



June 14, 2018

Wendy Atkins City of Sonoma, Planning Dept. No. 1 the Plaza Sonoma, CA

RE: Verizon Wireless Small Cell "Sonoma 007" on a new replacement Utility Pole near 453 2nd St W.

Dear Wendy:

On behalf of Verizon Wireless, this letter provides information and an enhanced description to support the application's request to receive Design Review Approval to install a wireless telecommunications small cell node in the public right-of-way near the referenced location.

The following is a detailed **Project Description** of the facility design, the project's purpose, and justifications to find support of the application.

Project Purpose:

The purpose of this project is to provide improved wireless voice and data coverage to the surrounding area. These wireless services include mobile telephone, wireless broadband, emergency 911, data transfers, electronic mail, Internet, web browsing, wireless applications, wireless mapping, and video streaming. Further radio frequency details are set forth in the attached Radio Frequency Statement, including propagation maps depicting existing and proposed coverage in the vicinity.

Small Cell network consists of a radio access node connected to small telecommunications antenna(s), typically mounted on existing wooden utility poles within the public rights-of-way, to distribute wireless telecommunications signals. Small cells provide telecommunications transmission infrastructure for use by wireless services providers.

Our proposal application will greatly benefit the area by improving wireless telecommunications service as further detailed below.

Location:

Verizon Wireless is proposing to install a small cell network in Sonoma on 2nd St. West near Church St. A small cell network is a set of radio access nodes that deliver wireless signals throughout a given area. Small antennas and remote radio units are located at each node site, and the nodes are linked by fiber optic cable to a central equipment hub. The proposed small cell network consists of several nodes spaced evenly about the service area described above.

All the proposed nodes would be located on existing wooden utility poles in City of Sonoma. Verizon Wireless is the applicant and owner of the proposed small cell network and has rights, as CPUC member, to locate on existing utility poles.

The proposed location for this site currently consists of an approximately 35-foot-tall wooden utility pole located in the public right-of-way in front of the property near 453 2nd St West in Sonoma. Verizon would be adding equipment on the pole.

Scope of Work:

- Install (1) canister antenna on a new 50' replacement utility pole.
- Install (3) new RRH-units on the pole, painted to match pole
- Install (2) new utility disconnect switches on pole
- Install (1) electrical meter on the pole
- Install appropriate signage, ground rods and buss bar
- Install (1) new conduit for power, telco, and coax

<u>Antenna:</u>

The antennas are cylindrical in shape and of the canister type, measuring 48 inches high and 14.6 inches in diameter. The antenna would be situated on top of the new pole, extending the overall structure height to 47.3 feet. The antennas would be painted dark brown to match the pole. The drawings and photographic simulations included with this application depict the design and its appearance on the pole.

Radio Units:

The radio units will be situated on the pole no higher than 18 feet at their tip, and painted dark brown to match the pole. The radio units are approximately 19.7 inches tall, 17.0 inches wide, and 7.2 inches deep and 27.2 inches tall, 12.1 inches wide and 7.0 inches deep. These units serve to run the equipment that interfaces with the Verizon Wireless communications network.

Justification:

As the community's demands for data area are increasing exponentially, we are required to go more closely into the areas where people use their phones, such as neighborhoods, urban areas, and commercial complexes. Centrally located sites provide the best capacity for the most people in a given community. Alternate candidates were assessed to find the best possible option that met the coverage objective and aesthetics. See Alternative Siting Analysis for these alternate considerations. In turn, Verizon Wireless will be siting additional facilities because it is determined, based on demand, usage, and service reports, that there is a need for increased capacity to meet the growing demand.

This site will increase the bandwidth needed to access data-rich applications like video and internet streaming, uploading and downloading photos and video, applications in the area to serve existing customers, and future wireless needs. Please note that as a part of the application, Verizon Wireless has provided Coverage Maps to support this need even though California Public Utilities Code section 7901 grants wireless providers the right to place wireless facilities along public rights-of-way without a lease or license.

Site Selection:

We evaluated many sites before choosing this one. This site was carefully selected based on this network's maturity, unique coverage, and capacity needs. Verizon's placement of cellular facilities also depends on often limited availability of property where the facilities can be built and operated.

Moving the site even a few hundred feet could affect coverage, creating the need for one or more additional sites. An alternative Site Analysis was included in the application to show the alternatives considered and to help demonstrate support for the selected proposed node location.

Construction:

Once all required permits are received, the licensed General Contractor will pick up the permit(s) and ensure that the City's Municipal Code requirements for construction in the Public Right of Way are met. Construction will take about a week with minimal disruption to the area.

Maintenance and Monitoring:

After the site construction is complete and the installation is operational, the installation will be an unmanned facility that requires occasional maintenance, about once a month or less, unless the equipment needs repair. All repair and installation work will comply with Department of Public Works City Requirements for conducting work in the public right of way. Also, all non-emergency work may be done during non-peak traffic hours to alleviate traffic congestion.

Safety Standards:

Please note that the Federal Communications Commission (FCC) sets safety guidelines for wireless facilities and due to the small size of this type of installation and it being low wattage, the emissions from small cells are a small fraction of FCC permitted levels in any publicly-accessible area. See FCC website for additional information at: <u>http://www.fcc.gov/oet/rfsafety/rf-faqs.html.</u> Included with our submittal is documentation from a 3rd party engineer stating how the proposed facility will comply with the FCC safety standards.

In conclusion, based on review of the above information and supporting documents included with our application, it is our hope we have provided substantial information to respectfully request Sonoma Planning support of the Project thereby recommend application approval. Sonoma Planning approval will enhance Verizon Wireless service in the area that will better serve Sonoma residences, visitors, and the emergency service providers who rely on the Verizon Wireless network.

If you have questions please feel free to contact me at 415-806-2323 or Christy@TheCBRGroup.com.

Sincerely, The CBR Group, Inc.

Christy Beltran Roberts (Authorized Agent for Verizon Wireless)

COMMUNITY BENEFITS

How Mobile Devices are Used Today

(Mobile Device: Cellular Phones, Tablets, etc..)

- 90% of American households use wireless service with approximately 52% being *wireless only* for telephone service. The average number of connected devices per home is 13.*
 - Homes are becoming increasingly reliant on their wireless networks for internet usage, voice, data, text, and media streaming,
- Cellular service and home technology capabilities is of major importance to homebuyers. Ranking higher than schools, 76% versus 60%.*
- Global mobile data traffic will increase sevenfold between 2016 and 2021, growing at a compound annual growth rate (CAGR) of 47% from 2016 to 2021. Reaching 49.0 Exabyte's per month by 2021.*

Small Cells help networks deliver best in class speeds, coverage, capacity and reliability.

*Source: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016–2021 White Paper (2-17-17)

PUBLIC SAFETY AND THE COMMUNITY

82% of 911 Calls Originate from a Cell Phone

- Enhanced network improvements to enable streaming and quick internet access to receive reliable information quickly regarding:
 - Fires, floods, earthquakes, mudslides, etc....
 - Be quickly and reliably informed about neighborhoods where loved ones and family are located.
- Enhanced capacity for Reverse 911 allows emergency officials to notify residents and businesses of an emergency and actions they may need to take.
- Many First Responders rely on wireless services to conduct emergency and non-emergency communications.

Small Cell facilities support network advances and make communities safer.

SMART CITIES AND THE COMMUNITY

- Enhanced network serves as foundation **support** for smart cities infrastructure to:
 - ✓ Improve internal efficiency and reduce costs of public administration
 - ✓ Extend City services to citizens and improve public safety
 - ✓ IoT Devices (Internet of Things: smart meters, vital infrastructure, connected devices)
 - \checkmark Support for autonomous cars
 - ✓ Ensure digital inclusion and spur economic development
- Small cell networks add capacity in a small specific areas to improve in-building coverage, voice quality, reliability, and data speeds for local residents, businesses, first responders, and visitors using the Verizon Wireless network.

Small Cell facilities proposed today are the roadmap for 5G and Smart City deployments

SMART CITIES AND THE COMMUNITY

Cisco Report on Wirless Data Usage

https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visualnetworking-index-vni/mobile-white-paper-c11-520862.html

PROPOSED SITE LOCATION





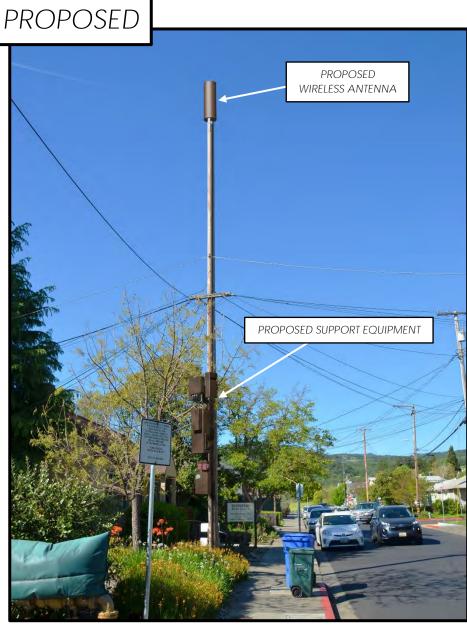
SONOMA 007 453 2nd St. W, Sonoma, CA 95476 Location Code: 425162

