Case File Number: PLN19-315 **September 23, 2020**

Location:	**540 21st Street (See map on reverse)**
Assessor Parcel Numbers:	**008-064700902**
Proposal:	Installation of a wireless telecommunications facility involving one 18'x18' equipment lease area and nine new antennas and nine radio units located within two 12'x12' screened enclosures on the roof top of an existing 10-story senior housing residential building.
Applicant:	Complete Wireless for Verizon Wireless.
Contact Person	Maria Kim
Phone Number:	(916) 247-6087
Owner:	Satellite First Communities
Planning Permits Required:	Major Conditional Use Permit and Regular Design Review to install a Macro Telecommunications Facility located within 100' of a residential zone.
General Plan:	Central Business District
Zoning:	CBD-R (Central Business District Residential Zone)
Environmental Determination:	Exempt, Sections 15301: existing facilities and 15303: new construction or conversion of small structures; Section 15183: 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:	1
City Council District:	3
Date Filed:	December 19, 2019
Finality of Decision:	Appealable to City Council
For Further Information:	Contact case planner Eva Wu at **(510) 238-3785** or ewu@oaklandca.gov

SUMMARY

The project applicant (Complete Wireless) is proposing to install a new wireless telecommunications facility involving nine new antennas and nine radio units located within two 12'x12' screened areas. There will also be an 18'x18' screened equipment lease area all on top of an existing senior housing facility. The two new structures will be approximately 10'-0" in height and the equipment structure will be 7'-6" above the existing roof level. All proposed structures will be under the existing building penthouse height.

The site is located within the CBD-R Zone, which is a residential zone in the Central Business District. A Major Conditional Use Permit and Design Review are required to install a Macro Telecommunications Facility inside or within 100' of a residential zone. The proposal is located within an area consisting of several two to five story residential buildings and one to two story commercial buildings and a public utility complex. The proposed antenna and equipment cabinets are designed to be fully concealed from public view and painted and textured to match the existing building.

BACKGROUND

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

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

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

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

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

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

For more information on the FCC's jurisdiction in this area, contact Steve Markendorff, Chief of the Broadband Branch, Commercial Wireless Division, Wireless Telecommunications Bureau, at (202) 418-0640 or e-mail "smarkend@fcc.gov".

PROPERTY DESCRIPTION

The subject property is a 150-unit, 10 story high senior residential building on a 26,800-square foot lot. The parcel is located in the Uptown neighborhood and surrounding buildings are a mix of higher density apartment building, business, and a few one-two stories homes.

PROJECT DESCRIPTION

The applicant is proposing the following (see Attachment A for the project plans):

- Installation of nine new antennas, nine radio units, and three surge protectors. The telecommunication equipment will be screened inside two rooftop lease areas each 12'x12' area with a 10' high screen wall.

- There will also be one 18'x18' equipment lease area with 7'-6" high screened walls containing outdoor equipment cabinets, backup batteries, and an emergency backup generator. The structures will be on top of the existing residential building. All proposed structures will be below the height of existing building penthouse.

This equipment will fill a significant gap in telecommunication coverage in the area south of West Grand Ave., West of Broadway and north of 18th Street. The project meets all the required findings for approval (see *Findings* section). Therefore, staff recommends approval of the project subject to the attached conditions of approval.

GENERAL PLAN ANALYSIS

The subject property is classified as Central Business District General Plan per the Oakland General Plan's Land Use and Transportation Element (LUTE). This land use classification is intended to encourage, support and enhance downtown area as a high density mixed urban center of regional importance and a primary hub for business, communications, office, government, high technology, retail, entertainment, and transportation in Northern California.

The proposed unmanned wireless telecommunication facility will not adversely affect and detract from the characteristics of the neighborhood and the small commercial center. As a result, the proposal is an appropriate location and would not significantly increase negative visual impacts to adjacent neighboring commercial or residential properties.

ZONING ANALYSIS

The subject property is in the CBD-R Central Business District Residential Zone. The intent of the Central Business District is to enhance the downtown area as a high density mixed urban center and primary hub for business, communication, etc.

Section 17.35.40 of the City of Oakland Planning Code requires a Conditional Use Permit (CUP) to install a Macro Telecommunication facility. Furthermore, pursuant to Section 17.134.020 (A) (3)(i), the CUP is Major because the site is in a residential zone.

Sections 17.128.070, 17.136.040(A)(10) and 17.136.050(B) of the City of Oakland Planning Code requires a Major Design Review permit for Macro Telecommunication facilities. Special findings are also required for Design Review approval to ensure that the facility is concealed to the greatest extent possible. The project design is discussed later in the *Key Issues* section of this report, and the required findings for Major Conditional Use Permit and Design Review are listed and included in staff's evaluation later in 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: existing facilities and 15303: new construction or conversion of small structures. In addition, the project is also exempt per Section 15183: projects consistent with a community plan, general plan or zoning.

KEY ISSUES AND IMPACTS

Project Site

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

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

Facilities sited on an A, B or C ranked preferences do not require a site alternatives analysis. Since the proposed project involves installation of fully concealed new telecommunication facility within a residential zone, the proposed project meets preference F, and a site alternatives analysis is required. The applicant has provided a site alternative analysis (Attachment B).

Alternative Site Analysis

The project is located within a mix of housing developments, low rise commercial area and in an underserved telecommunication area. The project applicant considered three alternative sites on other high rise residential towers and a commercial building north of subject site, but none of these sites were desirable due to the physical constraints or from a service coverage perspective. The proposed location is approximately equidistant from other Distributed Antenna Systems (DAS) nodes proposed in the surrounding area so that service coverage can be evenly distributed.

Staff has reviewed the applicant's alternative sites analysis and determined that the site selected conforms to the telecommunication regulation requirements. In addition, staff agrees that no other sites are more suitable.

Project Design

Section 17.128.120 of the City of Oakland Telecommunications Regulations requires 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 the 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 and B ranked preference do not require a site design alternatives analysis. Facilities designed to meet a C through F ranked preference, inclusive, must submit a site design alternatives analysis as part of the required application materials. The site design alternatives analysis shall, at a minimum, consist of:

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

Since the proposed project meets preference A, a site design alternatives analysis is not required. However, as discussed above, the project has been designed so that new antennas, radio units, and surge suppressors will be screened inside two rooftop structures to mimic the design of existing roof top equipment and penthouse. The structures will protrude above the roof approximately 7'-10', which is below the height of an existing roof top penthouse. The new screened wall will be painted and textured to match the existing building. Furthermore, staff has included a condition of approval requiring the applicant to submit further details of the

screening materials, colors, and textures to ensure that the facilities match, and do not detract from, the existing building facades. Staff has added an additional condition of approval to ensure that the design of the cabinet matches the architecture of the building.

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

In the RF emissions report (Attachment C) prepared by Hammett & Edison, the proposed project was evaluated for compliance with appropriate guidelines limiting human exposure to radio frequency electromagnetic fields. The report states that the proposed project will operate and 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 a certified RF emissions report stating that the facility is operating within acceptable thresholds established by the regulatory federal agency.

CONCLUSION

The new telecommunication facility will be fully concealed from public view and will not have significant visual impacts on the characteristics of the existing residential building or the surrounding neighborhood. It will provide an essential telecommunication service 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. As shown in the *Findings* section of this report, the findings for approval can be made to support approval of the Conditional Use and Regular Design Review Permits.

RECOMMENDATIONS:

1. Affirm staff's Environmental Determination
2. Approve the Conditional Use Permit, Design Review, application subject to the attached Findings and Conditions of Approval

Prepared by:

(for:)
Eva Wu
Planner II

Reviewed by:

Robert Merkamp,
Zoning Manager

Approved for forwarding to the
City Planning Commission

Edward Manasse, Deputy Director
Bureau of Planning

ATTACHMENTS:

A. Project Plans
B. Alternative Site Selection & Photo simulations
C. 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); 17.136.050(B) (Non-Residential Design Review criteria); and 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 this area. The installation of the telecommunication equipment will not adversely affect the operating characteristics of the existing residential or business area because the proposed radio units will be inside two screening structures located on the roof of an existing high rise residential building. These enclosures will also be similar to typical mechanical equipment located on building rooftops.

The proposed rooftop enclosures will be approximately 10' above the existing roofline, 107'-0" above ground and 7'-7" below the overall height of the existing building. The equipment leased is 7'-6" in height and will also be screened. 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 facility will provide enhanced telecommunication service for the area. The proposed telecommunication use will not alter existing residential uses, will look similar to other rooftop mechanical equipment and is not expected to negatively affect the general quality and character of the neighborhood as it will be screened from view.

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 facility will enhance the successful operation of the surrounding area in its basic community function and will provide an essential telecommunication service to the community. Specifically, the proposal will improve telecommunication coverage for residences and businesses within the area, 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 classified as Central Business District General Plan per the Oakland General Plan's Land Use and Transportation Element (LUTE). This land use classification is intended to encourage, support and enhance downtown area as a high density mixed urban center of regional importance and a primary hub for business, communications, office, government, high technology, retail, entertainment, and transportation in Northern California.

The proposed unmanned wireless telecommunication facility will not adversely affect and detract from the characteristics of the neighborhood and the small commercial center. As a result, the proposal is an appropriate location and would not significantly increase negative visual impacts to adjacent neighboring commercial or residential properties.

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 project is proposed to be located on the rooftop of an existing residential building. The new facility will be located inside two screened structures. The proposed equipment will be camouflaged and blend in with the existing HVAC equipment located on the roof. Photo simulations submitted for the project shows the view of the proposed antennas and screening, as seen from the street, with minimum visual impacts. Therefore, the proposal will not have significant impacts on the operating characteristics of the existing residential building and surrounding neighborhood. Furthermore, staff has included a condition of approval requiring the applicant to submit further details of the screening materials, colors, and textures to ensure that the facilities match, and don't detract from, the existing building facades. Staff has added an additional condition of approval to ensure that the design of the cabinet matches the architecture of the building.

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 the findings above, which describe how the proposed facility is of a quality and character typical of existing rooftop residential mechanical equipment and enhances the successful operation of the surrounding area.

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 *General Plan Analysis Section*, above.

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 will be compatible in color and texture with the existing building materials. The proposed equipment will be camouflaged and blend in with the existing HVAC equipment located on the roof of commercial building as well as screened from below due to the existing mature trees on the downslope side.

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 telecommunication facility consists of two new rooftop mounted antennae and radio unit platforms housed in 10' high screened walls on top of an existing building. The residential building is not an architecturally significant structure and contains little noted architecture details. The enclosures are designed to look like other existing mechanical and penthouse structures. The screened walls are similar in color and texture to the existing building. Staff has added an additional condition of approval to ensure that the design of the cabinet matches the architecture of the building.

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

The antennas are located on the proposed rooftop enclosures and are largely screened from view and similar to other rooftop equipment.

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 equipment cabinets are behind screened walls and set away from roof edge. All screen walls are constructed to match the material and color of the existing 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 enclosures will maintain a 1:1 ratio setback from the edge of building roof line. The proposed equipment enclosures are designed to look similar to the other typical mechanical equipment.

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 and radio units will be mounted on the roof of an existing residential building and will not be accessible to the public due to its location approximately 107' above ground. The associated equipment cabinets will be fully concealed from public view.

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 will be located on the roof of existing residential building and is fully screened from public view. Therefore, the proposal will not disrupt the overall community character surrounding the subject site.

CONDITIONS OF APPROVAL

1. Approved Use

The project shall be constructed and operated in accordance with the authorized use as described in the approved application materials, Staff Report dated 9/23/2020 and Approved Plans dated 01/17/2020, as amended by the following conditions of approval and mitigation measures, if applicable ("Conditions of Approval" or "Conditions").

2. Effective Date, Expiration, Extensions and Extinguishment

This Approval shall become effective immediately, unless the Approval is appealable, in which case the Approval shall become effective in ten (10) calendar days unless an appeal is filed. Unless a different termination date is prescribed, this Approval shall expire **two calendar year** from the Approval date, or from the date of the final decision in the event of an appeal, unless within such period a complete building permit application has been filed with the Bureau of Building and diligently pursued towards completion, or the authorized activities have commenced in the case of a permit not involving construction or alteration. Upon written request and payment of appropriate fees submitted no later than the expiration date of this Approval, the Director of City Planning or designee may grant a one-year extension of this date, with additional extensions subject to approval by the approving body. Expiration of any necessary building permit or other construction-related permit for this project may invalidate this Approval if said Approval has also expired. If litigation is filed challenging this Approval, or its implementation, then the time period stated above for obtaining necessary permits for construction or alteration and/or commencement of authorized activities is automatically extended for the duration of the litigation.

3. Compliance with Other Requirements

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

4. Minor and Major Changes

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

b. Major changes to the approved project, plans, Conditions, facilities, or use shall be reviewed by the Director of City Planning to determine whether such changes require submittal and approval of a revision to the Approval by the original approving body or a new independent permit/approval. Major revisions shall be reviewed in accordance with the procedures required for the original permit/approval. A new independent permit/approval shall be reviewed in accordance with the procedures required for the new permit/approval.

5. Compliance with Conditions of Approval

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

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

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

6. Signed Copy of the Approval/Conditions

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

7. Blight/Nuisances

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

8. Indemnification

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

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

9. Severability

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

10. Special Inspector/Inspections, Independent Technical Review, Project Coordination and Monitoring

The project applicant may be required to cover the full costs of independent third-party technical review and City monitoring and inspection, including without limitation, special inspector(s)/inspection(s) during times of extensive or specialized plan-check review or construction, and inspections of potential violations of the Conditions of Approval. The project applicant shall establish a deposit with Engineering Services and/or the Bureau of Building, if directed by the Director of Public Works, Building Official, Director of City Planning, Director of Transportation, or designee, prior to the issuance of a construction-related permit and on an ongoing as-needed basis.

11. Public Improvements

The project applicant shall obtain all necessary permits/approvals, such as encroachment permits, obstruction permits, curb/gutter/sidewalk permits, and public improvement ("p-job") permits from the City for work in the public right-of-way, including but not limited to, streets, curbs, gutters, sidewalks, utilities, and fire hydrants. Prior to any work in the public right-of-way, the applicant shall submit plans for review and approval by the Bureau of Planning, the Bureau of Building, Engineering Services, Department of Transportation, and other City departments as required. Public improvements shall be designed and installed to the satisfaction of the City

12. Trash and Blight Removal

Requirement: The project applicant and his/her successors shall maintain the property free of blight, as defined in chapter 8.24 of the Oakland Municipal Code. For nonresidential and multi-family residential projects, the project applicant shall install and maintain trash receptacles near public entryways as needed to provide sufficient capacity for building users.

