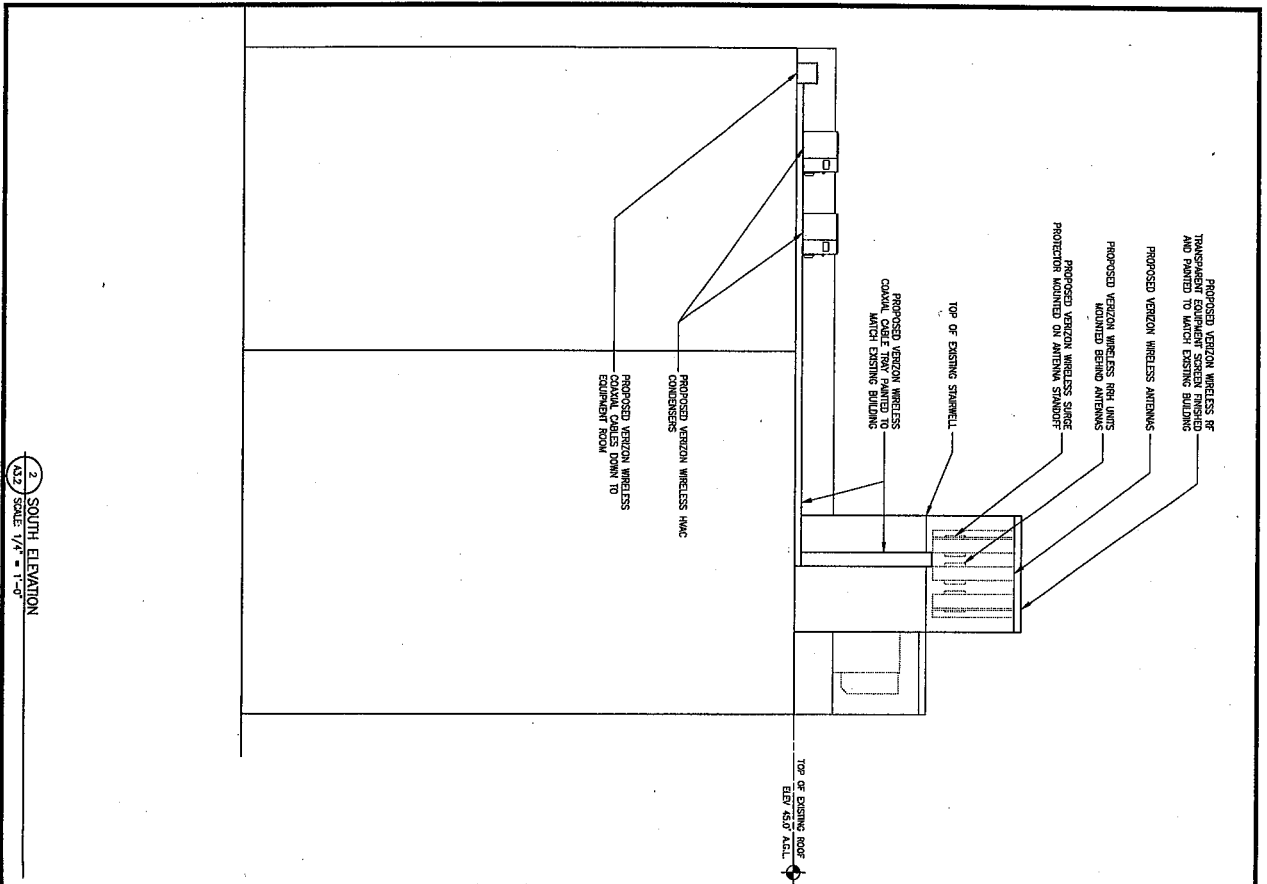


A1.1	VERIZON WIRELESS 1221 E 20TH STREET OAKLAND, CA 95606	MST ARCHITECTS 1225 E 19TH STREET, SACRAMENTO, CA 95811 916-441-2000 www.mstarchitects.com	COMPLETE Wireless Consulting, Inc.
	SHEET TITLE: OVERALL SITE PLAN	<small>THIS DOCUMENT AND ANY INFORMATION CONTAINED HEREIN IS THE PROPERTY OF MST ARCHITECTS, INC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. NO PART OF THIS DOCUMENT IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM MST ARCHITECTS, INC.</small>	