SHOT MAP VERIZON NODE: "Sonoma 007" Verizon Location Code: 425162



The CBR Group 841 Arnold Dr., Suite A Martinez, CA 94553 info@thecbrgroup.com





VIEW 1: LOOKING NORTH ALONG 2nd St. W PHOTOSIMS PRODUCED 3/9/2018



The CBR Group 841 Arnold Dr., Suite A Martinez, CA 94553 info@thecbrgroup.com



VIEW 2: LOOKING WEST ACROSS 2nd St. W PHOTOSIMS PRODUCED 3/9/2018



The CBR Group . 841 Arnold Dr., Suite A Martinez, CA 94553 info@thecbrgroup.com

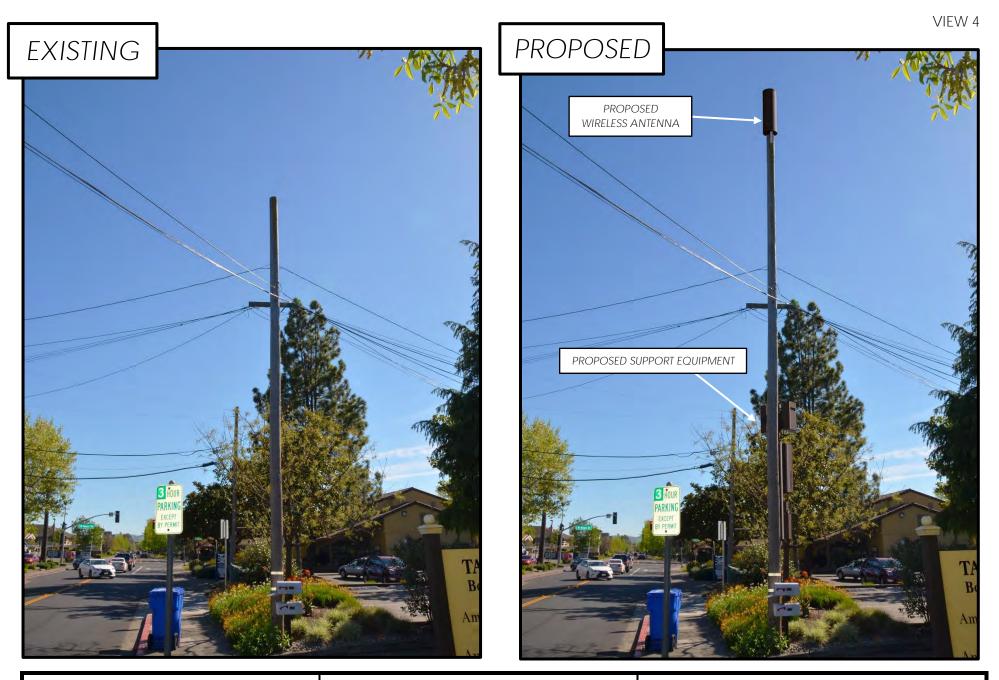




VIEW 3: LOOKING SOUTHWEST ACROSS 2nd St. W PHOTOSIMS PRODUCED 3/9/2018

GROUP

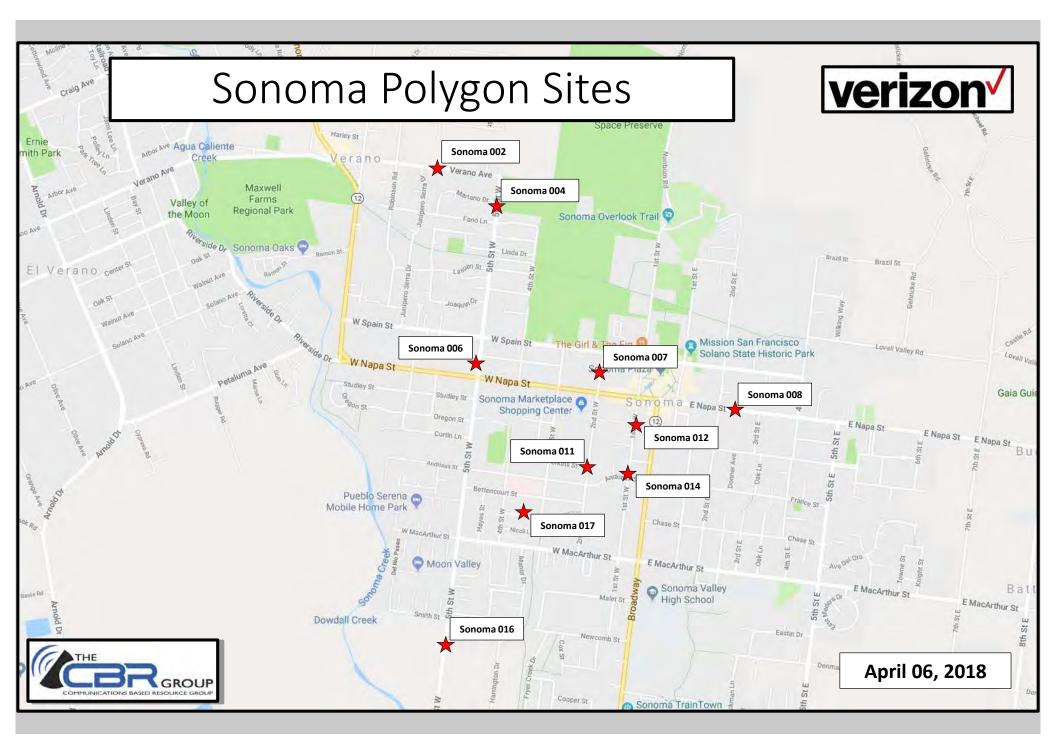
The CBR Group 841 Arnold Dr., Suite A Martinez, CA 94553 info@thecbrgroup.com



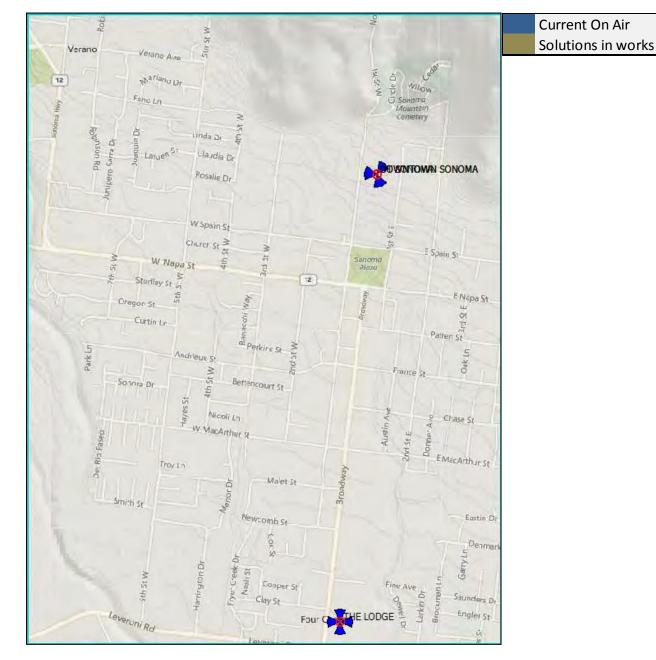
VIEW 4: LOOKING SOUTH ALONG 2nd St. W PHOTOSIMS PRODUCED 3/9/2018



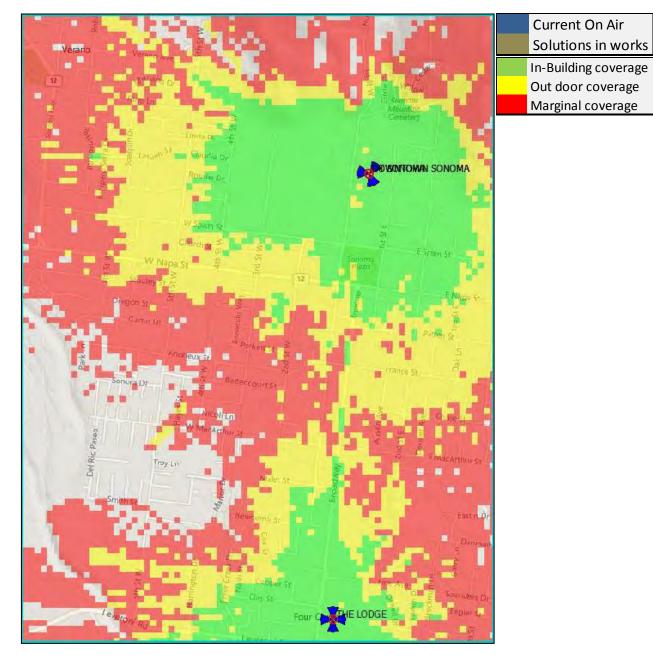
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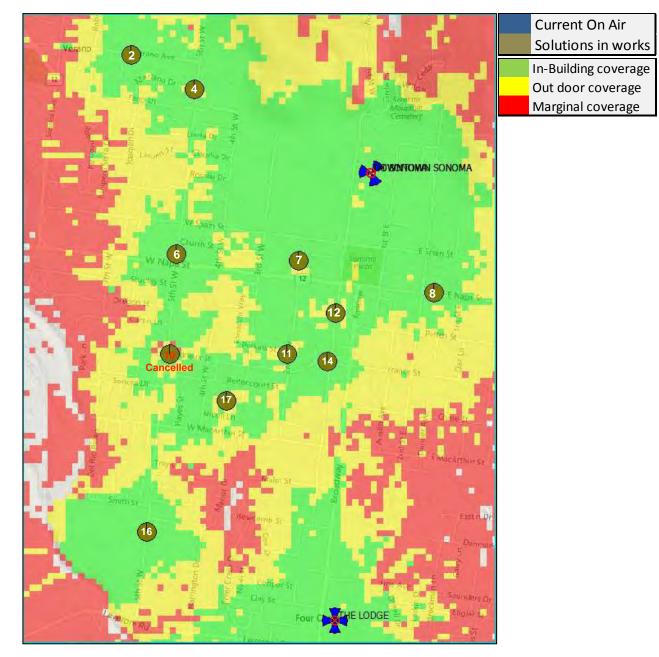
Coverage Area



Without Small cell_ AWS Coverage

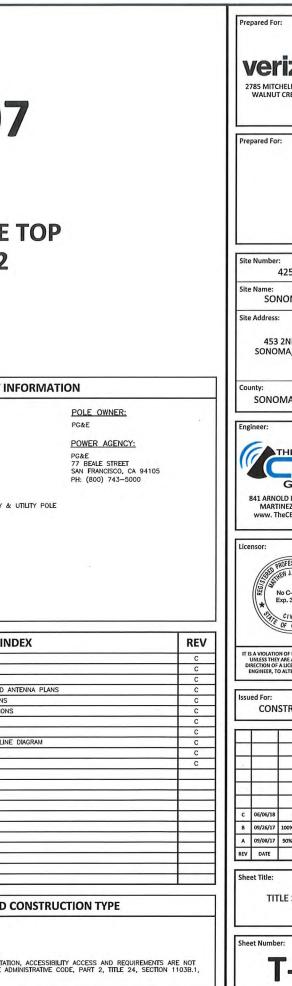


With Small cell_AWS_Coverage



ver	ZON	SONOMA, CA 95476 STRUCTURE TYPE: PG&E PO LOCATION CODE: 42510			
PROJECT DESCRIPTION	VICINITY MAP	PROJECT TEAM	PRC		
THIS IS AN UNMANNED WIRELESS TELECOMMUNICATION FACILITY FOR VERIZON WIRELESS SYSTEMS CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTENNA AND ASSOCIATED EQUIPMENT. SCOPE OF WORK CONSISTS OF THE FOLLOWING: 1. INSTALL (1) (N) CANISTER ANTENNA ON (N) 50' REPLACEMENT POLE (43'-0" ABOVE GROUND LEVEL 7'-0" UNDERGROUND EMBEDMENT.) 2. INSTALL (3) (N) RRH UNITS ON (N) REPLACEMENT POLE. 3. INSTALL (N) FOCS SIGNAGE ON (N) REPLACEMENT POLE. 4. INSTALL (N) BUSS BAR ON (N) REPLACEMENT POLE. 5. INSTALL (N) BUSS BAR ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) BLECTRICAL METER ON (N) REPLACEMENT POLE. 7. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 7. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 7. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE. 5. INSTALL (2) (N) UTILITY DISCONSECT SWITCH ON ANNER WITHOUT EXCESS CABLE LOOPS. 5. SPACING OF SUPPORT EDUIPMENT (EC. METER, LOAD CENTER AND RRUS) TO BE CLUSTERED (VERTICALLY) AS CLOSE AS IS TECHNICALLY FEASIBLE ON POLE. 5. ISNAGE-FCC MANDATED RF WARNING SIGNAGE SHALL FACE TOWARD BUILDING IF THERE IS NO WINDOW. • UTILITY LINES-PROPOSED UTILITY LINES BETWEEN EXISTING POINT OF CONNECTION TO BE OVERHEAD.	Church St Church S Church St Church S Taxpertise	APPLICANT/LESSEE: VERIZON WRELESS 2785 MITCHELL ORIVE, BLDG 9 WALNUT CREEK, CA 94598 CONTACT: JENNIFER HAAS PH: (925) 448–7063 EMAIL: jennifer-Indas@VerizonWireless.com SITE ACQUISITION MANAGER: THE CBR GROUP 841 ARNOLD DRIVE, SUITE A MARTINEZ, CA 94553 CONTACT: CHRISTY BELITRAN PH: (415) 806–2323 EMAIL: christy@thecbrgroup.com CONSTRUCTION: VERIZON WIRELESS 2000 GROW CANYON PLACE, SUITE 210 SAN RAMON, CA 94583 CONTACT: JOSHUA HAN PH: (415) 867–4987 EMAIL: joshua.han@verizonwireless.com ENGINEER: THE CBR GROUP 841 ARNOLD DRIVE, SUITE A MARTINEZ, CA 94553 CONTACT: MARTINEZ HAND PH: (925) 798–2100 EMAIL: matt@thecbrgroup.com	SITE INFORMATION: SITE NUMBER: 425162 SITE NAME: SONOMA 007 SITE ADDRESS: 453 2ND ST. W, SONOMA, CA 95476 A.P.N. NUMBER: R.O.W. CURRENT USE: UTILITY POLE PROPOSED USE: TELECOMMUNICATIONS JURISDICTION: CITY OF SONOMA LATITUDE: 38.2930204 LONGITUDE: -122.4611895 GROUND ELEVATION: 83.5' AGL ZONING: R.O.W. SH		
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 AUTHORTIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. 1) 2016 CALIFORNIA BUILDING CODE (CBC) WITH CALIFORNIA AMENDMENTS, BASED ON THE 2009 IBC 2) 2016 CALIFORNIA RESIDENTIAL CODE (CRC) WITH APPENDIX H, PATIO COVERS, BASED ON THE 2009 IBC 3) 2016 CALIFORNIA HISTORICAL BUILDING CODE (CHBC)	SITE Susan's Gu	RF ENGINEER: VERIZON WIRELESS 2000 CROW CANYON PLACE, SUITE 210 SAN RAMON, CA 94583 CONTACT: BENJAMIN SANTA MARIA EMAIL: Benjamin.SantaMaria@verizonwireless.com	LS-1 SITE SURVEY (UTILITY POLE EXHI A-1 OVERALL SITE PLAN A-2 EXISTING AND PROPOSED EQUIPM A-3 EXISTING AND PROPOSED EAST E A-4 EXISTING AND PROPOSED NORTH A-5 EQUIPMENT AND CONSTRUCTION I A-6 EQUIPMENT AND CONSTRUCTION I E-1 ELECTRICAL GROUND DIAGRAMS, S E-2 ELECTRICAL DETAILS TCP TRAFFIC CONTROL PLAN		
4) 2016 CALIFORNIA EXISTING BUILDING CODE (CEBC), BASED ON THE 2009 IEBC 5) 2016 CALIFORNIA GREEN BUILDINGS STANDARDS CODE (CGBSC)					
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11) ANSI / EIA-TIA-222-G 12) 2015 NFPA 101, LIFE SAFETY CODE 13) 2015 NFPA 72, NATIONAL FIRE ALARM CODE 14) 2015 NFPA 13, FIRE SPRINKLER CODE 15) G.O. 95	DO NOT SCALE DRAWINGS THESE DRAWINGS ARE FORMATTED TO BE FULL SIZE AT 24" x 36". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOBSTEE AND SHALL IMMEDIATELY NOTIFY THE ARCHTECT/EXIGNEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME.		OCCUPANCY : S-2 (UNMANNED) CONSTRUCTION TYPE: IIB HANDICAP REQUIREMENTS FACILITY IS UNMANNED AND NOT FOR HUM REQUIRED, IN ACCORDANCE WITH CALIFORN EXCEPTION 1 & SECTION 1134B.2.1, EXCEPT		