When Required: Ongoing

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

13. Graffiti Control

Requirement:

a. During construction and operation of the project, the project applicant shall incorporate best management practices reasonably related to the control of graffiti and/or the mitigation of the impacts of graffiti. Such best management practices may include, without limitation:
   i. Installation and maintenance of landscaping to discourage defacement of and/or protect likely graffiti-attracting surfaces.
   ii. Installation and maintenance of lighting to protect likely graffiti-attracting surfaces.
   iii. Use of paint with anti-graffiti coating.
   iv. Incorporation of architectural or design elements or features to discourage graffiti defacement in accordance with the principles of Crime Prevention Through Environmental Design (CPTED).
   v. Other practices approved by the City to deter, protect, or reduce the potential for graffiti defacement.

b. The project applicant shall remove graffiti by appropriate means within seventy-two (72) hours. Appropriate means include the following:
   i. Removal through scrubbing, washing, sanding, and/or scraping (or similar method) without damaging the surface and without discharging wash water or cleaning detergents into the City storm drain system.
   ii. Covering with new paint to match the color of the surrounding surface.
   iii. Replacing with new surfacing (with City permits if required).

When Required: Ongoing

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

14. Lighting

Requirement: Proposed new exterior lighting fixtures shall be adequately shielded to a point below the light bulb and reflector to prevent unnecessary glare onto adjacent properties.

When Required: Prior to building permit final

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

15. Dust Controls – Construction Related

Requirement: The project applicant shall implement all of the following applicable dust control measures during construction of the project:

a. Water all exposed surfaces of active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever feasible.

b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
d. Limit vehicle speeds on unpaved roads to 15 miles per hour.
e. All demolition activities (if any) shall be suspended when average wind speeds exceed 20 mph.
f. All trucks and equipment, including tires, shall be washed off prior to leaving the site.
g. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

16. Criteria Air Pollutant Controls - Construction Related

Requirement: The project applicant shall implement all of the following applicable basic control measures for criteria air pollutants during construction of the project as applicable:

a. Idling times on all diesel-fueled commercial vehicles over 10,000 lbs. shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations). Clear signage to this effect shall be provided for construction workers at all access points.
b. Idling times on all diesel-fueled off-road vehicles over 25 horsepower shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes and fleet operators must develop a written policy as required by Title 23, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations").
c. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Equipment check documentation should be kept at the construction site and be available for review by the City and the Bay Area Air Quality District as needed.
d. Portable equipment shall be powered by grid electricity if available. If electricity is not available, propane or natural gas generators shall be used if feasible. Diesel engines shall only be used if grid electricity is not available and propane or natural gas generators cannot meet the electrical demand.
e. Low VOC (i.e., ROG) coatings shall be used that comply with BAAQMD Regulation 8, Rule 3: Architectural Coatings.
f. All equipment to be used on the construction site shall comply with the requirements of Title 13, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations") and upon request by the City (and

the Air District if specifically requested), the project applicant shall provide written documentation that fleet requirements have been met.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

17. Construction-Related Permit(s)

Requirement: The project applicant shall obtain all required construction-related permits/approvals from the City. The project shall comply with all standards, requirements and conditions contained in construction-related codes, including but not limited to the Oakland Building Code and the Oakland Grading Regulations, to ensure structural integrity and safe construction.

When Required: Prior to approval of construction-related permit

Initial Approval: Bureau of Building

Monitoring/Inspection: Bureau of Building

18. Hazardous Materials Related to Construction

Requirement: The project applicant shall ensure that Best Management Practices (BMPs) are implemented by the contractor during construction to minimize potential negative effects on groundwater, soils, and human health. These shall include, at a minimum, the following:

a. Follow manufacture's recommendations for use, storage, and disposal of chemical products used in construction;
b. Avoid overtopping construction equipment fuel gas tanks;
c. During routine maintenance of construction equipment, properly contain and remove grease and oils;
d. Properly dispose of discarded containers of fuels and other chemicals;
e. Implement lead-safe work practices and comply with all local, regional, state, and federal requirements concerning lead (for more information refer to the Alameda County Lead Poisoning Prevention Program); and
f. If soil, groundwater, or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the project applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notifying the City and applicable regulatory agency(ies) and implementation of the actions described in the City's Standard Conditions of Approval, as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the City or regulatory agency, as appropriate.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

19. Construction Days/Hours

Requirement: The project applicant shall comply with the following restrictions concerning construction days and hours:

a. Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pier drilling 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.

b. Construction activities are limited to between 9:00 a.m. and 5:00 p.m. on Saturday. In residential zones and within 300 feet of a residential zone, construction activities are allowed from 9:00 a.m. to 5:00 p.m. only within the interior of the building with the doors and windows closed. No pier drilling or other extreme noise generating activities greater than 90 dBA are allowed on Saturday.

c. No construction is allowed on Sunday or federal holidays.

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.

Any construction activity proposed outside of the above days and hours for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case-by-case basis by the City, with criteria including the urgency/emergency nature of the work, the proximity of residential or other sensitive uses, and a consideration of nearby residents'/occupants' preferences. The project applicant shall notify property owners and occupants located within 300 feet at least 14 calendar days prior to construction activity proposed outside of the above days/hours. When submitting a request to the City to allow construction activity outside of the above days/hours, the project applicant shall submit information concerning the type and duration of proposed construction activity and the draft public notice for City review and approval prior to distribution of the public notice.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

20. Construction Noise

Requirement: The project applicant shall implement noise reduction measures to reduce noise impacts due to construction. Noise reduction measures include, but are not limited to, the following:

a. Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.

b. Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available, and this could

achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.

c. Applicant shall use temporary power poles instead of generators where feasible.

d. Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.

e. The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

21. Operational Noise

Requirement: Noise levels from the project site after completion of the project (i.e., during project operation) shall comply with the performance standards of chapter 17.120 of the Oakland Planning Code and chapter 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 City.

When Required: Ongoing

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

22. Construction and Demolition Waste Reduction and Recycling

Requirement: The project applicant shall comply with the City of Oakland Construction and Demolition Waste Reduction and Recycling Ordinance (chapter 15.34 of the Oakland Municipal Code) by submitting a Construction and Demolition Waste Reduction and Recycling Plan (WRRP) for City review and approval, and shall implement the approved WRRP. Projects subject to these requirements include all new construction, renovations/alterations/modifications with construction values of $50,000 or more (except R-3 type construction), and all demolition (including soft demolition) except demolition of type R-3 construction. The WRRP must specify the methods by which the project will divert construction and demolition debris waste from landfill disposal in accordance with current City requirements. The WRRP may be submitted electronically at www.greenhalosystems.com or manually at the City's Green Building Resource Center. Current standards, FAQs, and forms are available on the City's website and in the Green Building Resource Center.

When Required: Prior to approval of construction-related permit

Initial Approval: Public Works Department, Environmental Services Division

Monitoring/Inspection: Public Works Department, Environmental Services Division

23. Underground Utilities

Requirement: The project applicant shall place underground all new utilities serving the project and under the control of the project applicant and the City, including all new gas, electric, cable, and telephone facilities, fire alarm conduits, street light wiring, and other wiring, conduits, and similar facilities. The new facilities shall be placed underground along the project's street frontage and from the project structures to the point of service. Utilities under the control of other agencies, such as PG&E, shall be placed underground if feasible. All utilities shall be installed in accordance with standard specifications of the serving utilities.

When Required: During construction

Initial Approval: N/A

Monitoring/Inspection: Bureau of Building

PROJECT SPECIFIC CONDTIONS:

5. 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.

6. 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.

7. Screening Materials

The project applicant shall submit to Bureau of Planning staff a materials board, samples and colors of the screened wall paint and proposed texturing for review and approval.

Applicant Statement

I have read and accept responsibility for the Conditions of Approval. I agree to abide by and conform to the Conditions of Approval, as well as to all provisions of the Oakland Planning Code and Oakland Municipal Code pertaining to the project.

_____
Name of Project Applicant

_____
Signature of Project Applicant

_____
Date

ATTACHMENT A

ZD DRAWING SIGN-OFF

DATE: TIME: % CWC-PLEASE RETURN BY:

COMPLETE Wireless Consulting, Inc.

SIGNATURE DATE

SITE ACQUISITION: _____ _____

PLANNING: _____ _____

CONSTRUCTION: _____ _____

MANAGEMENT: _____ _____

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SIGNATURE DATE

CONSTRUCTION: _____ _____

REAL ESTATE: _____ _____

RF ENGINEER: _____ _____

EQUIPMENT ENGINEER: _____ _____

MW ENG./TRANSPORT: _____ _____

OTHER (IF APPLICABLE)

SIGNATURE DATE

_____ _____

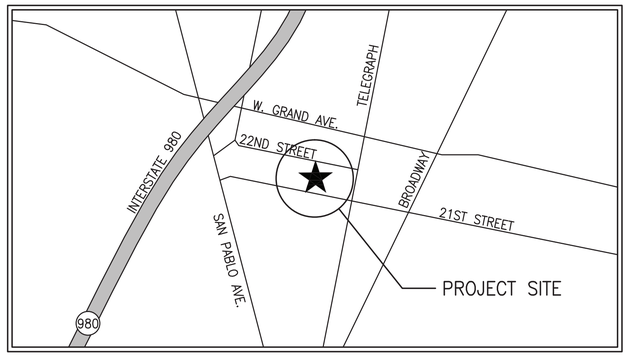
Approved Plans
1/17/2020

verizon

2785 Mitchell Drive, Walnut Creek, CA 94598

TELEGRAPH AND GRAND

540 21ST STREET
OAKLAND, CA 94612
APN: 008-0647-009-02
LOCATION #: 312554



LOCATION PLAN N

PROJECT DIRECTORY

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

PROPERTY OWNER:
SATELLITE FIRST COMMUNITIES
185 ALCATRAZ AVENUE
BERKELEY, CA. 94703
510-809-2751

ARCHITECT:
MANUEL S. TSIHLAS
MST ARCHITECTS, INC.
1520 RIVER PARK DRIVE
SACRAMENTO, CA 95815
916-567-9630
manuel@mstarchitects.com

CONSTRUCTION MANAGER:
MARK CASEY
COMPLETE WIRELESS CONSULTING, INC.
2009 V STREET
SACRAMENTO, CA 95818
916-508-7945
mcasey@completewireless.net

PROJECT SUMMARY

ASSESSOR'S PARCEL NUMBER:	008-0647-009-02
JURISDICTION:	CITY OF OAKLAND
OCCUPANCY:	S-2 (UNMANNED TELECOMMUNICATIONS FACILITY) U (TOWER)
TYPE OF CONSTRUCTION:	V-B
ZONING:	CBD-R (CENTRAL BUSINESS DISTRICT RESIDENTIAL ZONE)

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:

2016 CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS EFFECTIVE JANUARY 1, 2017

PART 1	CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
PART 2	CALIFORNIA BUILDING CODE
PART 2.5	CALIFORNIA RESIDENTIAL BUILDING CODE
PART 3	CALIFORNIA ELECTRICAL CODE
PART 4	CALIFORNIA MECHANICAL CODE
PART 5	CALIFORNIA PLUMBING CODE
PART 6	CALIFORNIA ENERGY CODE
PART 8	CALIFORNIA HISTORICAL BUILDING CODE
PART 9	CALIFORNIA FIRE CODE
PART 10	CALIFORNIA EXISTING BUILDING CODE
PART 11	CALIFORNIA GREEN BUILDING STANDARDS CODE
PART 12	CALIFORNIA REFERENCE STANDARDS CODE

LOCAL COUNTY OR CITY ORDINANCES

ACCESSIBILITY REQUIREMENTS: THIS FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ACCESSIBILITY NOT REQUIRED IN ACCORDANCE WITH THE 2016 CBC 11B-203.5, AND 11B-202.4 EXCEPTION 7.

DIRECTIONS

FROM VERIZON OFFICE @ 2785 MITCHELL DRIVE, WALNUT CREEK, CA 94598:

1. HEAD NORTHEAST ON MITCHELL DR TOWARD OAK GROVE RD
2. TURN RIGHT ONTO OAK GROVE RD
3. TURN RIGHT ONTO YGNACIO VALLEY RD
4. YGNACIO VALLEY RD TURNS RIGHT AND BECOMES HILLSIDE AVE
5. TURN RIGHT ONTO THE 24 W RAMP TO OAKLAND
6. CONTINUE ONTO CA-24 W/HWY 24 W
7. CONTINUE ONTO I-980 W
8. TAKE THE 18TH STREET EXIT TOWARD 14TH STREET
9. MERGE ONTO BRUSH ST
10. TURN LEFT ONTO 17TH ST
11. TURN LEFT AT THE 1ST CROSS STREET ONTO CASTRO ST
12. USE THE RIGHT LANE TO STAY ON CASTRO ST
13. TURN RIGHT AT THE 1ST CROSS STREET ONTO SAN PABLO AVE
14. TURN LEFT ONTO 21ST ST
15. DESTINATION WILL BE ON THE LEFT

INDEX OF DRAWINGS

PROJECT DESCRIPTION

PROPOSED VERIZON WIRELESS UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING:

- A 18'-0"x18'-0" EQUIPMENT LEASE AREA.
- (2) 12'-0"x12'-0" ANTENNA LEASE AREAS
- OUTDOOR EQUIPMENT CABINETS.
- A STANDBY GENERATOR ON ROOFTOP.
- POWER & TELCO UTILITIES BROUGHT TO FACILITY.
- ROOF MOUNTED CONDUITS ON SLEEPERS.
- ANTENNAS W/ASSOCIATED EQUIPMENT MOUNTED BEHIND NEW SCREEN WALLS.

PROJECT MILESTONES

11/17/2017	90% ZONING DOCUMENTS
02/21/2018	100% ZONING DOCUMENTS
03/12/2018	100% ZONING DOCUMENTS REV 1
05/14/2018	100% ZONING DOCUMENTS REV 2
XX/XX/XXXX	90% CONSTRUCTION DOCUMENTS
XX/XX/XXXX	100% CONSTRUCTION DOCUMENTS

COMPLETE Wireless Consulting, Inc.