COMPLETE
1-800-854-2222



2 SOUTH ELEVATION
SCALE 1/8" = 1'-0"

1 NORTH ELEVATION
SCALE 1/8" = 1'-0"

A3.2

DESIGN NO.	REVISION
DATE	BY
CHECKED BY	DATE
SCALE	DATE
DATE	BY

DESIGN NO.	REVISION
DATE	BY
CHECKED BY	DATE
SCALE	DATE
DATE	BY

DESIGN NO.	REVISION
DATE	BY
CHECKED BY	DATE
SCALE	DATE
DATE	BY

CLINTON
1221 E 20TH STREET
OAKLAND, CA 95606

PROJECT ELEVATIONS

MST ARCHITECTS
1538 River Park Drive, Sacramento, CA 95811
916-567-9630
www.MSTArchitects.com

COMPLETE
Wireless Connection, Inc.

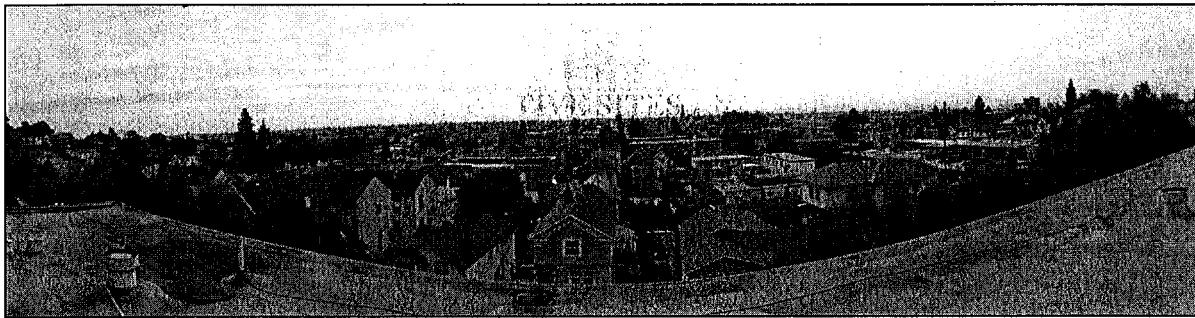
ATTACHMENT A

ALTERNATIVE SITES ANALYSIS VERIZON WIRELESS

Site Name: Clinton
Location: 1221 E. 20th St, Oakland, CA 95606
APN: 021-0262-001

The proposed facility will provide a mixture of both coverage and capacity the City of Oakland. Modern life has become increasingly dependent upon wireless communications. Wireless access is critical to many facets of every-day life, such as safety, recreation, and commerce. Now that about 1 in 3 American households no longer have a landline phone, wireless coverage and capacity must meet higher demands for service. As more households move away from landlines, the demand for wireless service has increased in residential areas.

Here, the property is located in an RM-2 (Mixed Housing) zone and the surrounding area consists of similarly zoned parcels. Because the demand area encompasses a residential area, most of the properties are one-story houses. Please see panoramic photo below.



Verizon looked to building roofs that could offer both the space and the height needed to keep from having to build a new tower in the area. However, many of the non-residential buildings in the area are only two-stories in height, which barred many of the buildings in the area from consideration.

The following locations were investigated but eliminated because a taller roof structure would be needed to achieve Verizon's coverage and capacity needs in the area.

- 1745 14th Avenue, East Bay Blue Print & Supply Co.
This building was too short for a roof mount and a new tower was required. This location was eliminated to prevent a new tower.
- 1148 E. 18th Street
This location was considered, but the proposed location offered more height to prevent taller roof-mounted structures.
- 1125 E. 18th Street, East 18th Street Associates
This location was considered, but the proposed location offered more height to prevent taller roof-mounted structures.