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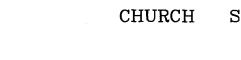
verizon 2785 MITCHELL DRIVE, SUITE 9 WALNUT CREEK, CA 94598 425162 Site Name: SONOMA 007 453 2ND ST. W, SONOMA, CA 95476 SONOMA COUNTY THE CBR GROUP 841 ARNOLD DRIVE, SUITE A MARTINEZ, CA 94553 www. TheCBRGroup.com HOLESSION No C-86844 Exp. 3/31/19 1+ OF CALIFORNIT IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT. CONSTRUCTION C 05/06/18 REMOVE BBU GC
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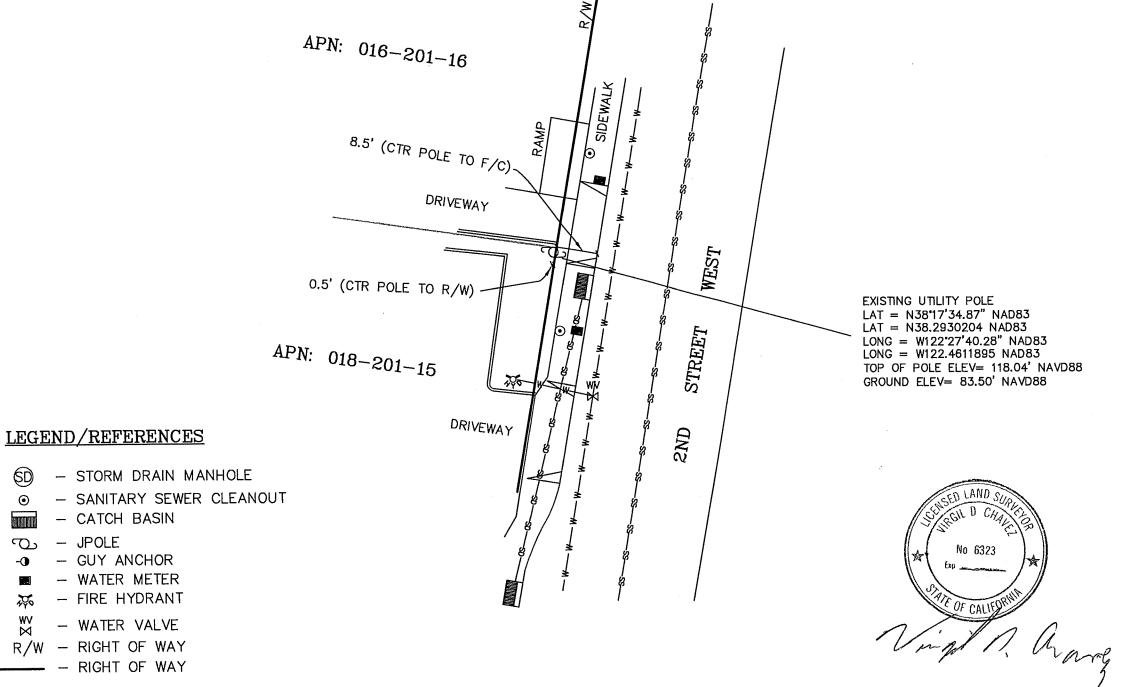
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JUN 1 4 2018





DATE:	AUGUST, 2017		
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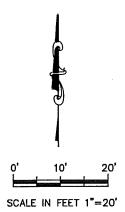
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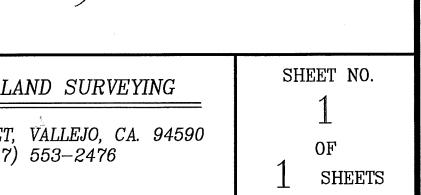
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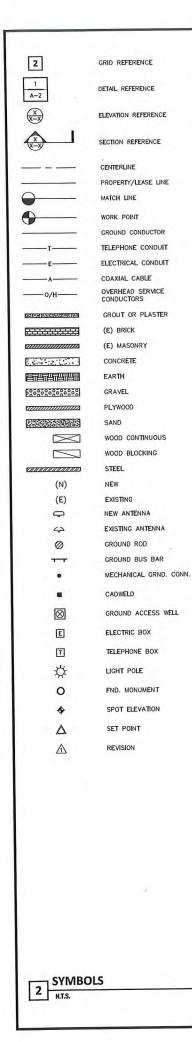
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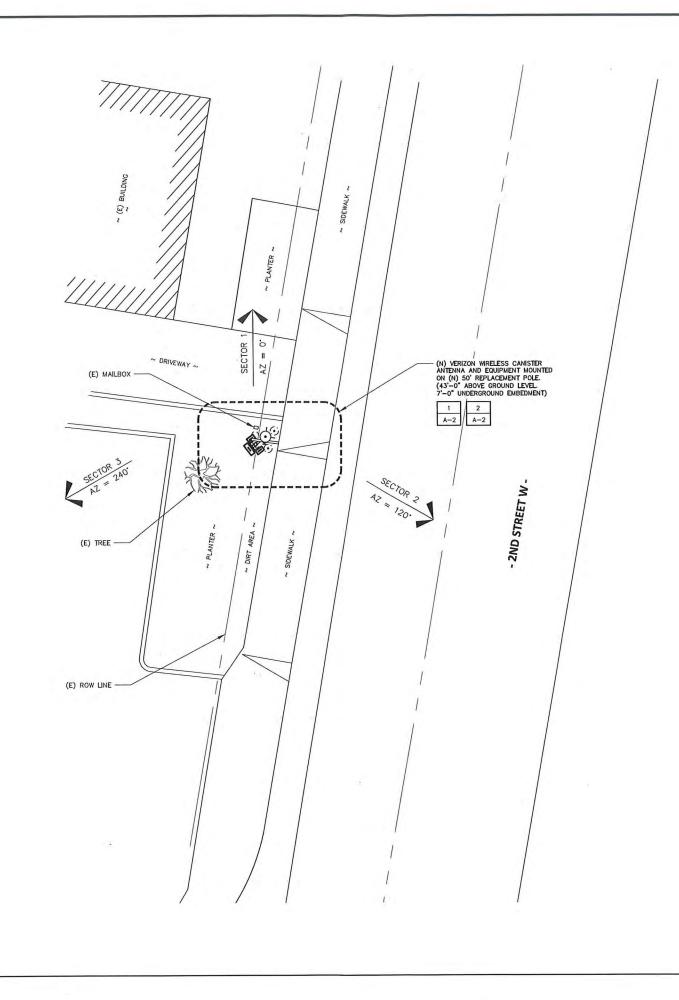
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STREET