MST ARCHITECTS WIRELESS DIVISION
1520 River Park Drive, Sacramento, CA 95815
916-567-9630
www.MSTArchitects.com

verizon

TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA. 94612

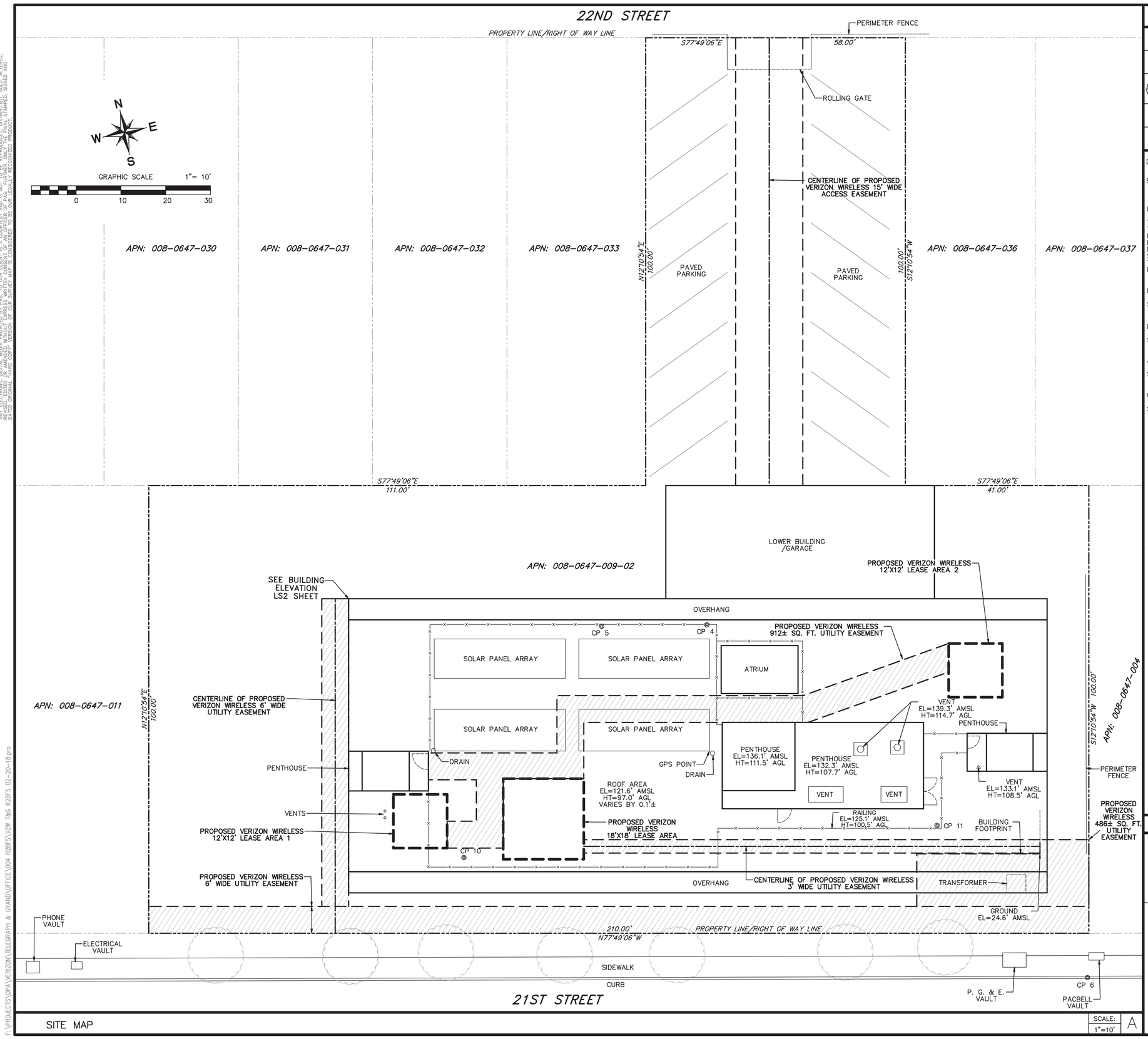
SHEET TITLE:
TITLE SHEET, LOCATION PLAN, PROJECT DATA

Revisions:
1 △
2 △
3 △
4 △
5 △

File:162.2097_T11.dwg
Drawn By: MWS
Checked By: TST
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

T1.1



SITE MAP

SCALE: 1"=10" A

GRAPHIC SCALE 1"= 10'
0 10 20 30

LEGEND

MANHOLE		FIRE HYDRANT	
LIGHT POLE		MONUMENT	
TREE		HANDICAPPED PARKING	
JP	JOINT POLE	TP	TELEPHONE POLE
PP	POWER POLE	+EL=124.5'	SPOT ELEVATION

EDGE OF PAVEMENT
E E
OVERHEAD ELECTRIC LINE
42" GUARD RAIL
PROPERTY LINE
AMSL.....ABOVE MEAN SEA LEVEL
AGL.....ABOVE GROUND LEVEL
◎ CP #.....FIELD CONTROL POINT

DATE OF FIELD VISIT: 11/02/2017

SURVEYED BY/ OR UNDER THE DIRECTION OF: Oliver Philip Auer L.S. 5075

NOTES:

THIS IS NOT A BOUNDARY SURVEY. THIS IS A CELLULAR TELECOMMUNICATIONS TOPOGRAPHIC SURVEY MAP WITH EXISTING PARENT PARCEL LINES AND EASEMENTS BEING A GRAPHIC DEPICTION OF VARIOUS INFORMATION GATHERED FROM PRELIMINARY REPORTS, RECORD INFORMATION AND AVAILABLE MONUMENTS FOUND DURING THE FIELD SURVEY. UNLESS OTHERWISE NOTED, NO UNDERGROUND UTILITY LOCATING SERVICE COMPANY WAS CONTACTED PRIOR TO THIS MAP BEING PREPARED; THEREFORE, THERE MAY BE NON-VISIBLE OR OBSCURE UTILITIES EXISTING ON THE PROPERTY NOT SHOWN ON THIS MAP.

PARENT PARCEL DESCRIPTION:

SEE CONDITION OF TITLE GUARANTEE DESCRIPTION EXTRACT, LS2 SHEET.

LEASE AREA DESCRIPTIONS:

SEE LS2 SHEET.

JOINT ACCESS AND UTILITY EASEMENT DESCRIPTION:

SEE LS2 SHEET.

UTILITY EASEMENT DESCRIPTIONS:

SEE LS2 SHEET.

BASIS OF ELEVATIONS: NAVD 88.

BASIS OF BEARINGS: CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 3, NAD 83.

PROJECT BENCH: N/A

LANDLORD INFORMATION: SATELLITE FIRST COMMUNITIES
1835 ALCATRAZ AVENUE
BERKELEY, CA 94703

NET AREA OF:
UNDERLYING PARCEL(S): 0.62± AC.

SITE LOCATED IN FLOOD ZONE X, AN AREA OF MINIMAL FLOOD HAZARD, PER FEMA FIRM COMMUNITY PANEL NUMBER 06001C0067G, EFFECTIVE DATE 08/03/2009, PER FEMA INTERACTIVE WEBSITE.

FAA 1A CERTIFICATION:

LATITUDE AND LONGITUDE WAS OBTAINED FROM INFORMATION PROVIDED BY A GPS SURVEY. THE GEODETIC POSITION SHOWN WAS DETERMINED UTILIZING FAST-STATIC GPS OBSERVATIONS FROM NGS CORS STATION(S) USING TRIMBLE 4600LS RECEIVERS. THE DATA WAS DIFFERENTIALLY CORRECTED WITH TRIMBLE GPS SURVEY SOFTWARE.

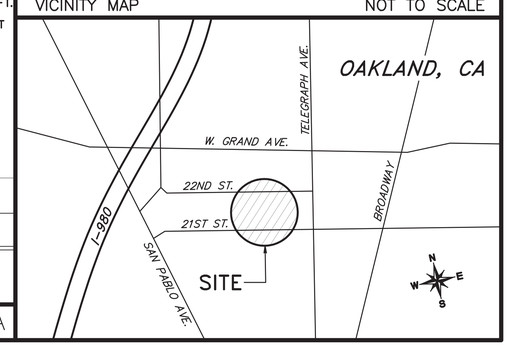
LATITUDE, LONGITUDE AND ELEVATIONS DENOTED ON THIS SURVEY MEET OR EXCEED THE FEDERAL AVIATION ADMINISTRATION 1-A STANDARD.

ELEVATION OF GROUND AT GPS POINT: 24.6' AMSL

STRUCTURE HEIGHT: TOP OF (E) VENT/EL=139.3' AMSL/HT=114.7' AGL

LATITUDE: N37°48'38.66"
LONGITUDE: W122°16'13.99" (NAD 83)

VICINITY MAP NOT TO SCALE



Phil Auer Surveying
14407 Corte Lejos
Bakersfield, CA 93314
Phone: (661) 587-6129
Mobile: (661) 978-7224
E-mail: Pasls5075@att.net

verizon

TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA 94612

SHEET TITLE: TOPOGRAPHIC SURVEY MAP

LICENSED LAND SURVEYOR
OLIVER PHILIP AUER
NO 5075
(Exp. 06/30/19)
STATE OF CALIFORNIA

Revisions:
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△
△
△
△

Name: TELEGRAPH AND GRAND
Drawn By: PAD
Checked By: OPA
Scale: AS NOTED
Date: 02/20/18

Job No. N/A

LS1

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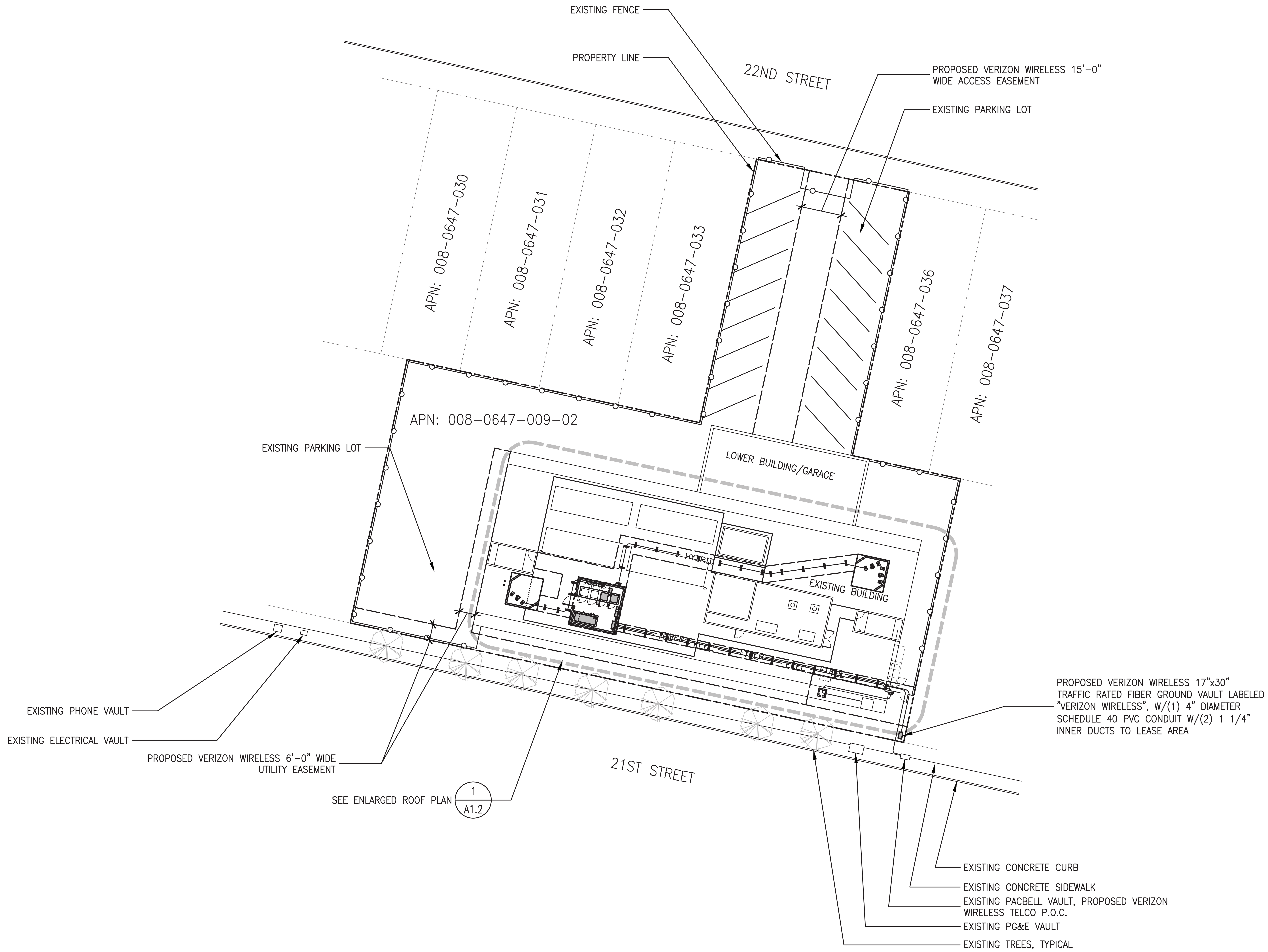

0' 5' 25' 50'
1" = 20.0'

N

1 A1.1 OVERALL SITE PLAN
SCALE: 1" = 20.0'

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OAKLAND, CA. 94612

SHEET TITLE:
OVERALL SITE PLAN

Revisions:

File: 162.2097_A11.dwg
Drawn By: MWS
Checked By: SV
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

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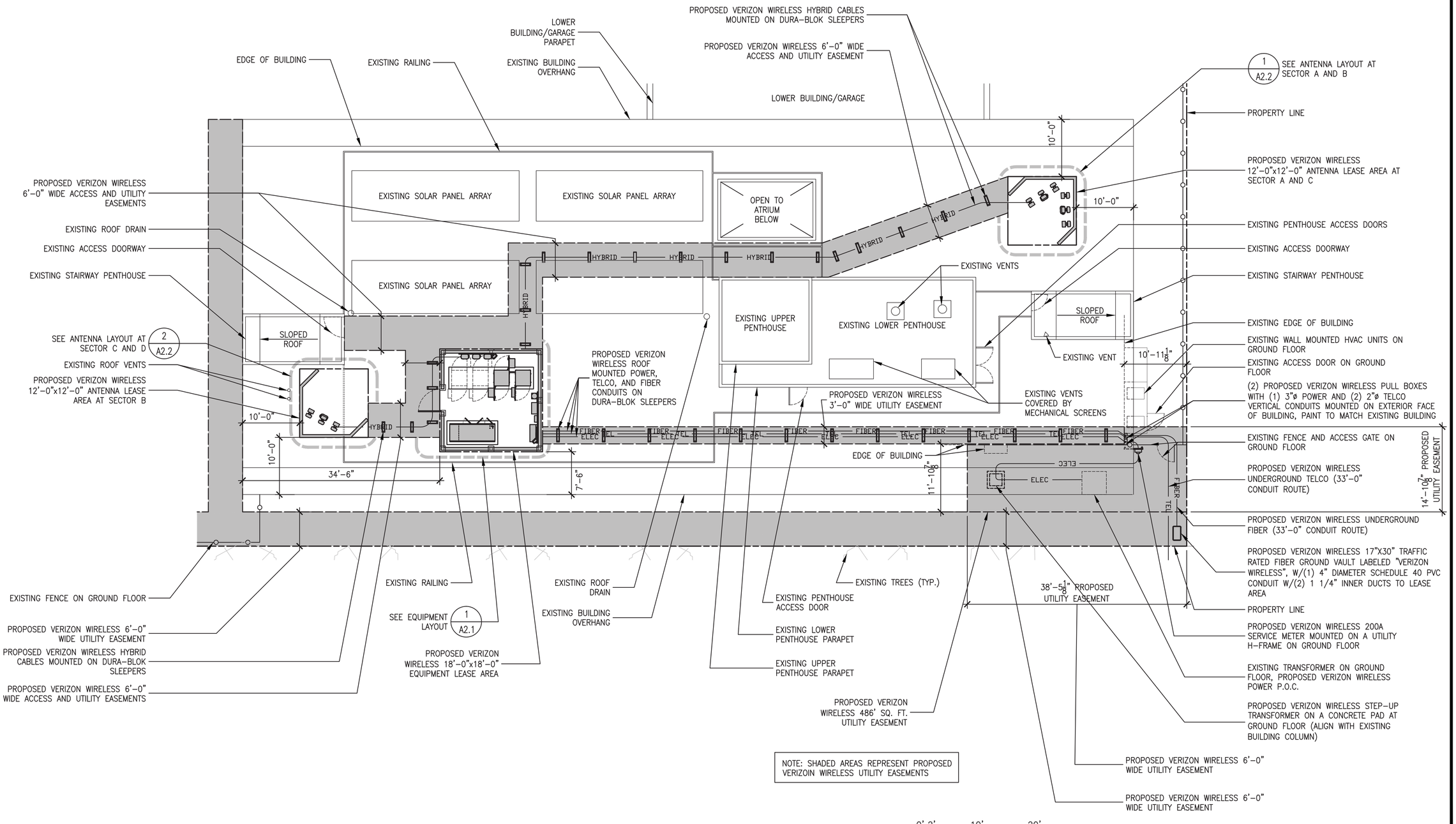