Proposed Roof Mount at 1221 E. 20th Street

The proposed location at 1221 E. 20th Street is the tallest building in the area. Additionally, there is an elevated stairwell that offers additional height to the building's roof. This stairwell allows Verizon's antennas need the height to clear the edges of the roof without creating a taller structure to create the same effects. The height of the antennas and their RF screens are the minimum needed to enclose both the antennas and achieve coverage needed in the area. Lastly, the existing building is one of four matching buildings on the parcel that create a square around the block. Two of the other buildings currently have similar stealthed telecommunications structures on their roofs. The proposed facility is designed to match the existing roof as well as the surrounding buildings on the parcel.

Because the area is primarily residential with short buildings, the available locations were narrowed significantly to multi-story buildings in the area. The proposed location is the only feasible option because it offers the best height, the smallest roof-mounted structures, and the least visual impact to the surrounding area.

**Verizon Wireless • Proposed Base Station (Site No. 286665 "Clinton")
1221 East 20th Street • Oakland, California**

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate the base station (Site No. 286665 "Clinton") proposed to be located at 1221 East 20th Street in Oakland, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install directional panel antennas above the roof of the four-story apartment building located at 1221 East 20th Street in Oakland. The proposed operation will, together with the existing base stations nearby, comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. 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)	5,000–80,000 MHz	5.00 mW/cm ²	1.00 mW/cm ²
BRS (Broadband Radio)	2,600	5.00	1.00
WCS (Wireless Communication)	2,300	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	2.40	0.48
[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. 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



**Verizon Wireless • Proposed Base Station (Site No. 286665 "Clinton")
1221 East 20th Street • Oakland, California**

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. 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 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 Verizon, including zoning drawings by MST Architects, Inc., dated August 25, 2014, it is proposed to install twelve Amphenol Model HTXCW451720R000 directional panel antennas within a new view screen enclosure to be installed above the penthouse above the southwestern four-story building of the apartment complex located at 1221 East 20th Street in Oakland. The antennas would be mounted with no downtilt at an effective height of about 58 feet above ground, 10½ feet above the roof, and would be oriented in groups of three toward 50°T, 140°T, 230°T, and 310°T, to provide service in all directions. The maximum effective radiated power in any direction would be 15,270 watts, representing simultaneous operation at 6,160 watts for AWS, 6,160 watts for PCS, and 2,950 watts for 700 MHz service; no operation is proposed in the cellular band.

Presently located above the penthouse of the apartment building to the northwest are similar antennas for use by AT&T Mobility and located above the penthouses of the apartment buildings to the northeast and east are similar antennas for use by other carriers, assumed for the purposes of this study to be Sprint and T-Mobile, respectively. For the limited purpose of this study, the transmitting facilities of those carriers are assumed to be as follows:

Operator	Service	Maximum ERP	Antenna Model	Downtilt	Height
AT&T	AWS	2,100 watts	Andrew SBNH-1D6565A	3°	58 ft
	PCS	5,300	Andrew SBNH-1D6565A	3	58
	Cellular	1,600	Andrew SBNH-1D6565A	6	58
	700 MHz	1,000	Andrew SBNH-1D6565A	6	58



Verizon Wireless • Proposed Base Station (Site No. 286665 "Clinton")
1221 East 20th Street • Oakland, California

Operator	Service	Maximum ERP	Antenna Model	Downtilt	Height
Sprint	BRS	1,500 watts	KMW ET-X-WM-18-65-8P	3°	58 ft
	PCS	7,000	KMW ET-X-TS-70-15-62-18	3	58
	SMR	500	KMW ET-X-TS-70-15-62-18	3	58
T-Mobile	AWS	4,400	Ericsson AIR21	3	58
	PCS	2,200	Ericsson AIR21	3	58

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation by itself is calculated to be 0.012 mW/cm², which is 1.5% of the applicable public exposure limit. The maximum calculated cumulative level at ground, for the simultaneous operation of all four carriers, is 4.0% of the public exposure limit. The maximum calculated cumulative level at the top-floor elevation of any nearby building* is 16% 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. Levels are calculated to exceed the applicable public exposure limit on the roof of the subject building in front of the antennas, as shown in Figure 3.