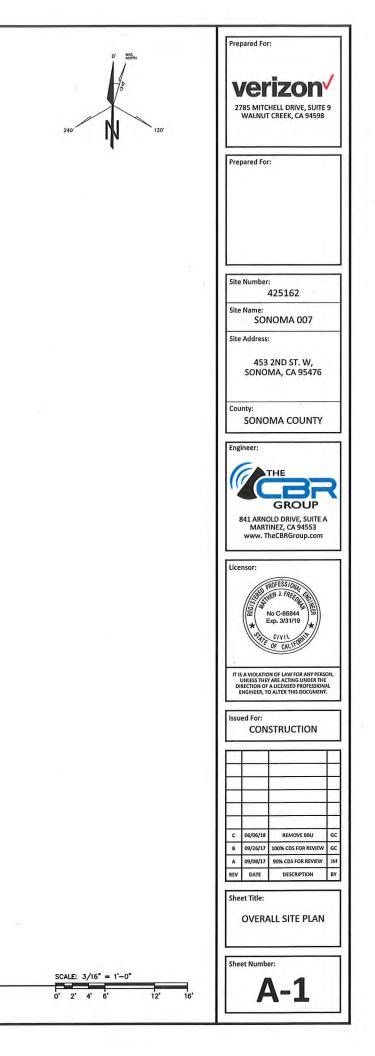


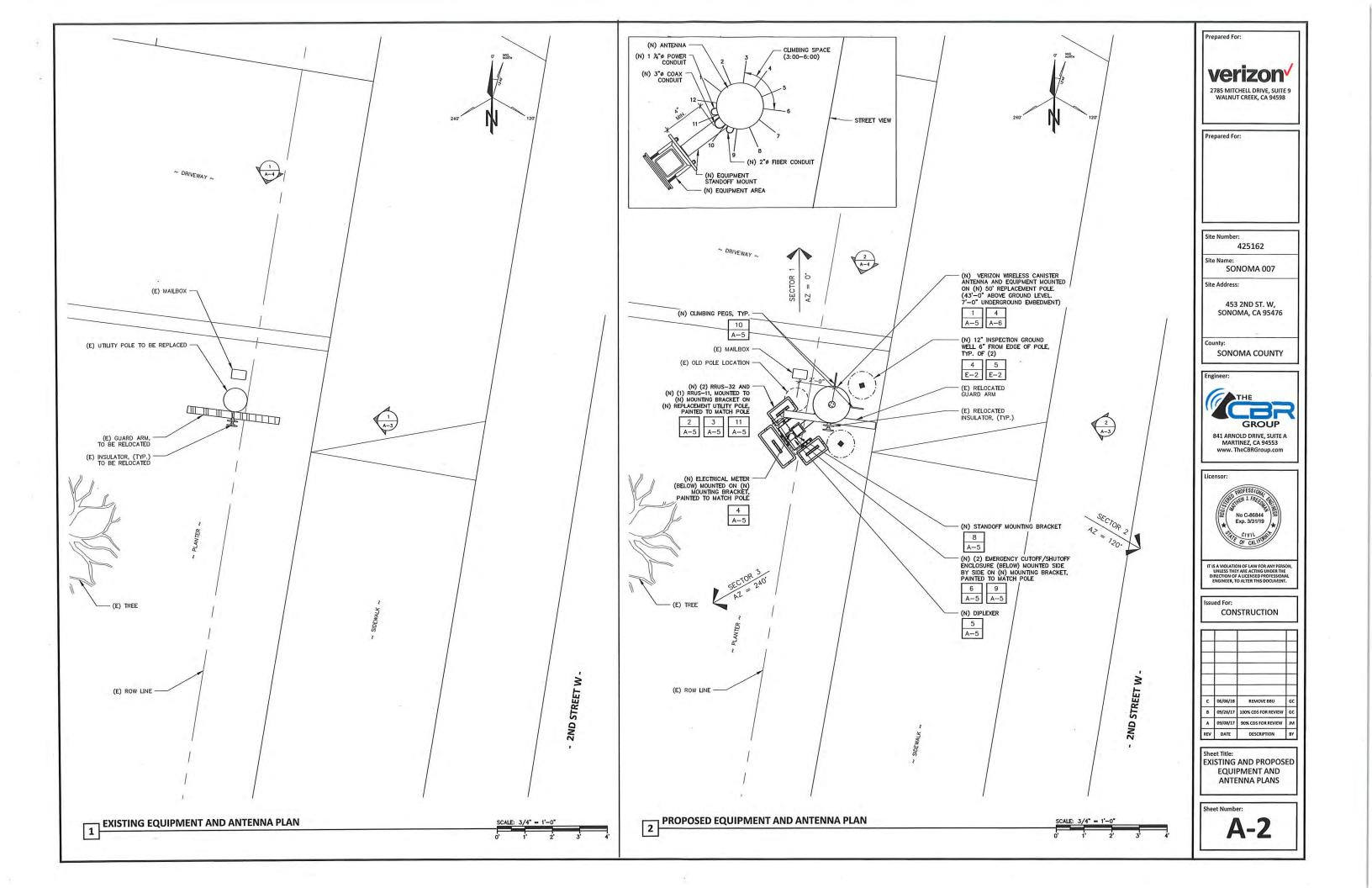


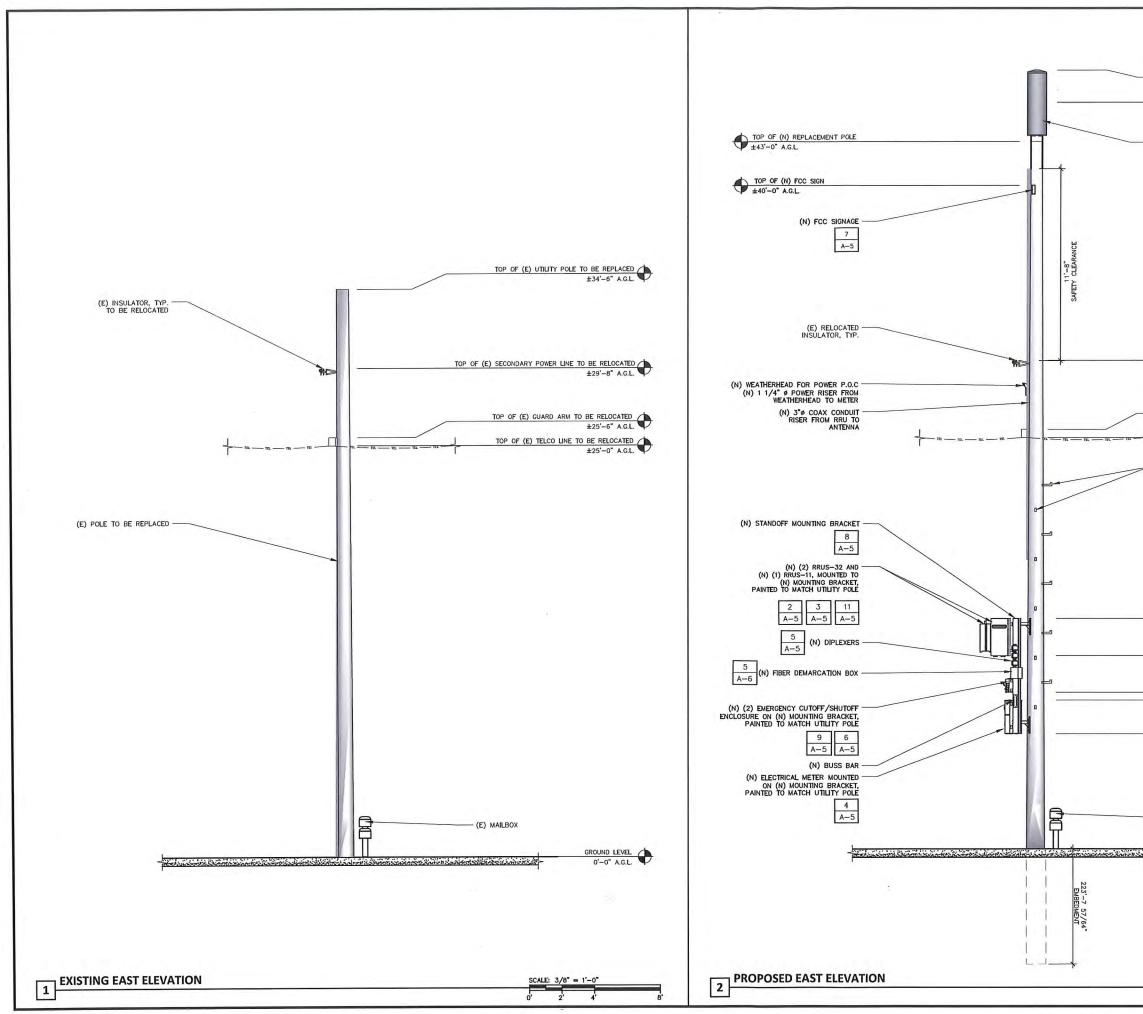




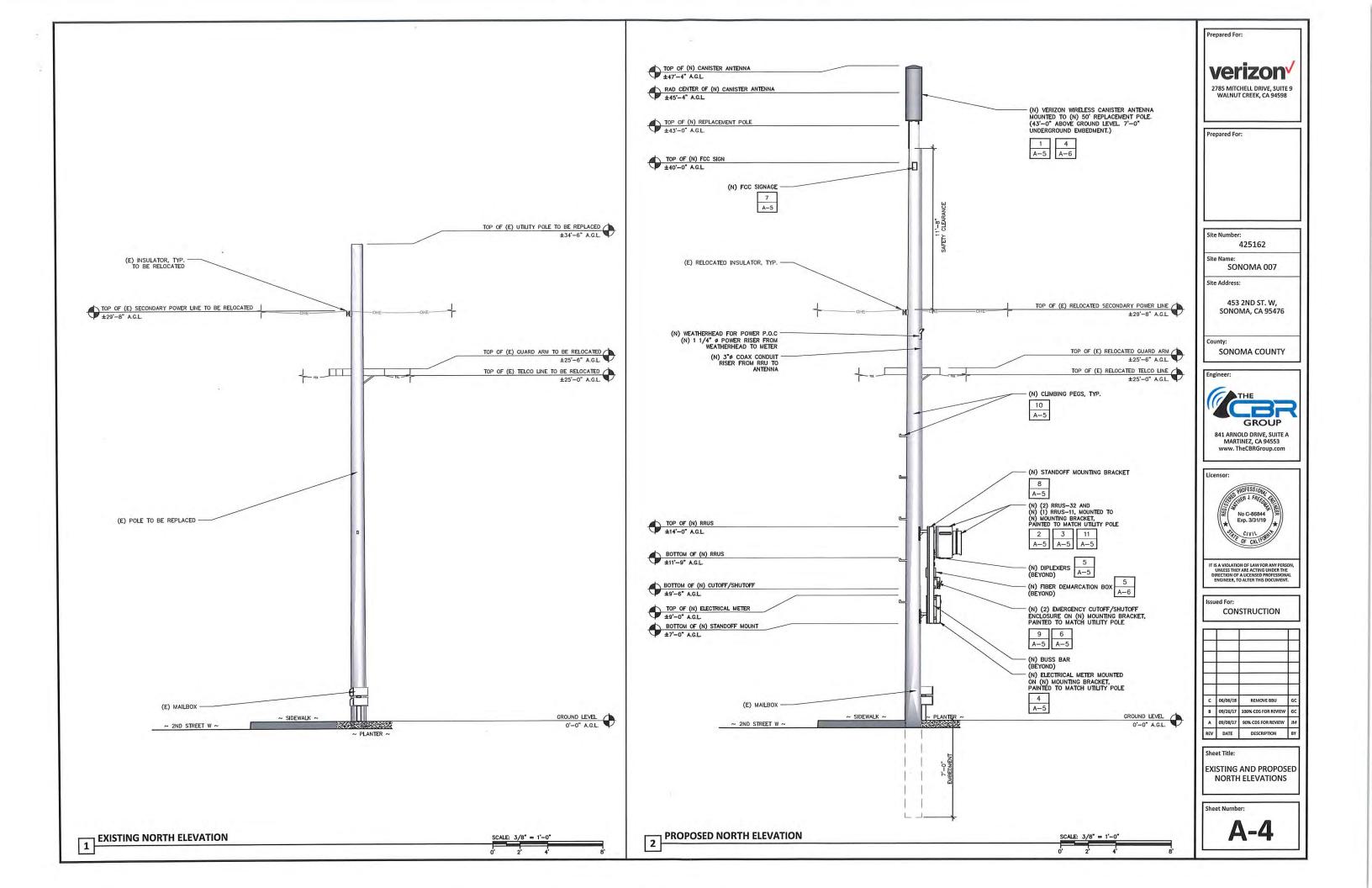
OVERALL SITE PLAN

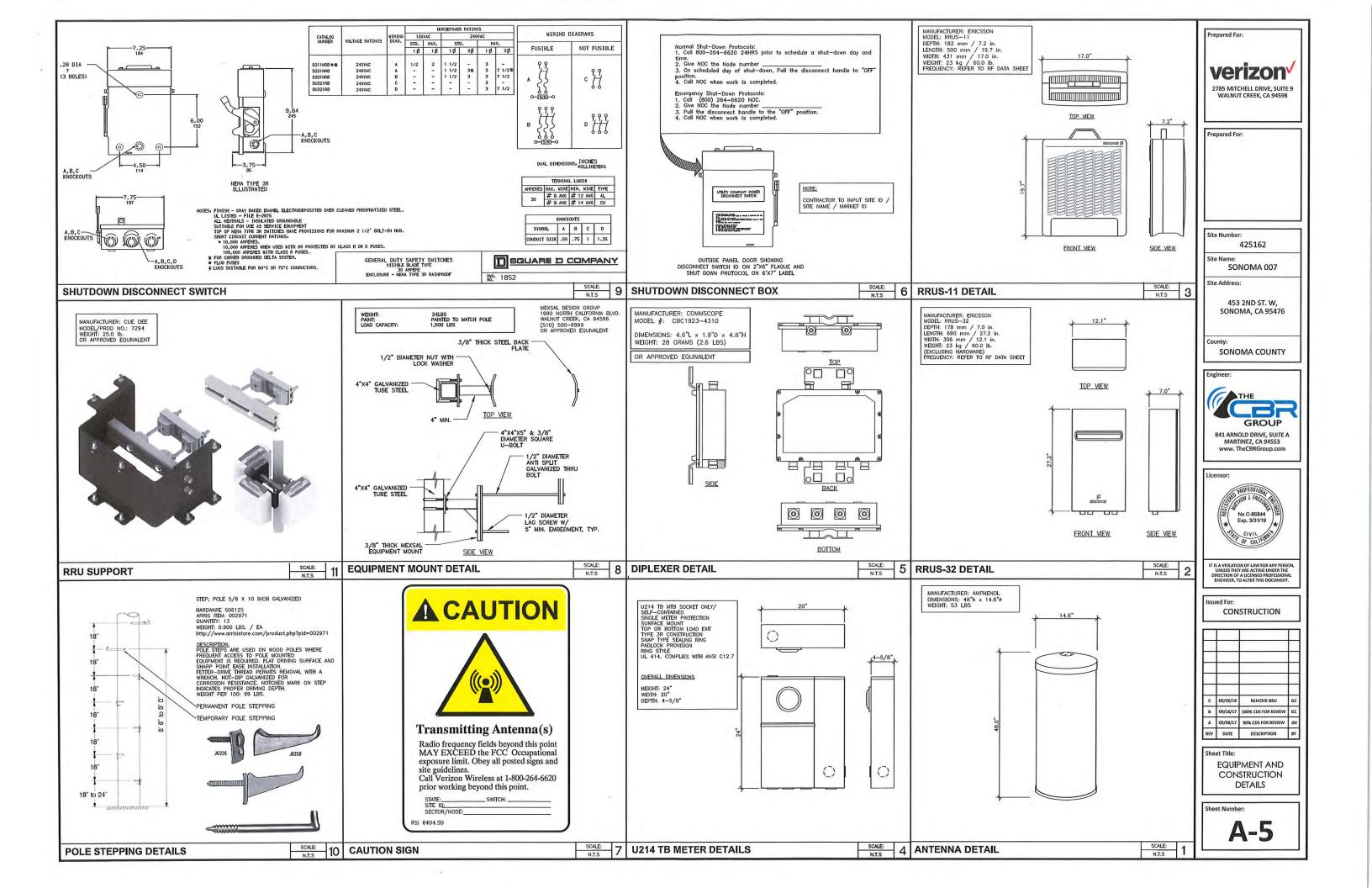






Prepared For verizon TOP OF (N) CANISTER ANTENNA ±47'-4" A.G.L 2785 MITCHELL DRIVE, SUITE 9 WALNUT CREEK, CA 94598 RAD CENTER OF (N) CANISTER ANTENNA ±45'-4" A.G.L - (N) VERIZON WRELESS CANISTER ANTENNA MOUNTED TO (N) 50' REPLACEMENT POLE. (43'-0" ABOVE GROUND LEVEL 7'-0" Prepared For: UNDERGROUND EMBEDMENT.) 1 4 A-5 A-6 Site Number 425162 Site Name: SONOMA 007 Site Address: 453 2ND ST. W, TOP OF (E) RELOCATED SECONDARY POWER LINE ±29'-8" A.G.L SONOMA, CA 95476 County: SONOMA COUNTY TOP OF (E) RELOCATED GUARD ARM ±25'-6" A.G.L. TOP OF (E) RELOCATED TELCO LINE ±25'-0" A.G.L Engineer THE (N) CLIMBING PEGS, TYP. BR 10 GROUP A-5 841 ARNOLD DRIVE, SUITE A MARTINEZ, CA 94553 www.TheCBRGroup.com Licensor: PROFESSIONAL AND PROFESSION No C-86844 Exp. 3/31/19 TOP OF (N) RRUS ±14'-0" A.G.L OF CALIFORNIA BOTTOM OF (N) RRUS ±11'-9" A.G.L IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT. BOTTOM