1 A1.2 ROOF PLAN
SCALE: 1/8" = 1'-0"

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SHEET TITLE: ROOF PLAN

Revisions:
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File:162.2097_A12.dwg
Drawn By: MWS
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Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

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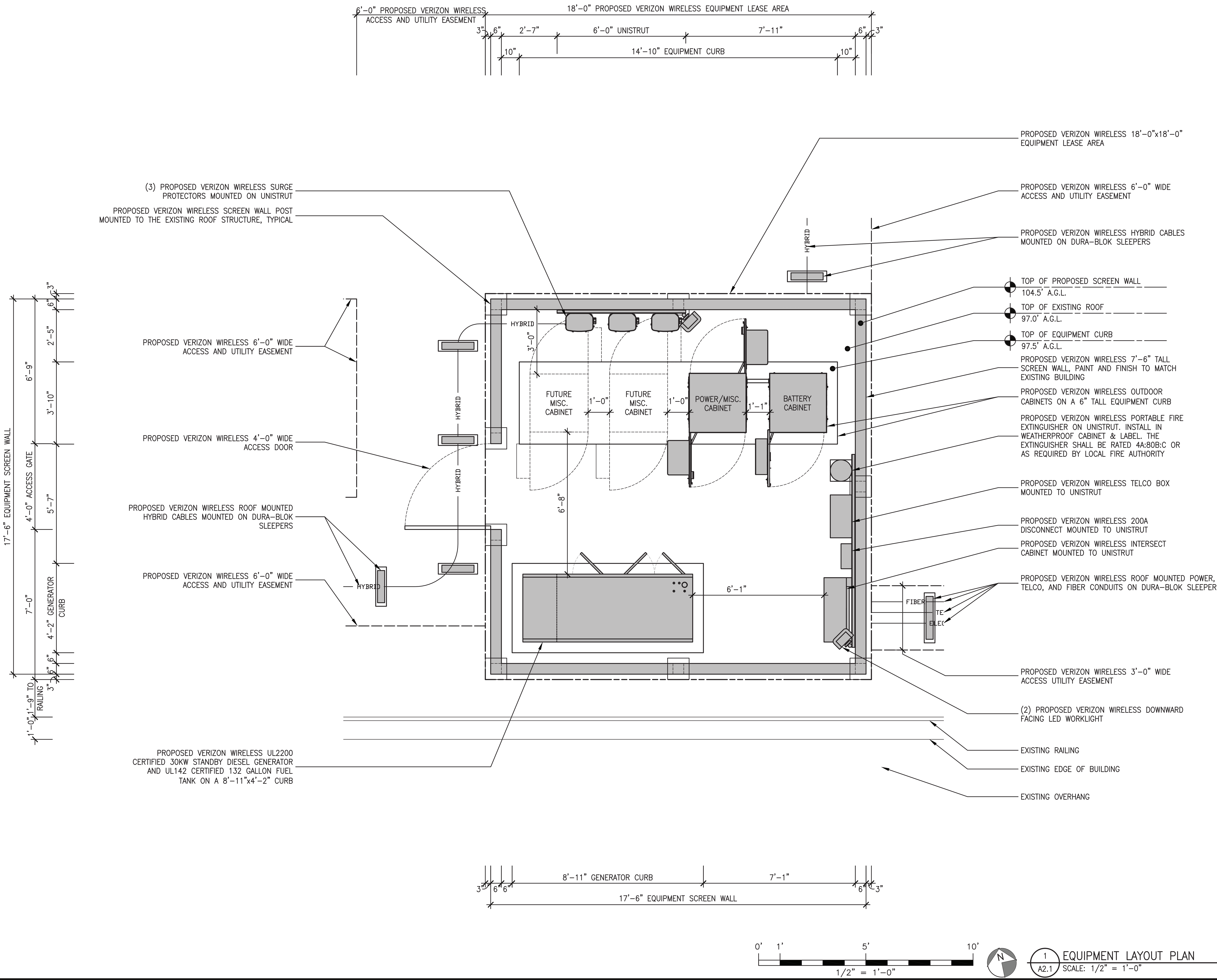

1 A2.1 EQUIPMENT LAYOUT PLAN
SCALE: 1/2" = 1'-0"

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OAKLAND, CA. 94612

SHEET TITLE:
EQUIPMENT LAYOUT PLAN

Revisions:
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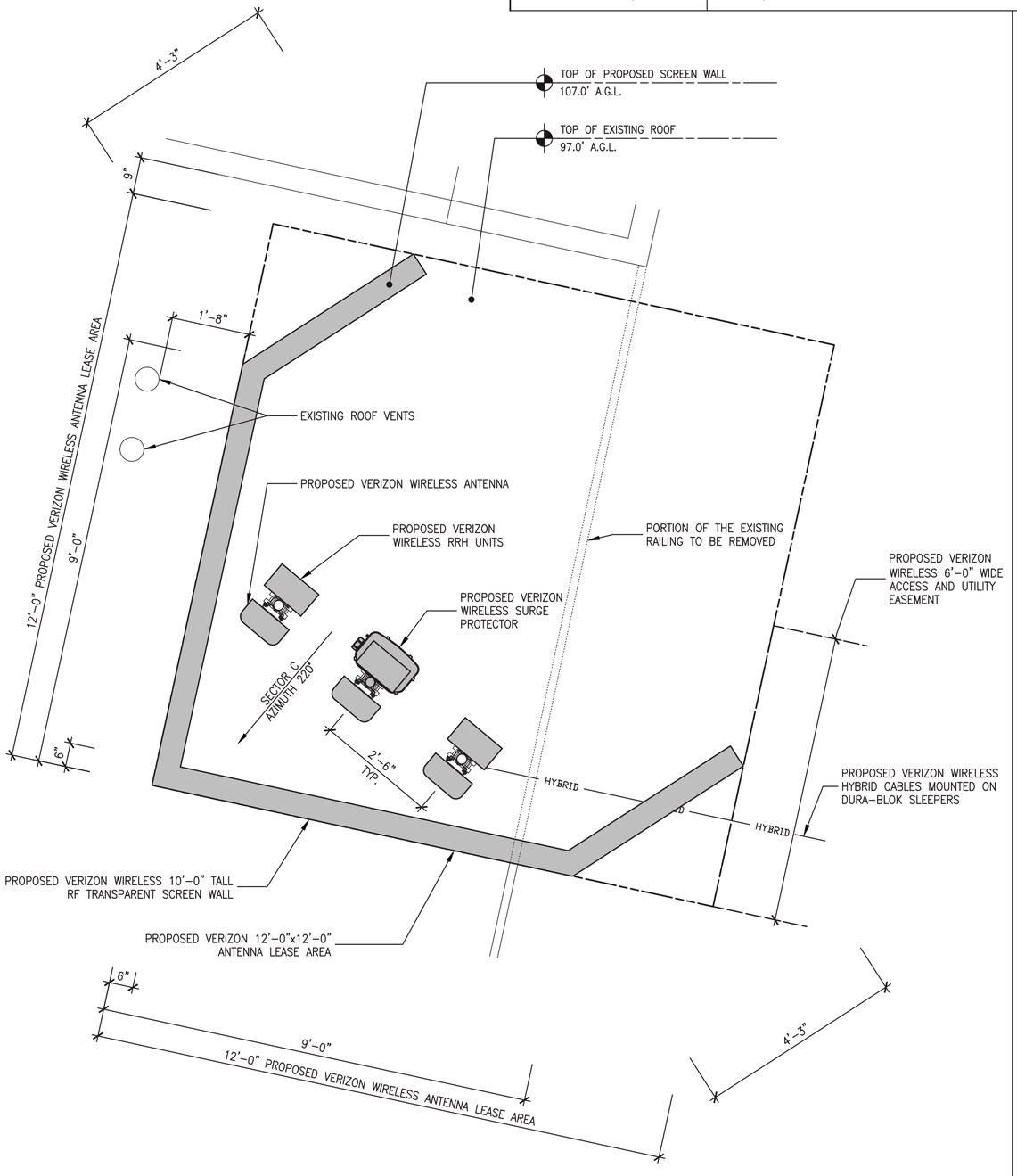
File: 162.2097 _A21.dwg
Drawn By: MWS
Checked By: SV
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

A2.1

ROOF MOUNTED EQUIPMENT SCHEDULE (PRELIMINARY AND SUBJECT TO CHANGE)

EQUIPMENT	DESCRIPTION	QUANTITY			TOTAL
		SECTOR A	SECTOR B	SECTOR C	
ANTENNA	TO BE DETERMINED	3	3	3	9
RRH/RADIO	TO BE DETERMINED	3	3	3	9
SURGE PROTECTOR/HYBRID	RAYCAP / HYBRID TRUNK CABLE	3/3			3/3



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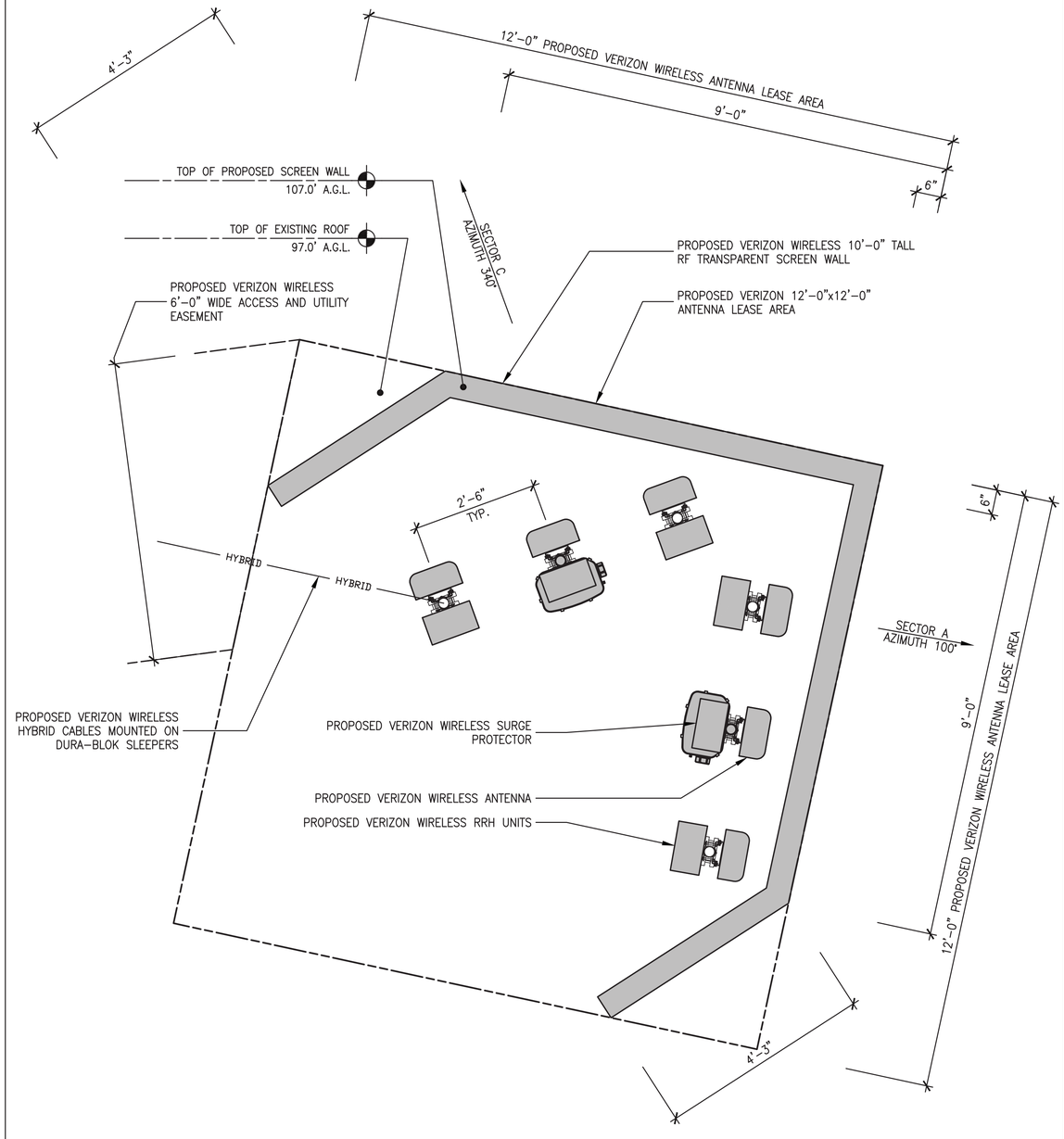
2 A2.2 ANTENNA LAYOUT AT SECTOR B

SCALE: 3/4" = 1'-0"



N

1 A2.2 ANTENNA LAYOUT AT SECTOR A AND C

SCALE: 3/4" = 1'-0"

COMPLETE Wireless Consulting, Inc.