Recommended Mitigation Measures

It is recommended that the roof access door be kept locked,[†] so that the Verizon antennas are not accessible to unauthorized persons. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all authorized personnel who have access to the roof, including employees and contractors of the wireless carriers as well as roofers, HVAC workers, and building maintenance staff. No access within 19 feet directly in front of the antennas themselves, such as might occur during maintenance work on the roof, should be allowed while the base station is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. Marking blue and yellow demarcation boundaries on the roof the building, as shown in Figure 3, and posting explanatory signs[‡] at the roof access door, next to the demarcation boundaries, and at 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.

* Including the other four-story apartment buildings in the same complex, located at least 70 feet away, based on photographs from Google Maps.

† If the roof access door cannot be locked, it is recommended that a barricade be installed instead of and at the same location as the blue demarcation boundary shown in Figure 3.

‡ 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.



**Verizon Wireless • Proposed Base Station (Site No. 286665 "Clinton")
1221 East 20th Street • Oakland, California**

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the base station proposed by Verizon Wireless at 1221 East 20th Street in Oakland, California, can comply with the prevailing standards for limiting human exposure to radio frequency energy and, therefore, need 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. Marking demarcation boundaries, training authorized personnel, and posting explanatory signs is recommended to establish compliance with occupational exposure limits.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-20309, which expires on March 31, 2015. This work has been carried out under her direction, and all statements are true and correct of her own knowledge except, where noted, when data has been supplied by others, which data she believes to be correct.

November 25, 2014



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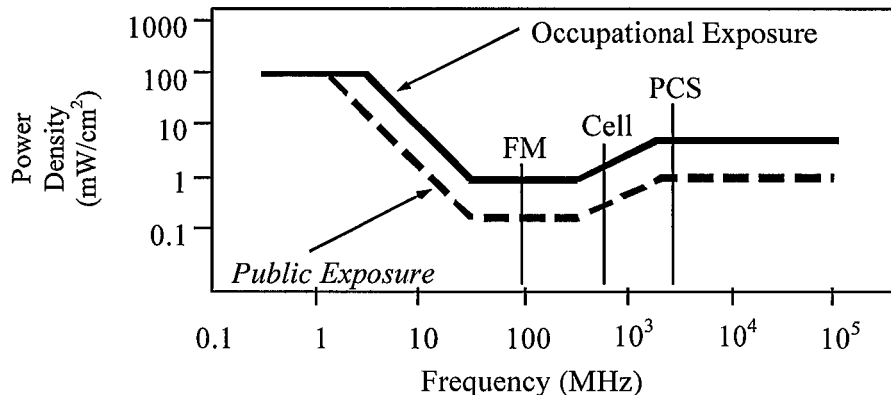
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FCC Radio Frequency Protection Guide

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 (<i>f</i> is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm ²)	
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/f²</i>
3.0 – 30	1842/f	<i>823.8/f</i>	4.89/f	<i>2.19/f</i>	900/f ²	<i>180/f²</i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	$3.54\sqrt{f}$	<i>$1.59\sqrt{f}$</i>	$\sqrt{f}/106$	<i>$\sqrt{f}/238$</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.



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FCC Guidelines
Figure 1

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/cm²,

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/cm²,

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:

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

where ERP = total ERP (all polarizations), in kilowatts,

RFF = relative field factor at the direction to the actual point of calculation, and