OF (N) CUTOFF/SHUTOFF ±9'-6" A.G.L Issued For: CONSTRUCTION TOP OF (N) ELECTRICAL METER ±9'-0" A.G.L BOTTOM OF (N) STANDOFF MOUNT ±7'-0" A.G.L (E) MAILBOX 06/06/18 REMOVE BBU G 100% CDS FOR REVIEW GC 09/26/17 GROUND LEVEL . 9/08/17 90% CDS FOR REVIEW DESCRIPTION REV DATE BY Sheet Title: EXISTING AND PROPOSED EAST ELEVATIONS heet Numbe **A-3** SCALE: 3/8" = 1'-0" 2' ó





ARIA Technologies Wallmount Enclosures

Network Interface Device (NID)

ARIA low profile, full-featured NIDs are constructed of materials capable of withstanding harsh indoor and outdoor conditions, such as UV degradation, chemical exposure, and sub-freezing temperatures.

Designed for wall mounting, and will accommodate up to 8 or 12 fiber terminations depending upon the model, with or without splicing.

Hinges hold the door in the open position for service and door seal securely protects contents from moisture and foreign matter intrusion. Cable entry ports are also sealed.

Useful for demarcation points, telecommunications rooms, and equipment rooms.

UL 497 listed



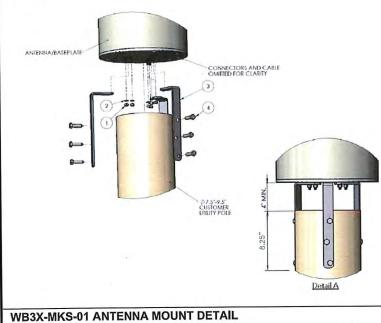
AWM-12 Dimensions: 8.54"x10"x2.88" (HxWxD)