MST ARCHITECTS WIRELESS DIVISION
1520 River Park Drive, Sacramento, CA 95815
916-567-9830
www.MSTArchitects.com

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TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA. 94612

SHEET TITLE: ANTENNA LAYOUT PLANS

Revisions:
1
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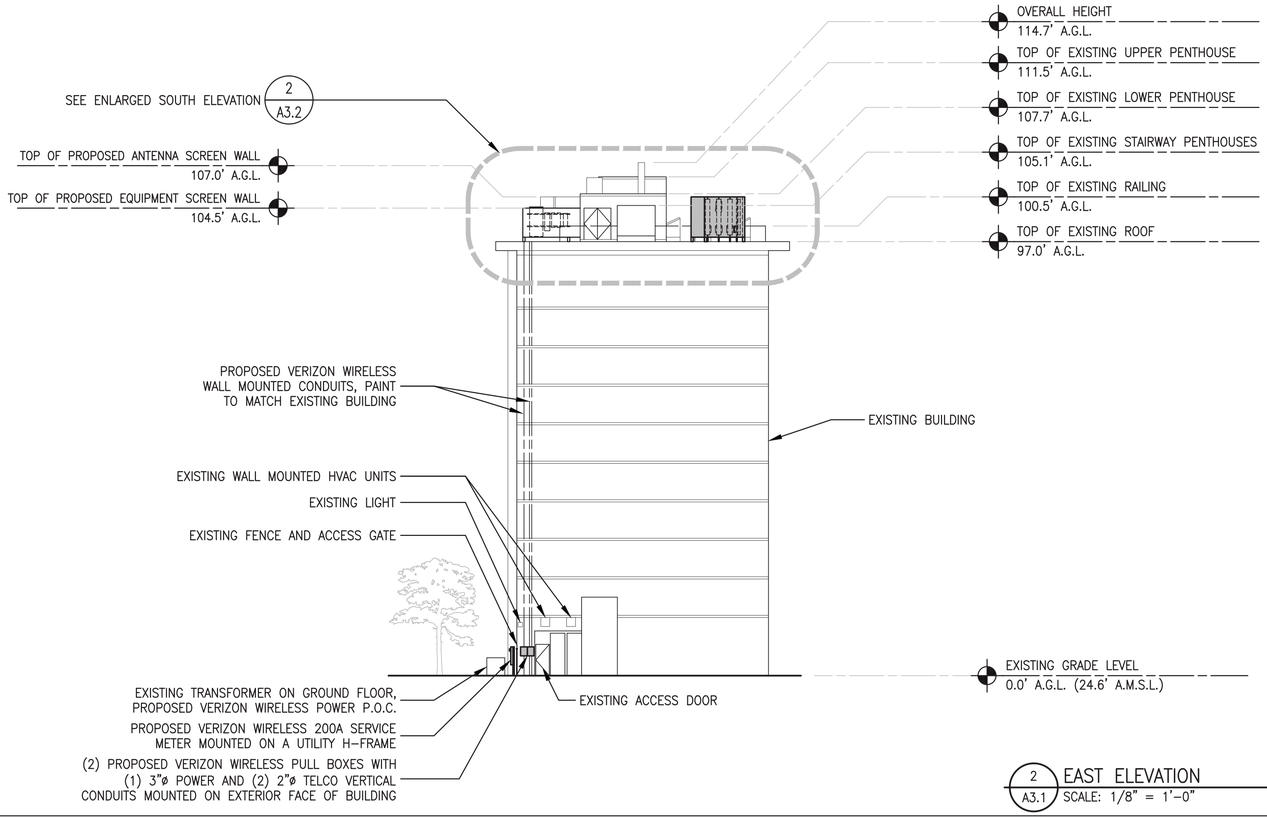
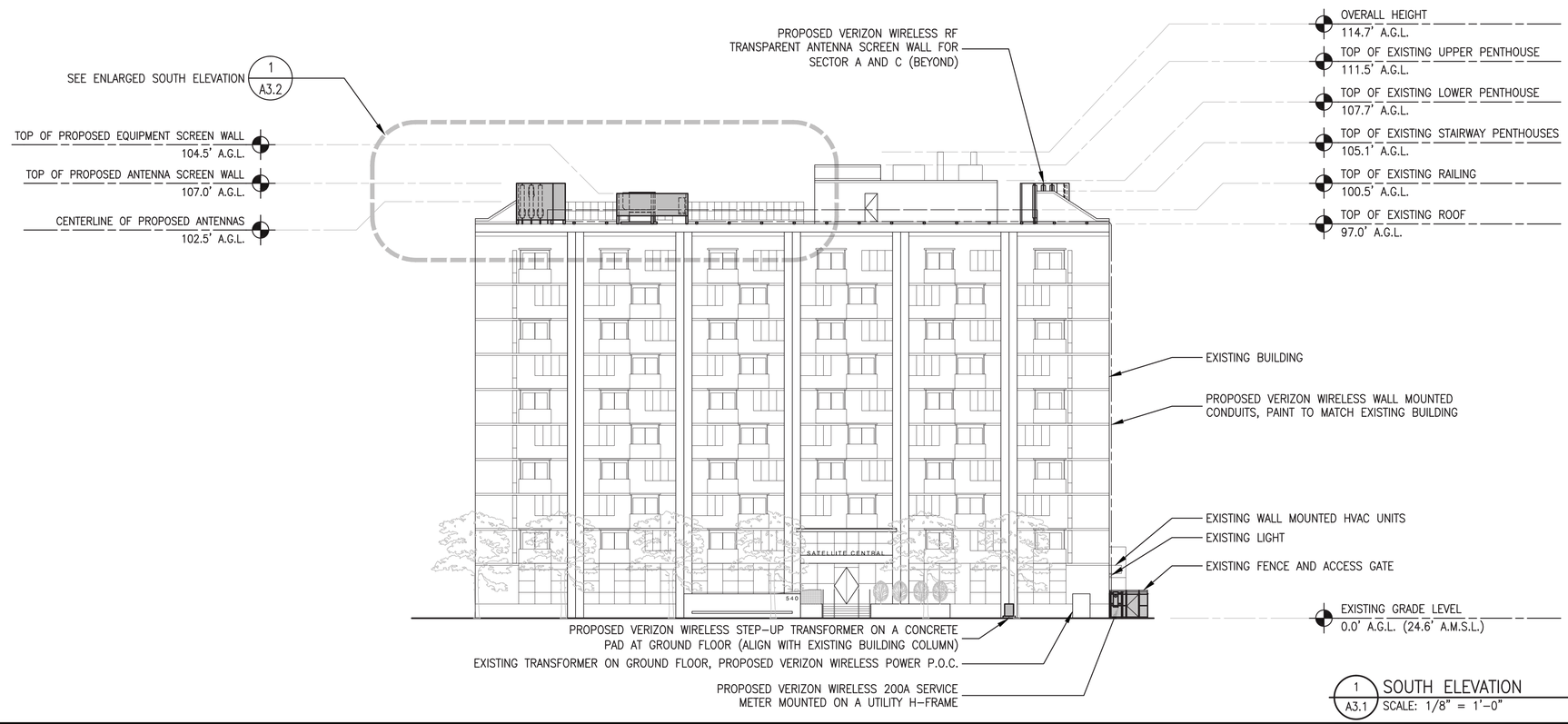
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

A2.2



2 A3.1 EAST ELEVATION
SCALE: 1/8" = 1'-0"



1 A3.1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

MST ARCHITECTS
WIRELESS DIVISION
1520 River Park Drive, Sacramento, CA 95815
916-567-9630
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TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA. 94612

SHEET TITLE: PROJECT ELEVATIONS

Revisions:
1
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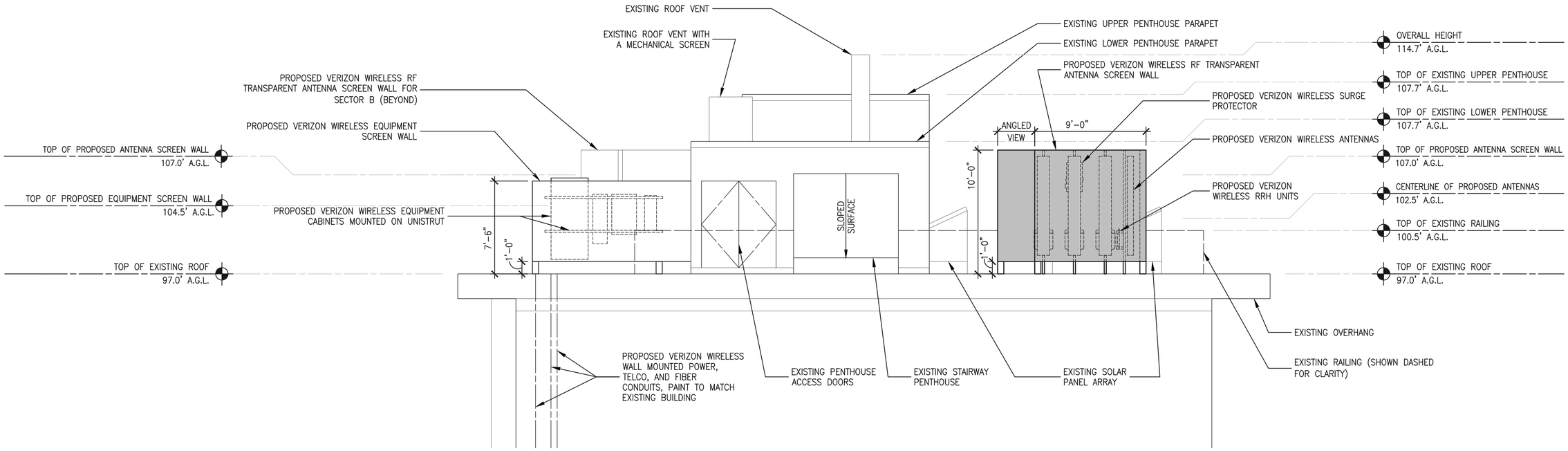
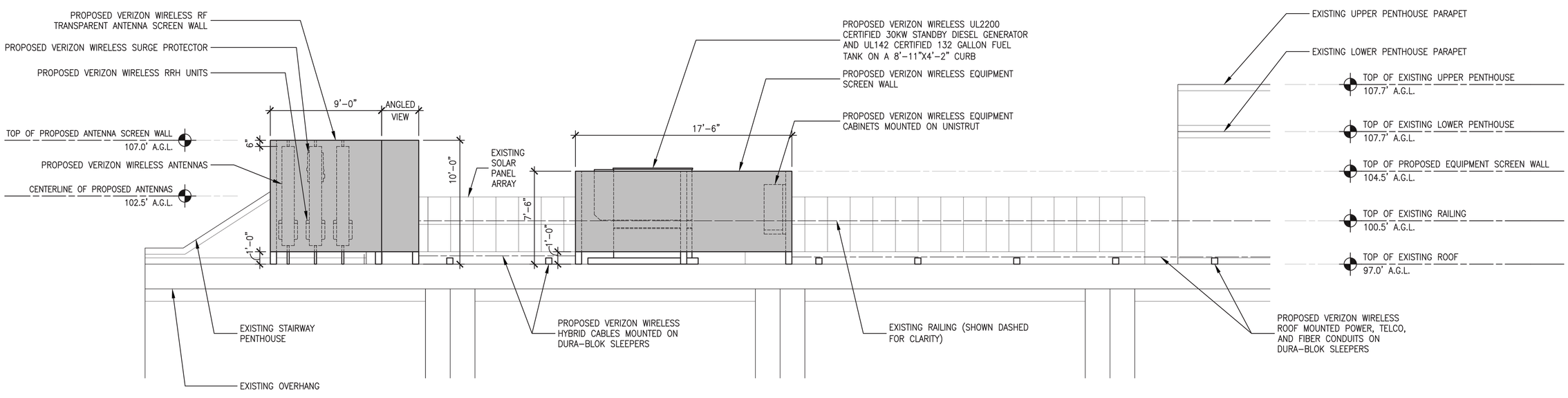
Checked By: SV
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

A3.1



2 A3.2 ENLARGED EAST ELEVATION
SCALE: 1/4" = 1'-0"



1 A3.2 ENLARGED SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

COMPLETE Wireless Consulting, Inc.

MST ARCHITECTS
WIRELESS DIVISION
1520 River Park Drive, Sacramento, CA 95815
916-567-9630
www.MSTArchitects.com

verizon

TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA. 94612

SHEET TITLE: PROJECT ELEVATIONS

Revisions:
△
△
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File:162.2097_A32.dwg
Drawn By: MWS
Checked By: SV
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

A3.2

1 CB.1 SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

COMPLETE Wireless Consulting, Inc.

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WIRELESS DIVISION
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verizon

TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA. 94612

SHEET TITLE:
COLOR BOARD

Revisions:
△
△
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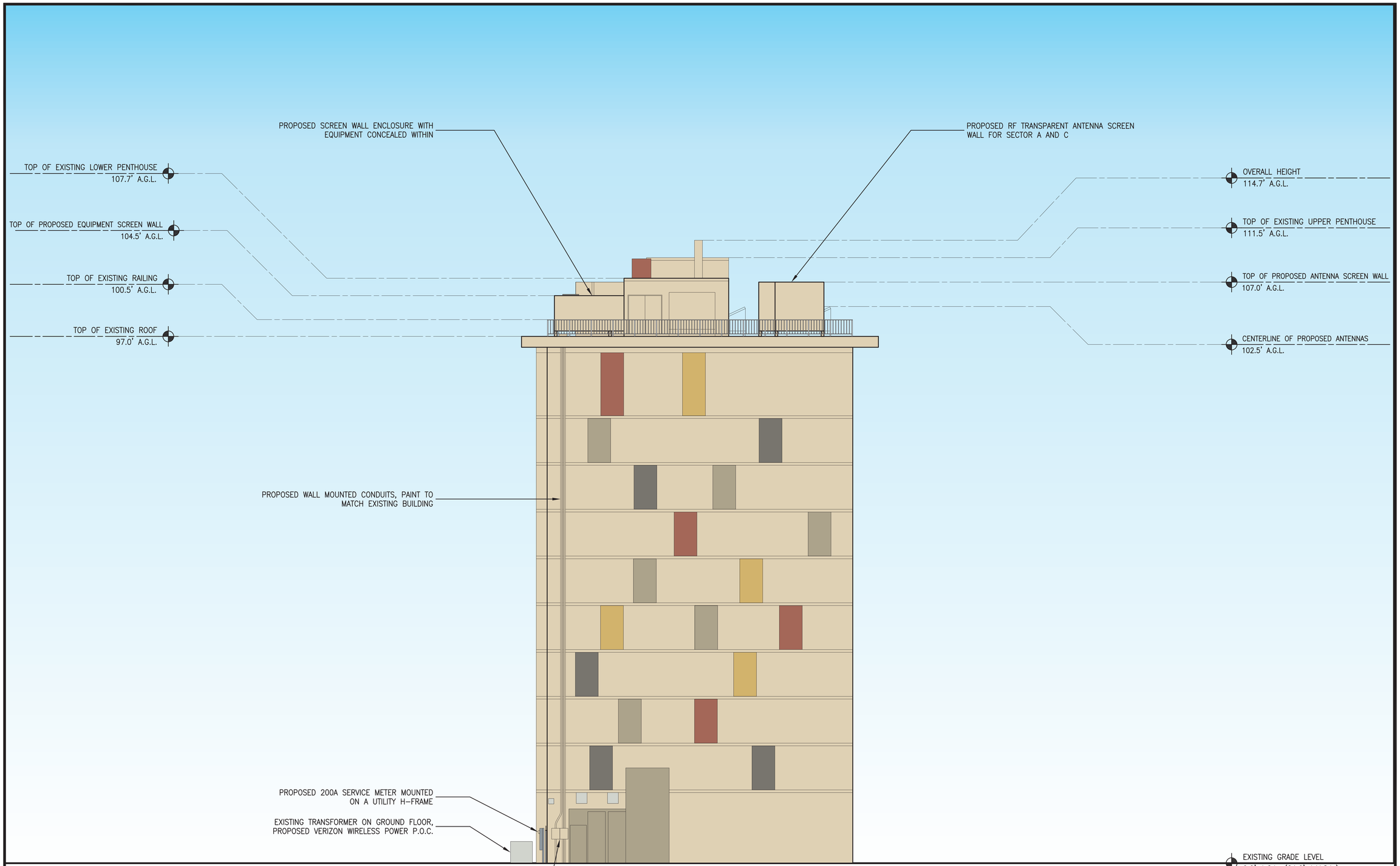
Checked By: MST
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