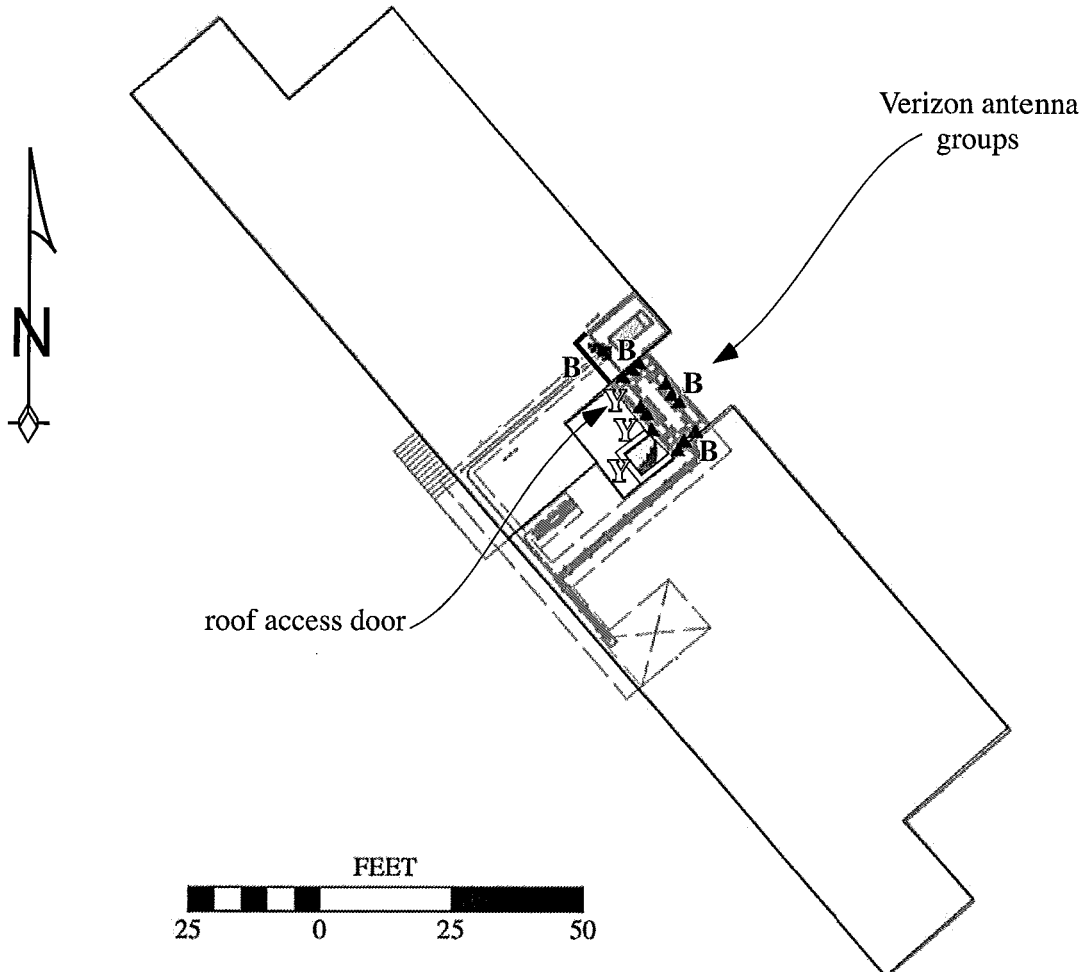
D = distance from the center of radiation to the point of calculation, in meters.

The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 ($1.6 \times 1.6 = 2.56$). 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.



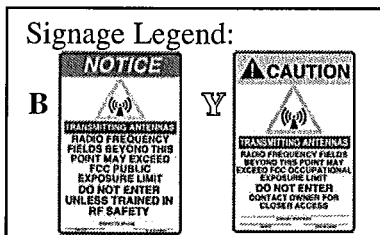
Verizon Wireless • Proposed Base Station (Site No. 286665 "Clinton")
1221 East 20th Street • Oakland, California

Calculated Maximum Exposure Levels on Roof
Exceeding Occupational Limit (yellow shading),
and Public Limit (light blue shading), with Recommended
Minimum Location for Demarcation Boundaries



Calculations performed according to OET Bulletin No. 65, August 1997.
Colors shown represent percent of applicable FCC public limit.

[blank] <100% ■ >100% ■ >500%



Notes:
Base drawing from MST Architects, Inc., dated August 25, 2014.
Explanatory signs should be posted as shown above, readily visible
to authorized workers needing access. See text.