Capacity: 6-Pack duplex SC or LC: 12 fibers

Special Features: Available as a single or dual door enclosure

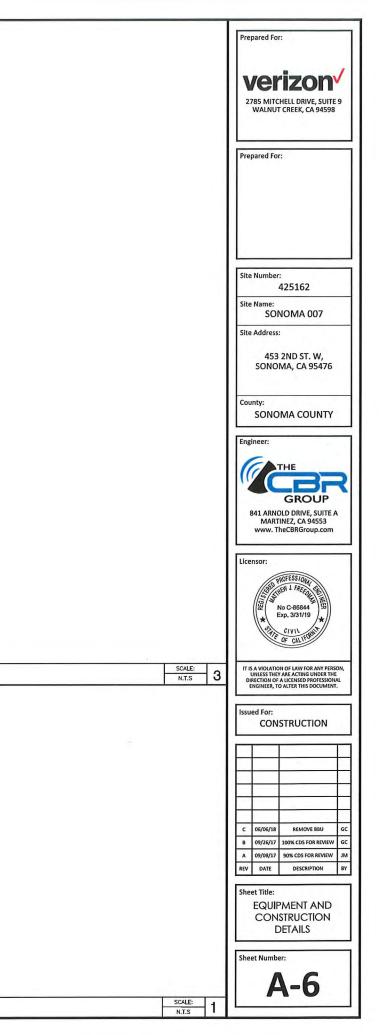


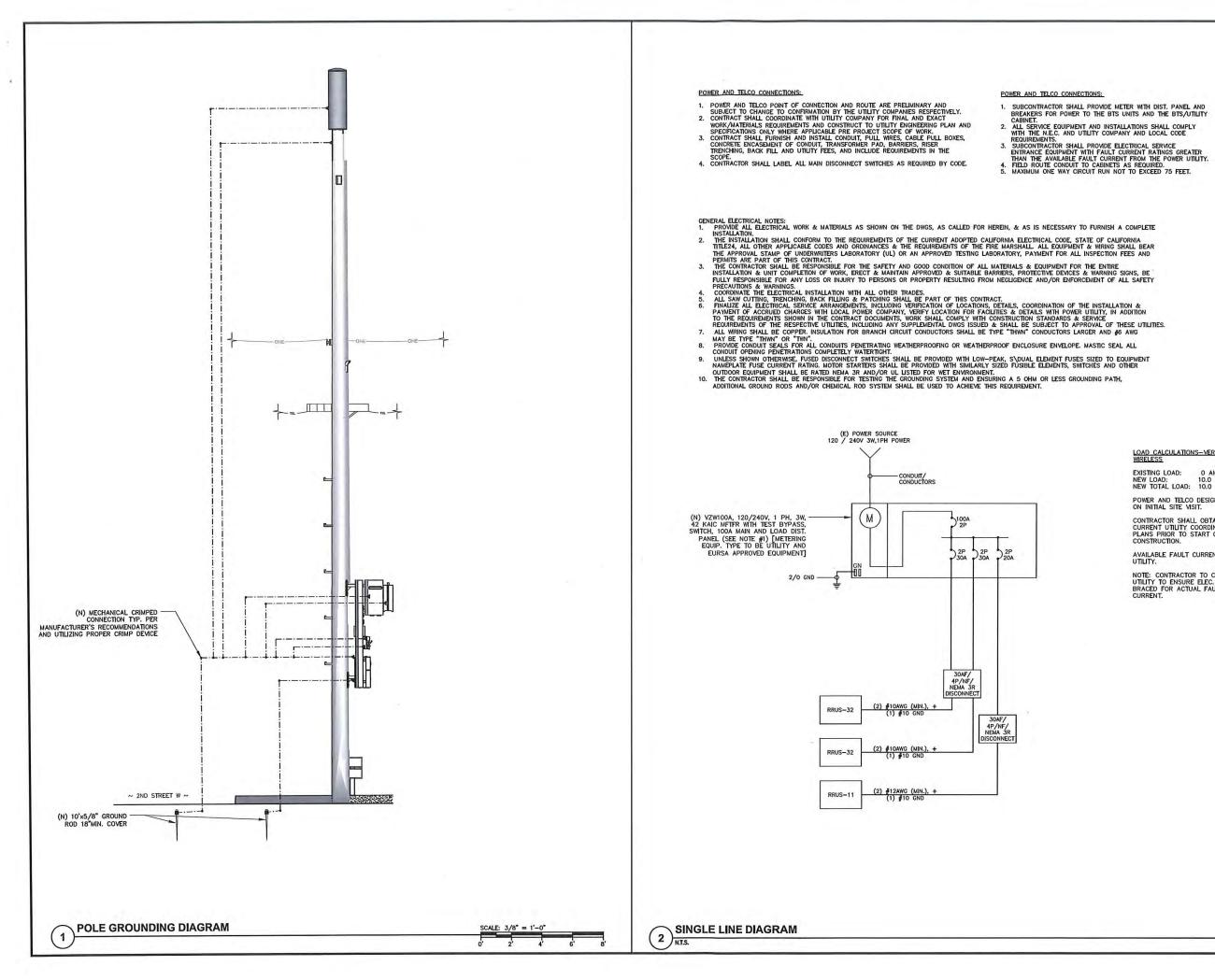
FIBER DEMARCATION BOX DETAIL

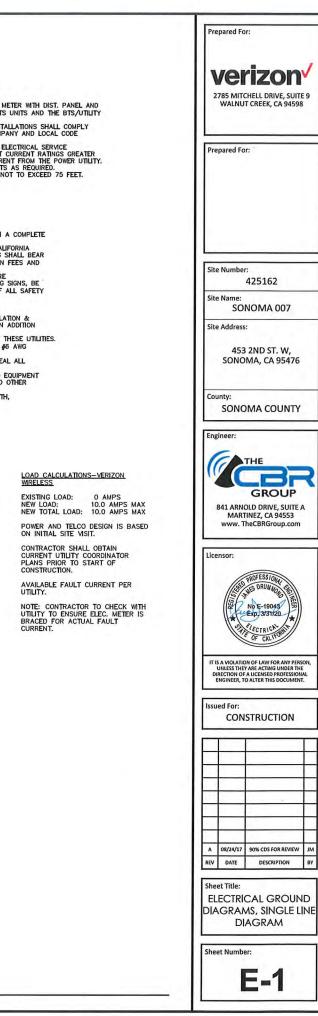


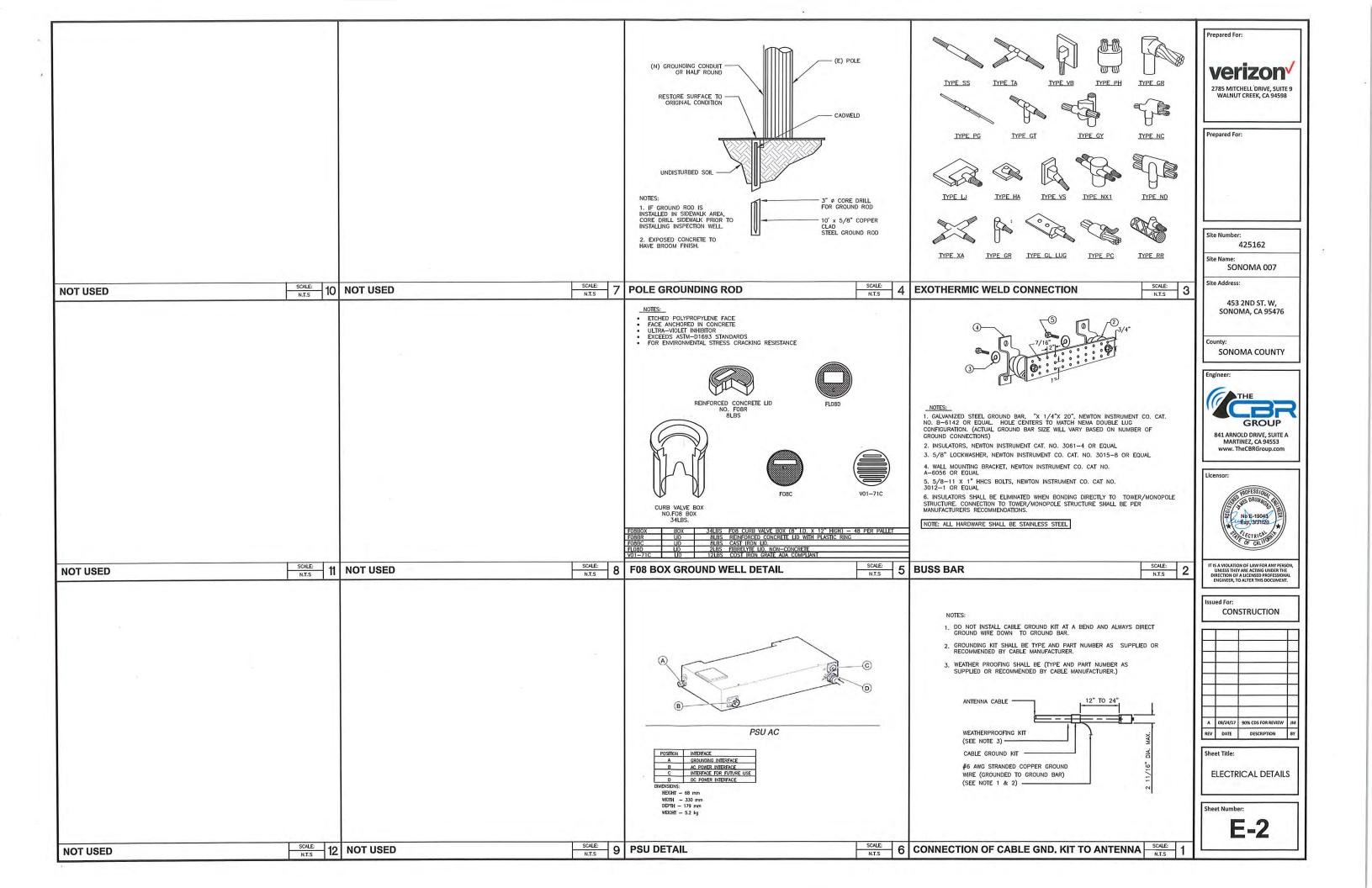
SCALE: 5 NOT USED

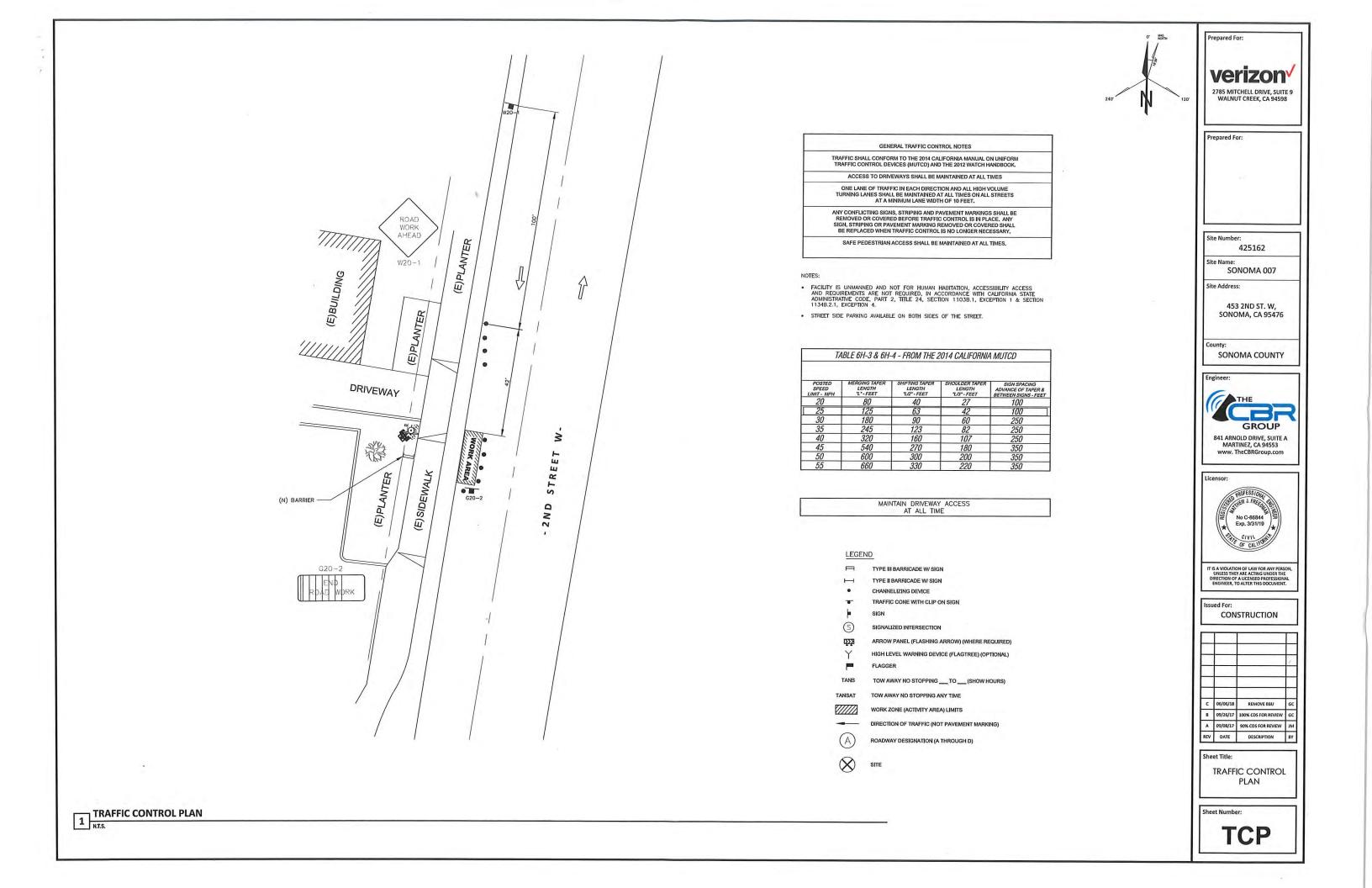
		SCALE: N.T.S	4	NOT USED	-	SCALE: N.T.S	2	NOT USED
Weight	2.7 kg (6 lbs)							
Mechanical	Characteristics							
Item 4	Galvanized Hex Lag Screw (1/2 x 2" Long)	9	_					
Item 3	Pole Mount Bracket	3						
Item 2	Lock Washer 3/8 HDG	6	_					
Item 1	Nut Hex, 3/B-16 HDG	6						
Parts List	Description	Quantity						
Step 3	Attach pole mount brackets (item 3)/antenna assembly to customer utility pole using lag screws (item 4). Make all electrical connections weatherproof with self-amalgamating tape.							
Step 2								
Step 1	Attach pole mount brackets (item 3) to anterna/base plate using fasteners (items 1 and 2). Tighten to 15 N-m (11 ft-lb).							
Mounting In	nstructions							
Utility Pole	e Mounting Kit for Cylindrical Antennas		_					
WB3X-	-MKS-01							













VERIZON SMALL CELL FOR SONOMA POLYGON ALTERNATIVE SITE ANALYSIS

Verizon Small Cell Node "Sonoma 007" (near 453 W 2nd St.) Prepared September 22, 2017



OVERVIEW

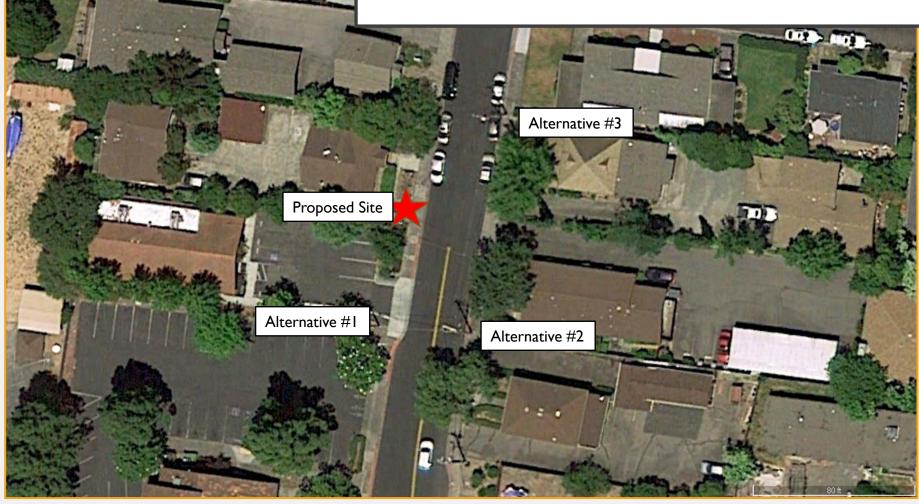
 Verizon is proposing to install a small cell standalone project in the area to improve network coverage and capacity.

- A small cell is just like the name implies. A small cell augments Verizon's capacity in a given area. It consists of a radio, antenna, power and a fiber connection. Small Cells are short range mobile cell sites used to complement larger macro cells (or cell towers). Small cells enable the Verizon network team to strategically add capacity to high traffic areas.
- Demand for wireless data services has nearly doubled over the last year, and is expected to grow 650% between 2013 and 2018 according to Cisco. It's part of Verizon's network strategy to provide reliable service and to stay ahead of this booming demand for wireless data.