CB.1



1 CB.2 EAST ELEVATION
SCALE: 1/4" = 1'-0"

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TELEGRAPH AND GRAND
540 21ST STREET
OAKLAND, CA. 94612

SHEET TITLE: COLOR BOARD

Revisions:
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File:162.2097_CB2.dwg
Drawn By: MST
Checked By: MST
Scale: AS NOTED
Date: 05/14/2018

Job No. 162.2097

CB.2

ATTACHMENT B

PROJECT SUPPORT STATEMENT
VERIZON WIRELESS

Site Name: Telegraph & Grand
Site Address: 540 21st Street, Oakland, CA 94612
APN: 008-0647-009-02

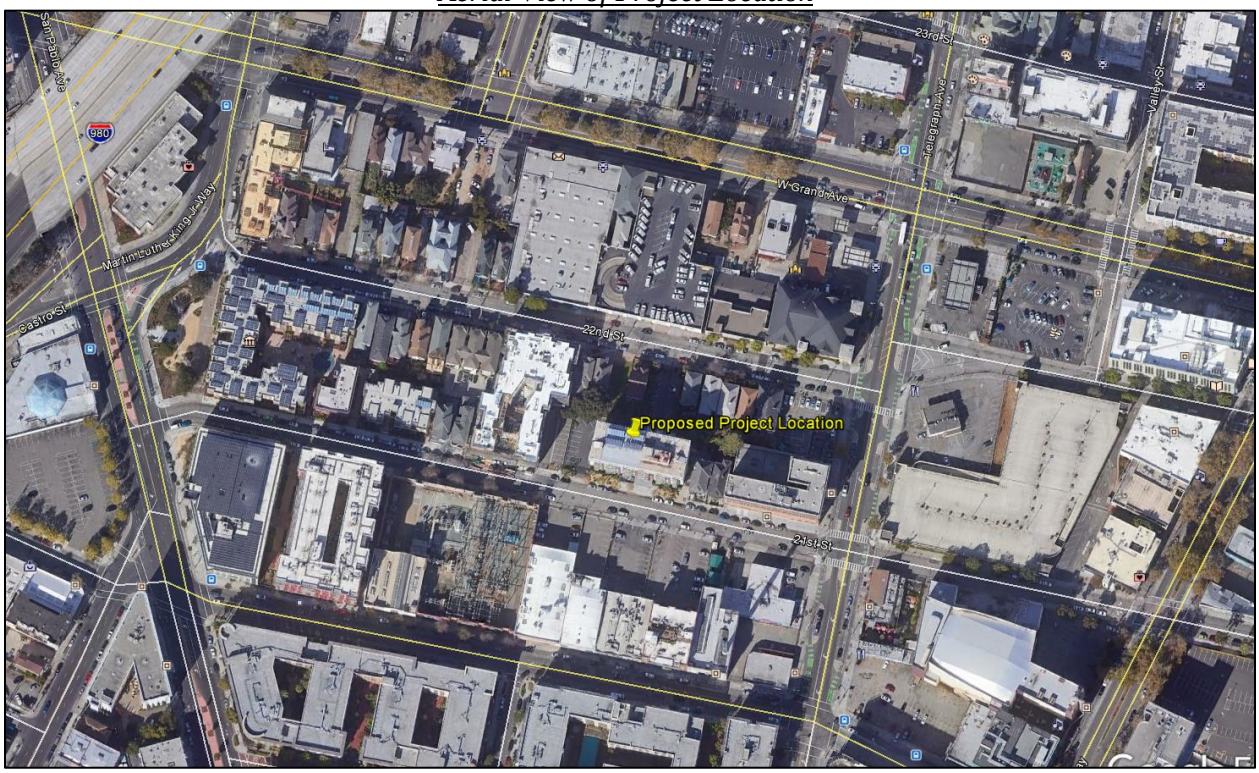
Introduction

Verizon Wireless constantly seeks to improve its wireless network through industry-leading techniques and innovative solutions in order to respond to high levels of wireless network traffic and increased user demand. This proposal for a new wireless telecommunications facility is an essential part of the effort to continuously improve the Verizon Wireless network for future and potential customers. The facility proposal is designed to comply with all applicable standards set forth in the City of Oakland Planning Code. The proposed facility is the least intrusive means for Verizon Wireless to close a significant gap in network coverage.

Proposed Location

The proposed project is to build and use a new, unmanned, wireless telecommunications facility at 540 21st Street, in Oakland, California. The subject property is zoned CBD-R (Commercial Business District – Residential). The building fronts 21st Street and has a parking lot that may be accessed from 22nd Street, between San Pablo Avenue and Telegraph Avenue, and is currently used as a senior housing. The building of the proposed facility is the tallest in the area with existing architectural detail, rooftop equipment, and color variation that will help screen the proposed Verizon antennas and equipment to the greatest extent feasible. Surrounding buildings are a mix of higher-density apartment buildings, businesses, and a few small homes.

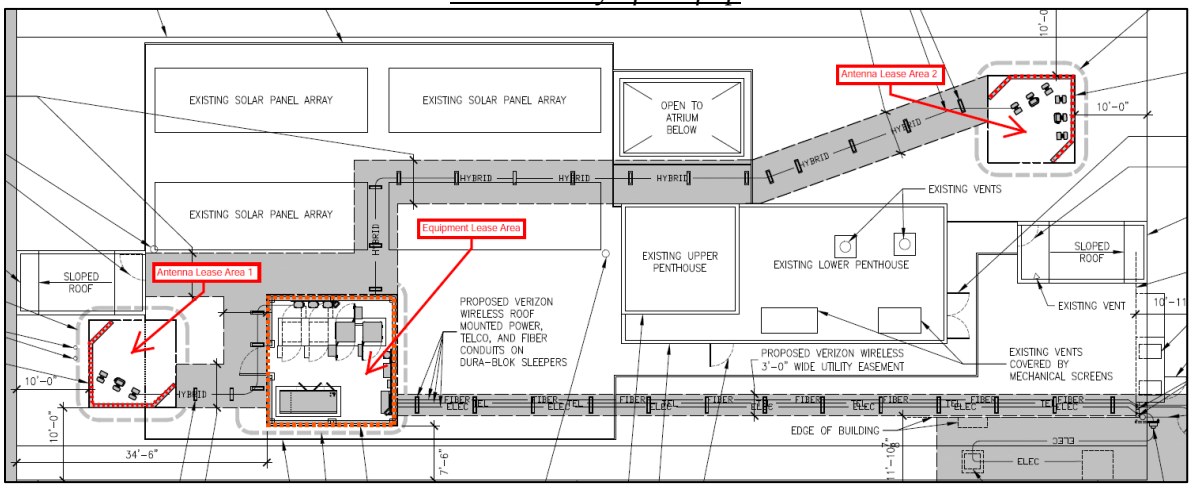
Aerial View of Project Location



Facility Description

The proposed facility consists of 3 lease areas: 2 areas for the antennas and 1 for the associated equipment.

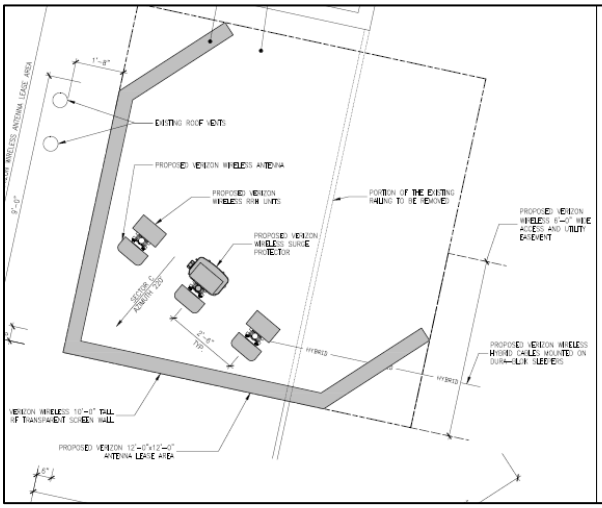
Aerial Survey of Rooftop



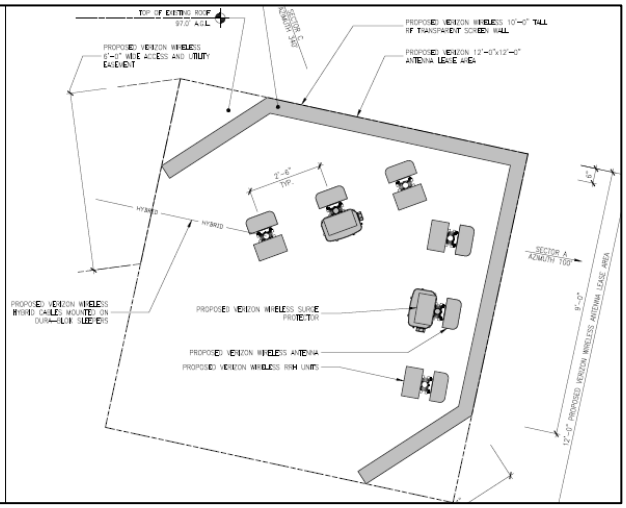
In accordance with the development standards for macro facilities, listed under section 17.128.070, the proposed facility is located on an existing tall building, the equipment cabinets are concealed from public view behind a screen wall, and the proposed height does not exceed 15'. Furthermore, all lease areas are setback from the edge of the roof at a 1:1 setback and will not be the tallest structure on the roof.

The 2 antenna lease areas are located on the northeast and southwest corners of the building and measure 10' x 10' and 10' in height. They are both setback from the roof's edge by at least 10' on all sides. The screen wall cupolas are open, facing the interior roof, for venting and access by the maintenance technician. Antenna Lease Area 1, depicted below, will house 1 sector of 3 total antennas while Antenna Lease Area 2 will house 2 sectors of 3 antennas for a total of 6 antennas.

Antenna Lease Area 1



Antenna Lease Area 2



The equipment cupola will be 18' x 18' completely enclosed with an access door, facing west. The screen walls will be 7.5' tall and is setback from the roof's edge by a minimum of 10' on all sides. The equipment area will contain outdoor equipment cabinets, backup batteries, and an emergency backup generator to ensure uninterrupted operation of the facility in the event of an emergency power outage.

All proposed screen walls will be painted to complement the building's existing design and the neighborhood character. All associated equipment will be located on the roof behind the same type of façade walls. Verizon is open to painting the rooftop facilities to balance the existing tri-color theme at the direction of Oakland Planning.

Existing Building Frontage View

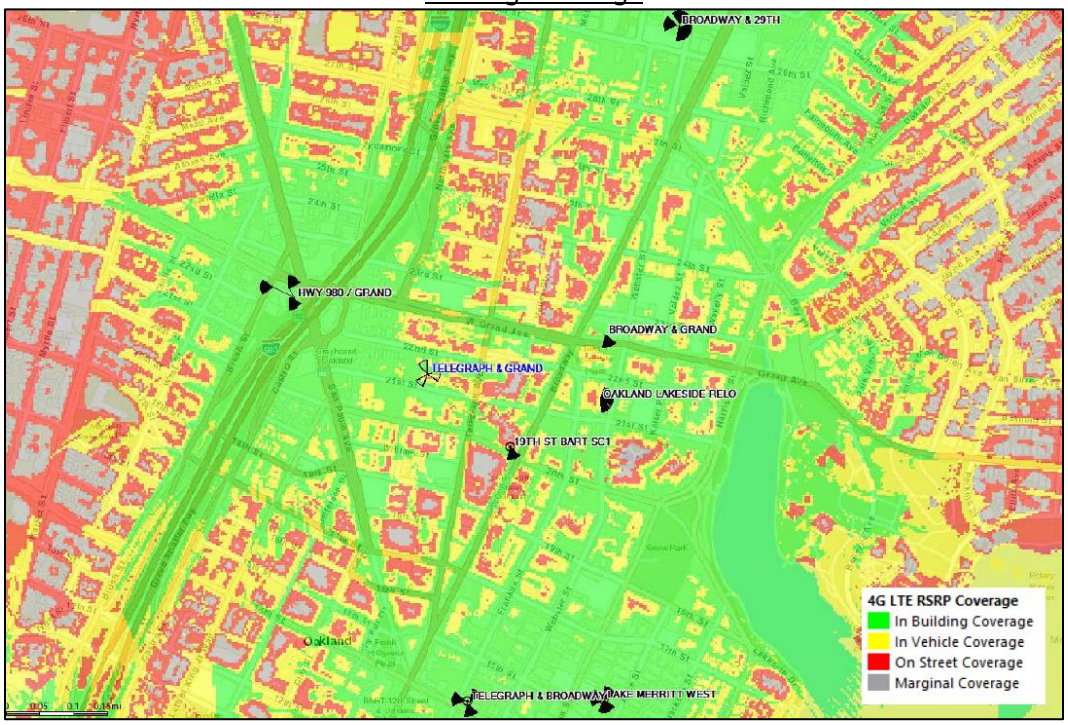
Photo Simulation from Telegraph at 20th Street

Please see the included Photo Simulations and Site Plans for more detailed information.

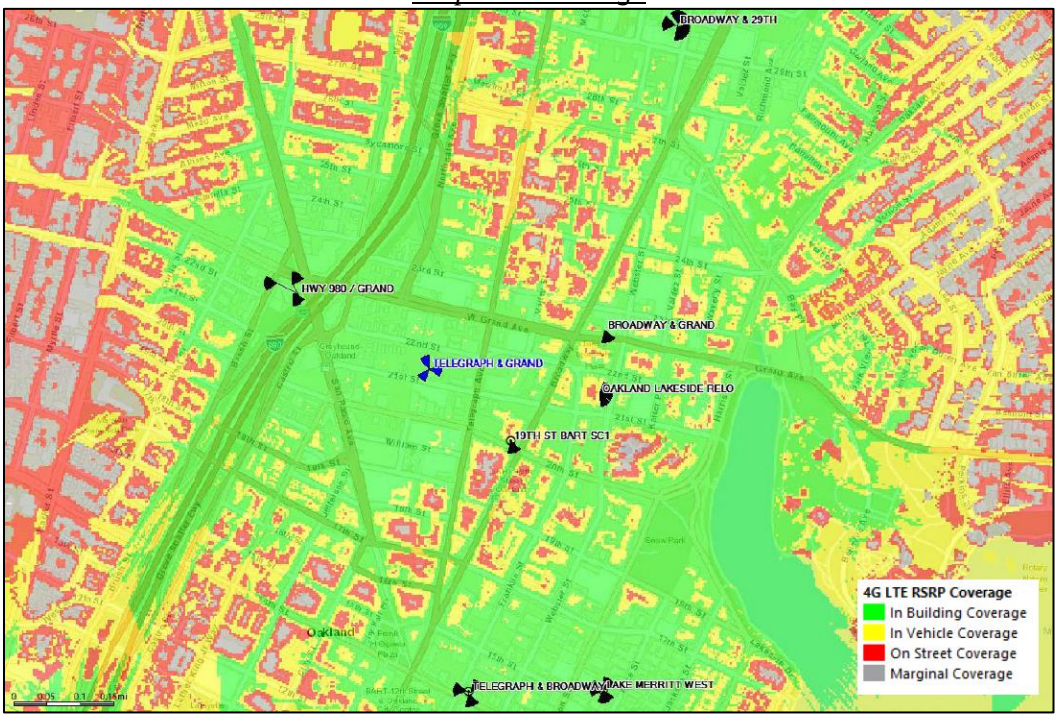
Need for the Facility

This facility will provide much needed coverage and capacity relief to the vicinity, providing enhanced network utility to residents and businesses in these neighborhoods. Please see the included coverage maps indicating Existing Coverage and Proposed Coverage.

Existing Coverage



Proposed Coverage



Compliance with City Development Requirements
Verizon Wireless strives to minimize visual and noise impacts for each facility and seeks to incorporate ways to preserve the local community character to the greatest extent feasible at all stages of site selection and design process. Part of this involves seeking properties in areas with substandard wireless coverage that provide the ability to meet community needs, zoning standards, and engineering requirements.

This application is for a major conditional use permit for a macro facility as defined in City of Oakland Wireless Ordinance 17.128.025(A). This project requires a major use permit because the parcel is zoned CBD-R (Commercial Business District – Residential) is located within 100 feet from the nearest residential property line. This facility is a macro facility because it does not meet the criteria to be classified as a mini or micro facility, and is not a tower or monopole. This facility will fill a significant gap in wireless coverage in this area.

A number of factors contributed to the final decision to locate a facility here, taking into account the needs of Verizon's network and the community values as expressed in the City's Code, specifically Chapter 17.128 (Telecommunications Regulations), Chapter 17.134 (Conditional Use Permit), and Chapter 17.136 (Design Review). The proposed facility on an existing rooftop has been designed to conform to the Section 17.128.070 which establishes guidelines for facilities located on existing buildings, poles or other existing support structures. i.e. "Macro Facilities."

A. *Site Location Preference*
Section 17.128.110 sets forth the City's preference for siting new wireless facilities in order of preference. This facility is located in the CBD-R zone, and as such an alternative sites analysis is submitted as part of this project application.

The 3 closest alternative sites were:

1. **Broadway Grand Retail Investors LLC (449 23rd Street, Oakland, CA 94612)**

This property is not available to lease because there is currently no rooftop space available.

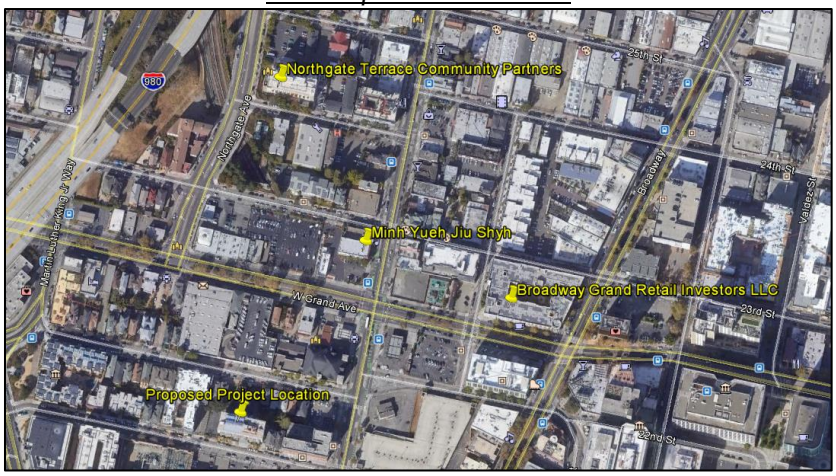
2. **Minh Yueh Jiu Shyh (2269 Telegraph Avenue, Oakland, CA 94612)**

The property owner previously expressed interest; however, after visiting the site, he was unresponsive and the candidate was eliminated from further consideration.

3. **Northgate Terrace Community Partners (550 24th Street, Oakland, CA 94612-1757)**

This candidate was investigated as it was a tall building to the north of the area needing coverage and capacity relief; however, it turns out that the building is too far north and the property owner was not interested in leasing property. Landlord expressed that they were not interested via telephone.

Aerial of Alternative Sites



B. Site Design Preferences

Section 17.128.120 establishes an order of preference for design which includes building or structure mounted completely concealed from view as the most preferred with towers as the least preferred. If the site design does not include a building or structure mounted antennas completely concealed from view or set back from the roof edge, then a site alternatives analysis is required.

The proposed facility has "building or structure mounted antennas completely concealed from view", Section 17.128.120(A). The antennas for the proposed facility will use architectural integration and stealthing techniques so as to be completely concealed from view. Because this project's site design is ranked most preferable, an Alternate Site Design is not required.

Please see Photo Simulations for additional information.

ADDITIONAL INFORMATION FROM APPLICANT

Benefits of Improved Wireless Service

Modern life has become increasingly dependent upon wireless communications. Wireless access is critical to many facets of everyday life, such as safety, recreation, and commerce. This site will allow current and future Verizon Wireless customers to have access to wireless services in the areas shown on the propagation models included in this application. This site will provide improved wireless communication, which is essential to first responders, community safety, local businesses and area residents.

Operations & Maintenance

Visitation to the site by a service technician for routine maintenance typically occurs up to once per week. The proposed site is unmanned and entirely self-monitored. It is electronically connected directly to a central office where diagnostic computers alert personnel to any equipment malfunction. Because the wireless facility is unmanned and results in no cumulative impact to existing local traffic patterns. No water or sanitation services are required. All maintenance testing will be conducted during the times and days specified by the Oakland Municipal Code.

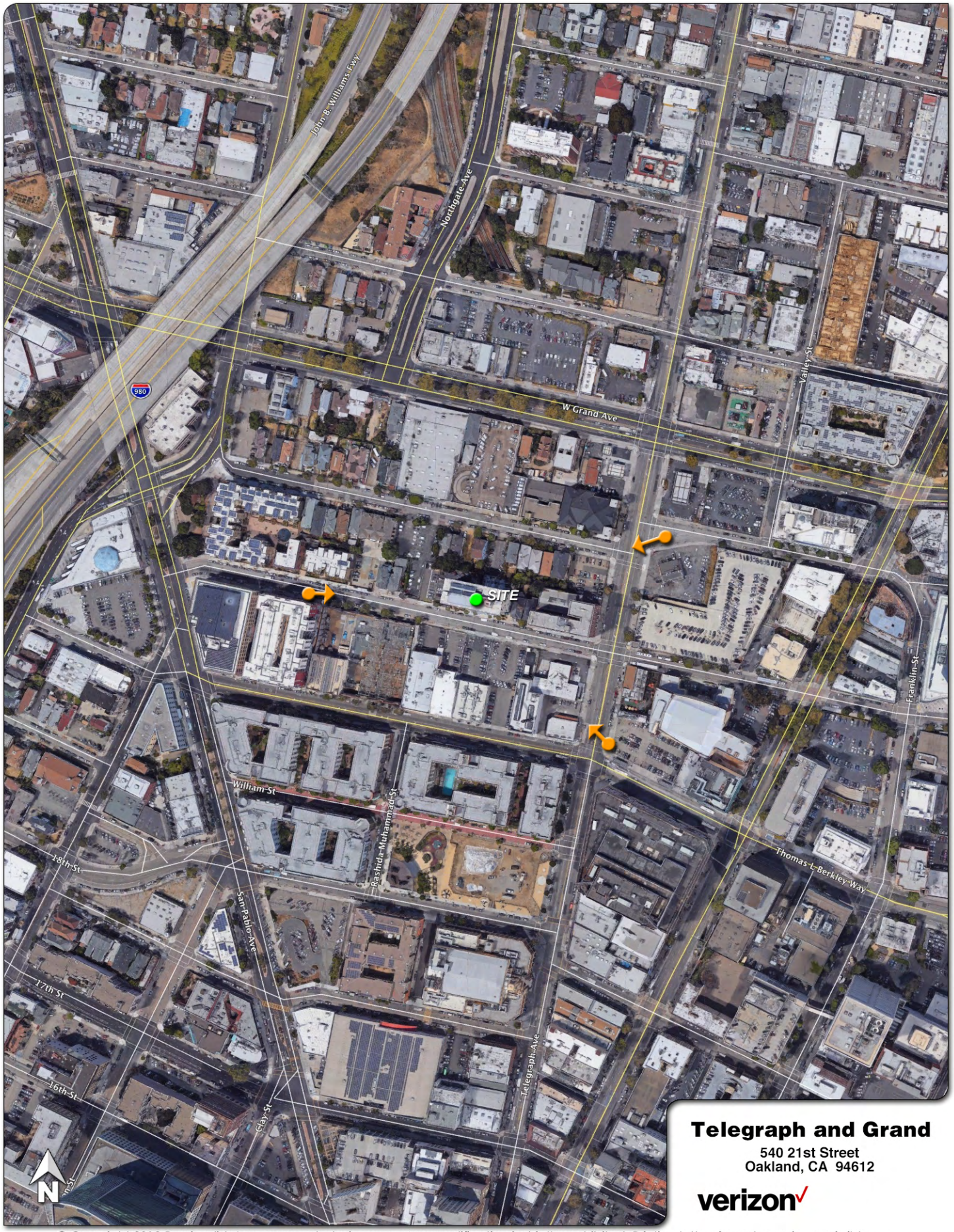
Compliance with FCC Standards

Verizon Wireless complies with all FCC rules governing construction requirements, technical standards, interference protection, power and height limitations and radio frequency standards. In addition, Verizon complies with all FAA rules on site location and operation.

Notice of Actions Affecting this Development Permit

In accordance with California Government Code Section 65945(a), Verizon Wireless requests notice of any proposal to adopt or amend the: general plan, specific plan, zoning ordinance, ordinance(s) affecting building or grading permits that would in any manner affect this development permit. Any such notice may be sent to: Complete Wireless Consulting, 2009 V Street, Sacramento, CA 95818.

Aerial photograph showing the viewpoints for the photosimulations.



Telegraph and Grand
540 21st Street
Oakland, CA 94612

verizon

Telegraph and Grand
540 21st Street
Oakland, CA 94612

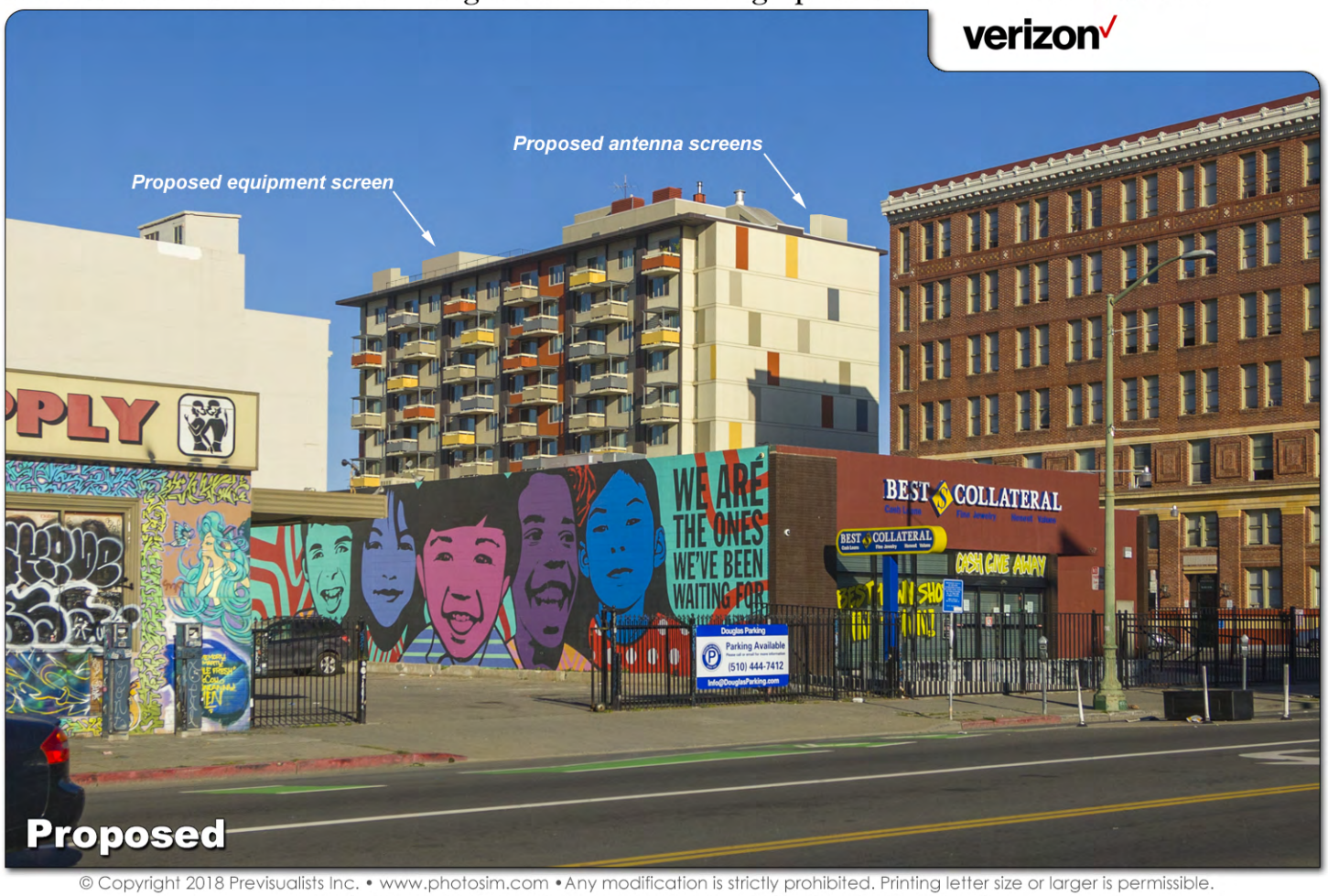
verizon

Photosimulation of the view looking west from 22nd across Telegraph.