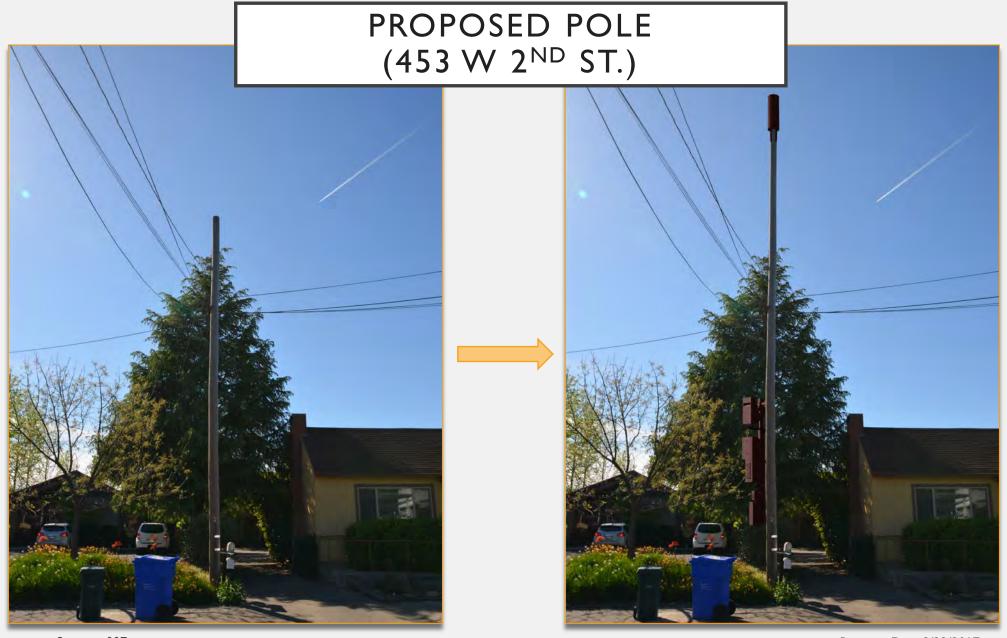
ALTERNATIVE ANALYSIS

- In addition to the proposed existing wooden utility pole location for this Node, Verizon considered poles immediately adjacent to the proposed pole to explain why it was selected.
- Existing antenna towers, monopoles, and rooftops located more than 150 feet from the proposed location are not viable alternatives for the small cell network because they do not meet Radio Frequency Coverage requirements, i.e., network objectives.
- The Node site is low in height, has low power, and is a reduced size antenna site that provides coverage to small areas.
- Cells interact with each other, and are laid out in a logical pattern to provide optimal coverage conditions to address service, capacity, reliability, and access for users. This network architecture in Small Cells is geographically very tight, and precludes alternative locations at greater distances.

SHOT MAP OF PROPOSED SITE LOCATION AND ALTERNATIVES CONSIDERED







Sonoma 007



ALTERNATE SITE #I (463 2ND ST W)

Node - Alternative Site #I

This alternative location is a wood utility pole located in the Public ROW. The nearest address is 463 2nd St W.

Pole Elimination Justification:

This is pole is not feasible for Verizon to locate on as it will not comply with G095 JPA Pole Standards as it will cause climbing space issue due to the primary risers that run up and down the pole. This makes available only one quadrant available to use for climbing on the pole.

Sonoma 007

ALTERNATE SITE #2 (458 2ND ST.W)

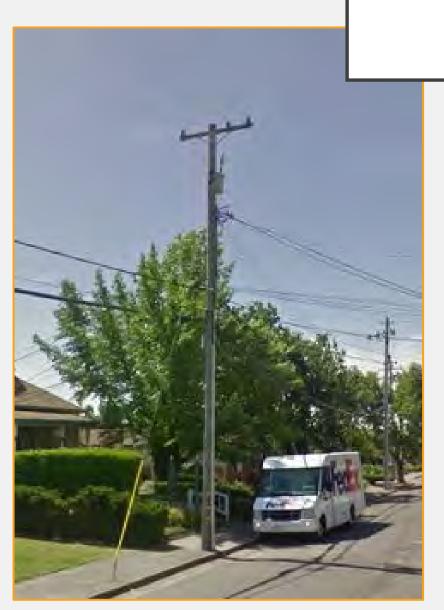
Node - Alternative Site #2

This alternative location is a wood utility pole located in the Public ROW. This pole is located near 458 2nd St W.

Pole Elimination Justification:

This is pole is not feasible for Verizon to locate on as it will not comply with G095 JPA Pole Standards as it will cause climbing space issue due to the primary risers that run up and down the pole. This makes available only one quadrant available to use for climbing on the pole.





ALTERNATE SITE #3 (450 2ND ST W)

Node - Alternative Site #3

This alternative location is a wood utility pole located in the Public ROW. The nearest address is 450 2nd St W.

Pole Elimination Justification:

This is pole is not feasible for Verizon to locate on as it will not comply with G095 JPA Pole Standards as it will cause climbing space issue due to the primary risers that run up and down the pole. This makes available only one quadrant available to use for climbing on the pole.

LEAST INTRUSIVE MEANS

Small Cell facilities are small form factor, smaller radio frequency footprint base stations that allow carriers to place appropriate facilities in areas where full size radio base stations are not appropriate. Some equipment is located in a switch or Hub facility some miles away, further reducing the scale and quantity of equipment on site. This proposal is consistent with the least intrusive means to provide coverage for current generation of service within a residential district.



Small Cell example similar to this proposal

THANK YOU

The CBR Group, Inc. Christy Beltran 415.806.2323 Christy@thecbrgroup.com

Radio Frequency - Electromagnetic Energy (RF-EME) Jurisdictional Report

Site No. 425162 Sonoma 007 453 2nd Street W. Sonoma, California 95476 Sonoma County 38° 17' 34.87'' N, -122° 27' 40.28'' W NAD83

> EBI Project No. 6217004217 September 26, 2017



Prepared for:

Verizon Wireless c/o The CBR Group Inc. 841 Arnold Drive, Suite A & B Martinez, CA 94553



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EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Verizon Wireless to conduct radio frequency electromagnetic (RF-EME) modeling for Verizon Site 425162 located at 453 2nd Street W. in Sonoma, California to determine RF-EME exposure levels from proposed Verizon wireless communications equipment at this site. As described in greater detail in Section 2.0 of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

Statement of Compliance

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits <u>and</u> there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

As presented in the sections below, based on worst-case predictive modeling, there are no modeled areas on any accessible ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site. Additionally, there are areas where workers who may be elevated above the ground may be exposed to power densities greater than the occupational limits. Therefore, workers should be informed about the presence and locations of antennas and their associated fields.

At the nearest walking/working surfaces to the Verizon antennas, the maximum power density generated by the Verizon antennas is approximately **1.10** percent of the FCC's general public limit (**0.22** percent of the FCC's occupational limit).

Recommended control measures are outlined in Section 5.0 and within a Site Safety Plan (attached); this plan includes instructions to shut down and lockout/tagout this wireless equipment in accordance with Verizon's standard operating protocol.

I.0 INTRODUCTION

Radio frequency waves are electromagnetic waves from the portion of the electromagnetic spectrum at frequencies lower than visible light and microwaves. The wavelengths of radio waves range from thousands of meters to around 30 centimeters. These wavelengths correspond to frequencies as low as 3 cycles per seconds (or hertz [Hz]) to as high as one gigahertz (one billion cycles per second).

Personal Communication (PCS) facilities used by Verizon in this area operate within a frequency range of 700-2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed a distance above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of in areas in the immediate vicinity of the antennas.

MPE limits do not represent levels where a health risk exists, since they are designed to provide a substantial margin of safety. 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.

2.0 SITE DESCRIPTION

This project site includes one (1) omni-directional wireless telecommunication antenna on a utility pole located at 453 2nd Street W. in Sonoma, California.

Verizon Antenna Information (proposed Configuration)									
Antenna# and Model	Frequency (MHz)	# of Transmitters	Transmit Power (Watts)	Azimuth	Gain (dBd)	Feet above Ground (CL)	х	Y	Z
AI	700	I	40		3.35				
Amphenol	1900	I	40	Omni	7.35	45.33 ft AGL	50	50	43.33
CUUT360X12Fxyz	2100	Ι	40		7.85				

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general population/uncontrolled exposure limits for members of the general public that may be exposed to antenna fields. While access to this site is considered uncontrolled, the analysis has considered exposures with respect to both controlled and uncontrolled limits as an untrained worker may access adjacent rooftop locations. Additional information regarding controlled/uncontrolled exposure limits is provided in Section 3.0. Appendix B presents a site safety plan that provides a plan view of the utility pole with antenna locations.

3.0 FEDERAL COMMUNICATIONS COMMISSION (FCC) REQUIREMENTS

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/ controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general public/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

General public/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment-related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Table I and Figure I (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

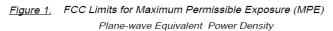
The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm²). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm²) and an uncontrolled MPE of 1 mW/cm² for equipment operating in the 1900 MHz frequency range. For the Verizon equipment operating at 700 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm² and an uncontrolled MPE of 0.57 mW/cm². These limits are considered protective of these populations.

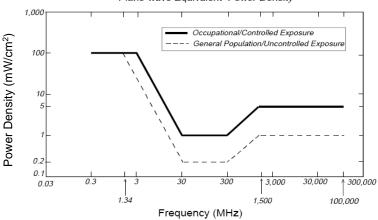
Table I: Limits for Maximum Permissible Exposure (MPE)									
(A) Limits for Occupational/Controlled Exposure									
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time [E] ² , [H] ² , or S (minutes)					
0.3-3.0	614	1.63	1.63 (100)*						
3.0-30	l 842/f	4.89/f	(900/f ²)*	6					
30-300	61.4 0.163 1.0 6								

Table 1: Limits for Maximum Permissible Exposure (MPE)									
(A) Limits for Occupational/Controlled Exposure									
Frequency Range (MHz)Electric Field Strength (E) (V/m)Magnetic Field Strength (H) (A/m)Power Density (S) (mW/cm²)Averaging Time [E]², [H]², or S (minutes)									
300-1,500	300-1,500 f/300 6								
1,500-100,000	1,500-100,000 5 6								
(B) Limits for Gene	ral Public/Uncontro	•							
Frequency Range (MHz)									
0.3-1.34	614	1.63	(100)*	30					
1.34-30	824/f	2.19/f	(180/f ²)*	30					
30-300	27.5	0.073	0.2	30					
300-1,500	300-1,500 f/1,500 30								
1,500-100,000	1,500-100,000 1.0 30								

f = Frequency in (MHz)

* Plane-wave equivalent power density





Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Personal Communication (PCS)	1,950 MHz	5.00 mW/cm ²	1.00 mW/cm ²
Cellular Telephone	870 MHz	2.90 mW/cm ²	0.58 mW/cm ²
Specialized Mobile Radio	855 MHz	2.85 mW/cm ²	0.57 mW/cm ²
Most Restrictive Freq, Range	30-300 MHz	1.00 mW/cm ²	0.20 mW/cm ²

MPE limits are designed to provide a substantial margin of safety. 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.