Telegraph and Grand
540 21st Street
Oakland, CA 94612

verizon

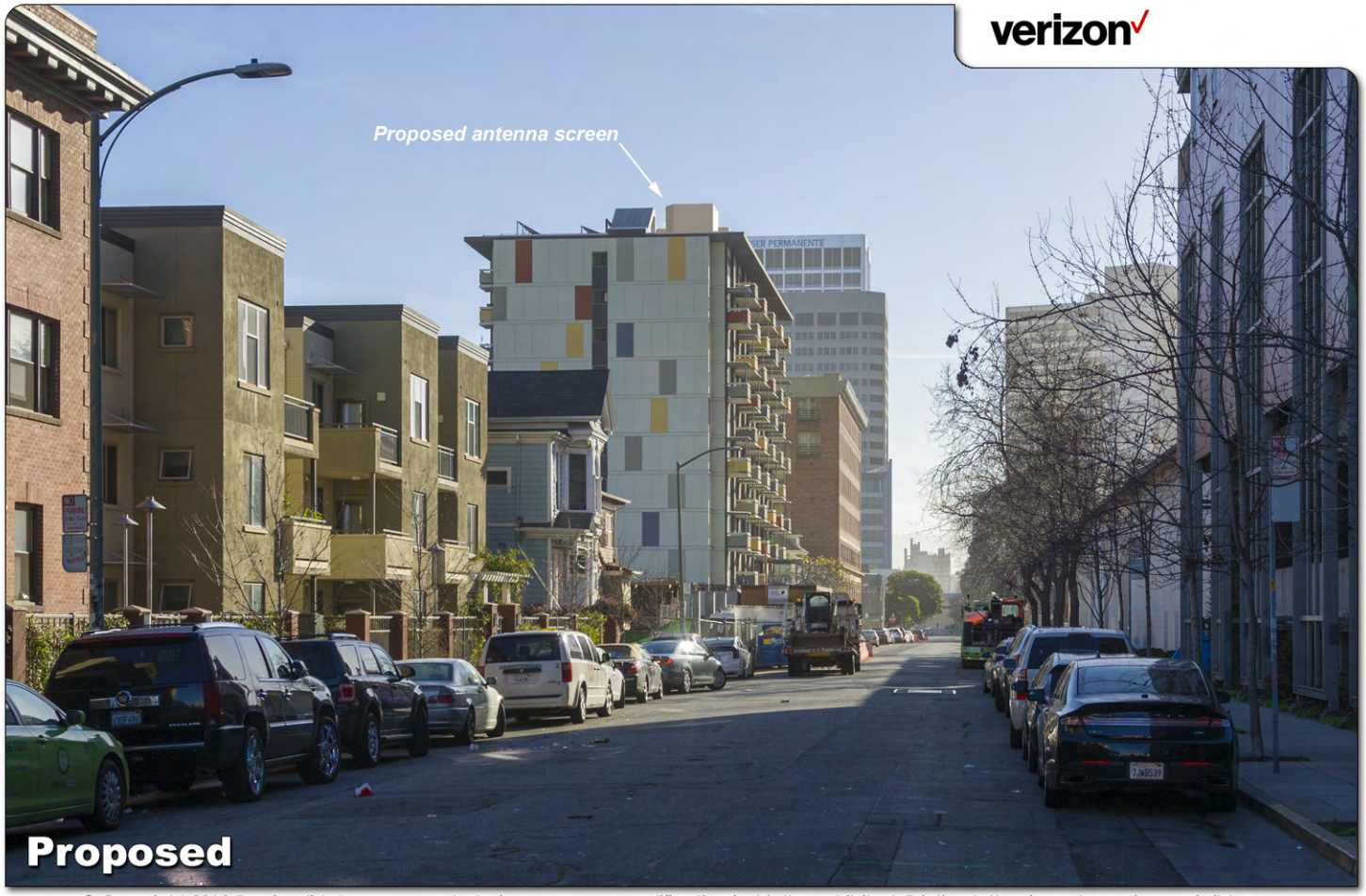
Photosimulation of the view looking northwest from Telegraph at 20th.



Telegraph and Grand
540 21st Street
Oakland, CA 94612

verizon

Photosimulation of the view looking east along 21st Street.



Verizon Wireless • Proposed Base Station (Site No. 312554 "Telegraph and Grand")
540 21st 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. 312554 "Telegraph and Grand") proposed to be located at 540 21st 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 tall residential building located at 540 21st Street in Oakland. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy; certain mitigation measures are recommended to comply with FCC occupational guidelines.

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 Band	Transmit Frequency	"Uncontrolled" Public Limit	Occupational Limit (5 times Public)
Microwave (point-to-point)	1–80 GHz	1.0 mW/cm^2	5.0 mW/cm^2
Millimeter-wave	24–47	1.0	5.0
Part 15 (WiFi & other unlicensed)	2–6	1.0	5.0
CBRS (Citizens Broadband Radio)	3,550 MHz	1.0	5.0
BRS (Broadband Radio)	2,490	1.0	5.0
WCS (Wireless Communication)	2,305	1.0	5.0
AWS (Advanced Wireless)	2,110	1.0	5.0
PCS (Personal Communication)	1,930	1.0	5.0
Cellular	869	0.58	2.9
SMR (Specialized Mobile Radio)	854	0.57	2.85
700 MHz	716	0.48	2.4
600 MHz	617	0.41	2.05
[most restrictive frequency range]	30–300	0.20	1.0

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. 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. 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 July 10, 2020, it is proposed to install nine CommScope Model NHH-45C directional panel antennas behind view screens to be installed above the roof of the ten-story residential building located at 540 21st Street in Oakland. The antennas would employ up to 12° downtilt, would be mounted at an effective height of about 102½ feet above ground, 5½ feet above the roof, and would be oriented in groups of three toward 90°T, 220°T, and 340°T. The maximum effective radiated power in any direction would be 52,090 watts, representing simultaneous operation at 19,060 watts for AWS, 10,000 watts for PCS, 12,030 watts for cellular, and 11,000 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.048 mW/cm^2, which is 8.8% of the applicable public exposure limit.

The maximum calculated level at the top-floor elevation of any nearby building* is 45% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation. Levels are calculated to exceed the applicable public exposure limit on the roof of the subject building, in front of the antennas.

Recommended Mitigation Measures

It is recommended that the roof access doors 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, to include review of personal monitor use and lockout/tagout procedures, be provided to all authorized personnel who have access to the roof, including employees and contractors of Verizon and of the property owner. No access within 54 feet directly in front of the Verizon antennas themselves, such as might occur during certain maintenance activities, should be allowed while the pertinent antennas are in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that boundary lines be marked on the roof with blue and yellow paint to identify areas within which exposure levels are calculated to exceed the public and occupational FCC limits, respectively, as shown in Figure 3. It is recommended that explanatory signs† be posted at the roof access doors, at the boundary lines, and on the screens in front of the antennas, readily visible from any angle of approach to persons who might need to work within that distance.

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 540 21st 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. Locking the roof access doors is recommended to establish compliance with public exposure limits; training authorized personnel, marking roof areas, and posting explanatory signs are recommended to establish compliance with occupational exposure limits.

---

* Including the tall residential building at least 60 feet away, based on photographs from Google Maps.

† 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.

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, 2021. 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, P.E.
707/996-5200

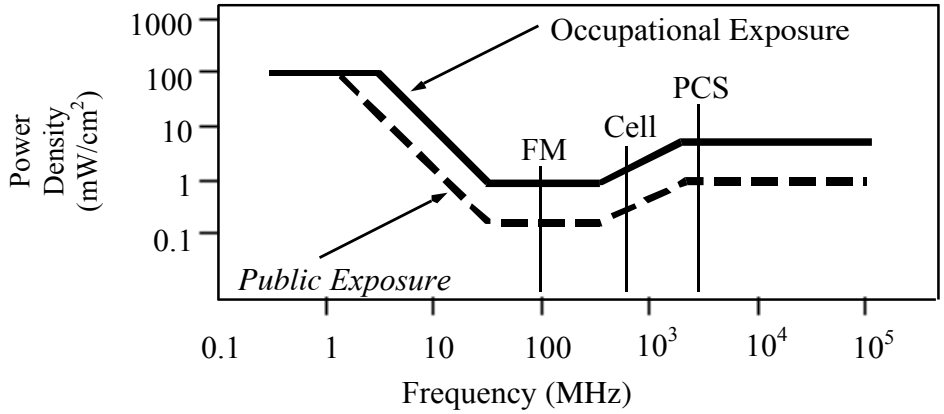
July 24, 2020

FCC Radio Frequency Protection Guide

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

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

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



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has incorporated those formulas in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

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

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

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

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

where θ_{BW} = half-power beamwidth of antenna, in degrees,
P_{net} = net power input to antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of 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:

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^2,

where ERP = total ERP (all polarizations), in kilowatts,
RFF = three-dimensional relative field factor toward point of calculation, and
D = distance from antenna effective height to point of calculation, in meters.

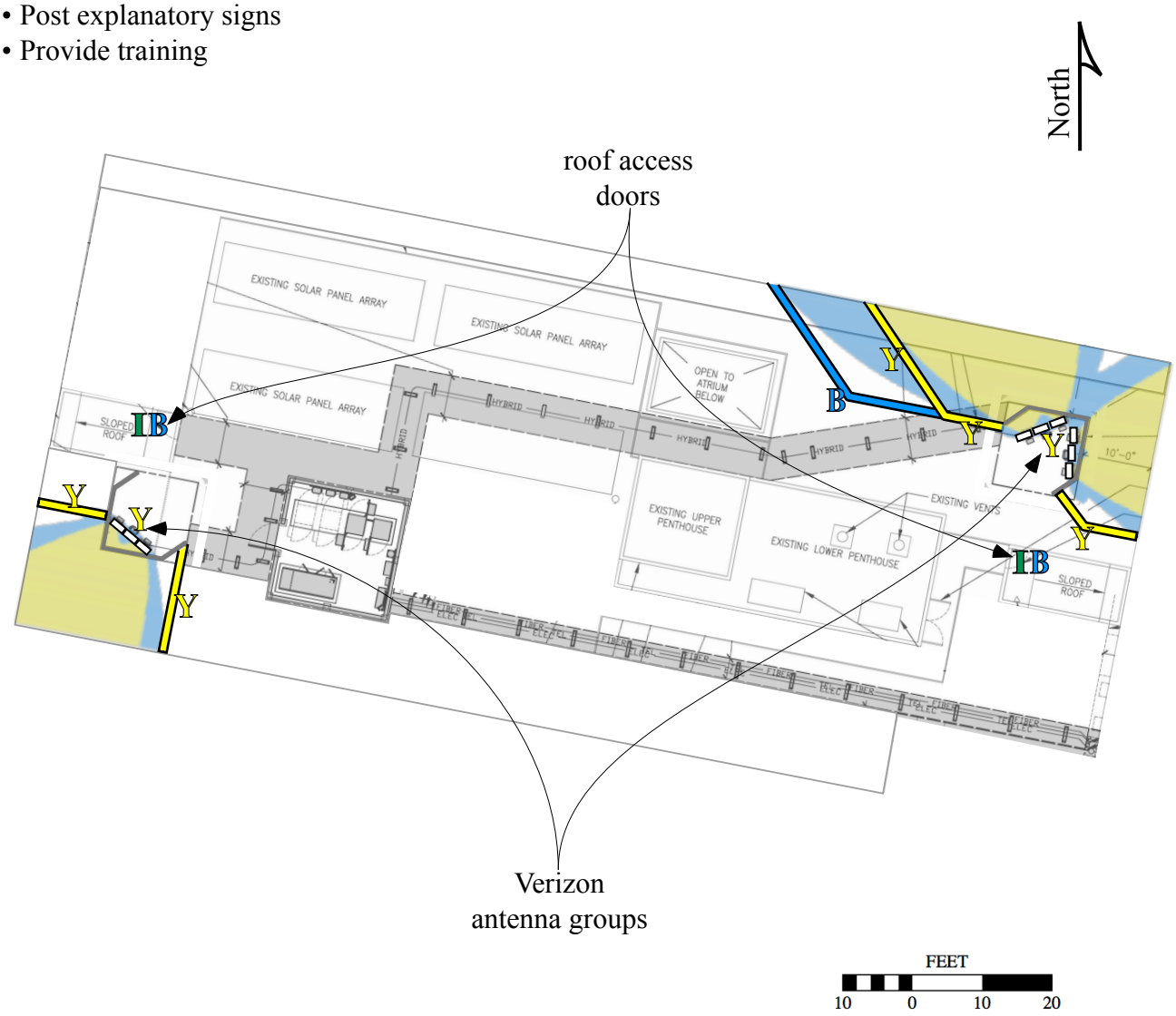
The factor of 2.56 accounts for the increase in power density due to ground reflection, assuming a reflection coefficient of 1.6 (1.6 x 1.6 = 2.56). The factor of 1.64 is the gain of a half-wave dipole relative to an isotropic radiator. The factor of 100 in the numerator converts to the desired units of power density. This formula is used in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program also allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, to obtain more accurate projections.

Verizon Wireless • Proposed Base Station (Site No. 312554 "Telegraph and Grand")
540 21st Street • Oakland, California

Calculated RF Exposure Levels on Roof

Recommended Mitigation Measures

- Lock roof access doors
- Mark boundaries as shown
- Post explanatory signs
- Provide training



Notes: See text.
Base drawing from MST Architects, Inc., dated July 10, 2020.
Calculations performed according to OET Bulletin 65, August 1997.

Legend:	Less Than Public	Exceeds Public	Exceeds Occupational	Exceeds 10x Occupational
Shaded color	blank			
Boundary marking	N/A			
Sign type	I - Green INFORMATION	B - Blue NOTICE	Y - Yellow CAUTION	O - Orange WARNING