Personal Communication (PCS) facilities used by Verizon in this area operate within a frequency range of 700-2100 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

4.0 WORST-CASE PREDICTIVE MODELING

EBI has performed theoretical modeling using RoofView® software to estimate the worst-case power density at the site ground-level and nearby roof-tops resulting from operation of the antennas. RoofView® is a widely-used predictive modeling program that has been developed by Richard Tell Associates to predict both near field and far field RF power density values for roof-top and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

The modeling is based on worst-case assumptions for the number of antennas and transmitter power. The modeling assumes a maximum of 3-radio transmitters with a power level of 40 watts per transmitter for the 700, 1900, and 2100 MHz frequencies, in order to provide a worst-case evaluation of predicted MPE levels. The assumptions used in the modeling are based upon information provided by Verizon, and information gathered from other sources. The parameters used for the modeling are summarized in the RoofView® export files presented in Appendix C.

There are no other wireless carriers with equipment installed at this site.

Based on worst-case predictive modeling, there are no modeled areas on any accessible ground-level walking/working surface related to the proposed Verizon antennas that exceed the FCC's occupational or general public exposure limits at this site. At the nearest walking/working surfaces to the Verizon antennas, the maximum power density generated by the Verizon antennas is approximately 1.10 percent of the FCC's general public limit (0.22 percent of the FCC's occupational limit).

The Site Safety Plan also presents areas where Verizon Wireless antennas contribute greater than 5% of the applicable MPE limit for a site. A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

The inputs used in the modeling are summarized in the RoofView® export file presented in Appendix C. A graphical representation of the RoofView® modeling results is presented in Appendix B. It should be noted that RoofView is not suitable for modeling microwave dish antennas; however, these units are designed for point-to-point operations at the elevations of the installed equipment rather than ground level coverage.

5.0 MITIGATION/SITE CONTROL OPTIONS

EBI's modeling indicates that there are no areas in front of the Verizon antennas that exceed the FCC standards for occupational or general public exposure at ground level. All exposures above the FCC's safe limits require that individuals be elevated above the ground. In order to alert people accessing the pole, NOTICE signs are recommended for installation on opposite sides of the pole 5' below the bottom of the antenna.

There are no barriers recommended on this site.

These protocols and recommended control measures have been summarized and included with a graphic representation of the antennas and associated signage and control areas in a RF-EME Site Safety Plan, which is included as Appendix B. Individuals and workers accessing the roof should be provided with a copy of the attached Site Safety Plan, made aware of the posted signage, and signify their understanding of the Site Safety Plan.

Implementation of the signage recommended in the Site Safety Plan and in this report will bring this site into compliance with the FCC's rules and regulations.

6.0 SUMMARY AND CONCLUSIONS

EBI has prepared a Radiofrequency – Electromagnetic Energy (RF-EME) Compliance Report for telecommunications equipment installed by Verizon Site Number 425162 located at 453 2nd Street W. in Sonoma, California to determine worst-case predicted RF-EME exposure levels from wireless communications equipment installed at this site. This report summarizes the results of RF-EME modeling in relation to relevant Federal Communications Commission (FCC) RF-EME compliance standards for limiting human exposure to RF-EME fields.

As presented in the sections above, based on the FCC criteria, there are no modeled areas on any accessible ground-level walking/working surface related to the proposed antennas that exceed the FCC's occupational or general public exposure limits at this site. Workers should be informed about the presence and locations of antennas and their associated fields. Recommended control measures are outlined in Section 5.0 and within a Site Safety Plan (attached); this plan includes procedures to shut down and lockout/tagout this wireless equipment in accordance with Verizon's standard operating protocol.

7.0 LIMITATIONS

This report was prepared for the use of Verizon Wireless. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

Appendix A

Certifications

Site No. 425162 453 2nd Street W., Sonoma, California

RF-EME Compliance Report EBI Project No. 6217004217

Reviewed and Approved by:



Michael McGuire Electrical Engineer

Note that EBI's scope of work is limited to an evaluation of the Radio Frequency – Electromagnetic Energy (RF-EME) field generated by the antennas and broadcast equipment noted in this report. The engineering and design of the building and related structures, as well as the impact of the antennas and broadcast equipment on the structural integrity of the building, are specifically excluded from EBI's scope of work.

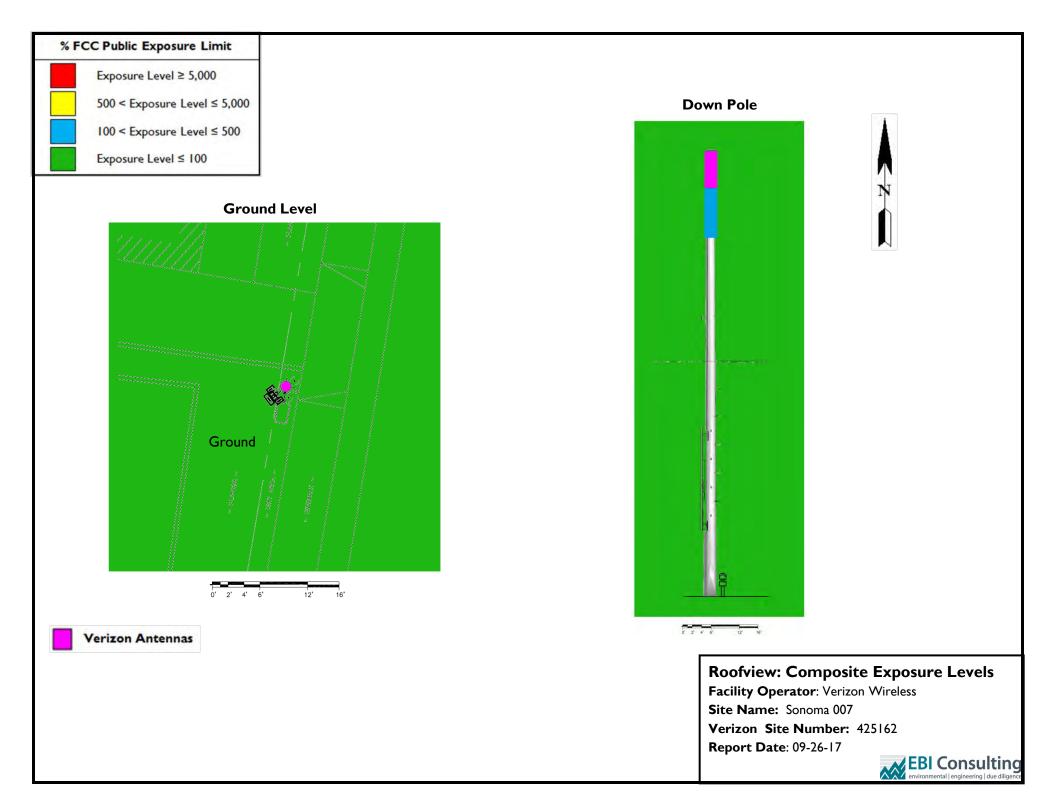
Preparer Certification

I, Christopher Ilgenfritz, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.

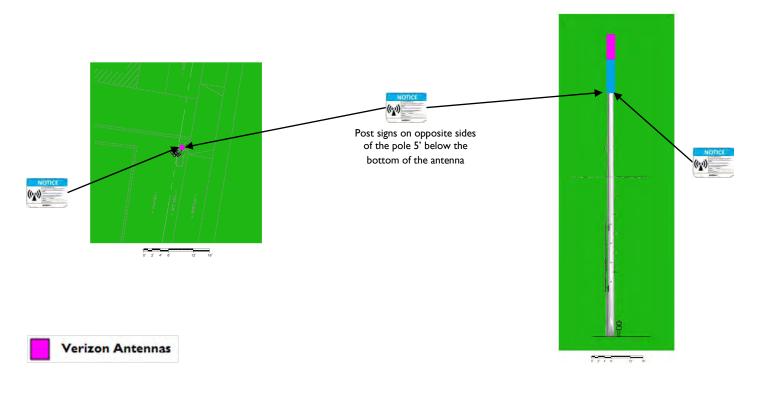
lif lift

Appendix B Radio Frequency Electromagnetic Energy Safety / Signage Plans





Verizon Signage Plan



Sign Image	Description	Posting Instructions	Required Signage
NOTICE NOTICE	Blue Notice Sign Used to alert individuals that they are entering an area where the power density emitted from transmitting antennas exceeds the FCC's maximum permissible exposure limit for the general public but is less than the occupational exposure limit.	Securely post at every point of access to the site in a manner conspicuous to all individuals entering thereon as indicated in the signage plan.	Post signs on opposite sides of the pole 5' below the bottom of the antenna

Appendix C Roofview® Export File

StartMap	efinition																				
		ax) Map Max \ M	ap Max≯Y	Offset	X Offs	et Numbe	r of envelo	pe													List Of Areas
120		20 140	140		20	20		1:\$E \$AE\$81:	\$ET\$200												\$AE\$81:\$ET\$200
StartSettir	ngsData																				
Standard	Method	Uptime Sc	ale Facto L	ow Thr	Low C	olor Mid Thi	r Mid Co	lor Hi Thr	Hi Color	Over Color	Ap Ht Mult	Ap Ht	Method								
4		2 1	1	10	00	1 5	500	4 50	00	2	3	1.5	1								
StartAnter	naData	It is advisable	to provide	an ID (ant 1) fo	r all antenna	s														
		(MHz) Tr	ans T	rans	Coax	Coax	Other	Input	Calc			(ft)	(ft)	(ft)	(ft)	dBd	BWdth	Uptime	ON	
ID	Name	Freq Po	wer C	ount	Len	Type	Loss	Power	Power	Mfg	Model	Х	Y	Z	Туре	Aper	Gain	Pt Dir	Profile	flag	
VZW A1	LTE	700	40		10	0	1			Amphenol	CUUT360X12Fxyz		50	50	43.33		4	3.35 360;0		ON•	
VZW A1	LTE	1900	40		10	0	1			Amphenol	CUUT360X12Fxyz		50	50	43.33		4	7.35 360;0		ON•	
VZW A1		2100	40		10	0	1			Amphenol	CUUT360X12Fxyz		50	50	43.33		4	7.85 360;0		ON•	
StartSymb																					
Sym	Map Ma	irki Roof X Ro	of Y N	1ap Lab		iption (notes	s for this tak	ble only)													
Sym		5		C Unit		e symbols															
Sym		14		oof Acc	ess																
Sym		45	5 A	C Unit																	

Sym 45 20 Ladder

Pla Rev	Sity of Sonoma nning Department vised 04/25/17 niform Applica	RECE ISE19 0 ma 00 OCT 0 3 2017 Ition City of Sonoma				
<i>Before submitting your application, have your of the submitting your application, have your of the submitting behavior of the submitting behavior of the submitting behavior of the submitting point of the submitting point</i>		epartment? ✓ Fire Department?				
Applicant Information	-	vner Information				
NameVerizon Wireless C/O The CBR Group	Name N/A Pole is located in F	Public R.O.W.				
Address_ 841 Arnold Dr., Suite A, Martinez, CA, 94	553 Address					
Phone (415-215-5485) Christy@thecbrgroup.cor						
Type of Application						
Environmental Review	□ Prezoning/Annexation	Design Review				
Conditional Use Permit	Rezoning:	Demolition Permit				
Conditional Use Permit (Minor)	fromto	Certificate of Compliance				
□ Tentative Subdivision Map (5+ lots)	General Plan Amendment: from to	Lot Line Adjustment/Merge				
Tentative Parcel Map (4 or fewer lots)	Variance	Public Notice				
Planned Unit Development	□ Exception	• Other:				
 Notice of special fees: The following special f Public Notice Fee: To cover costs associat County Processing Fee: Applies to environ Fish and Game Fee: Negative Declaration project meets specific criteria. 	ed with required newspaper and mail nmental review. Collected at application	ed public notices. ion submittal.				
Project Location (by address or nearest cross-	-street)453 2nd ST. W, Sonoma CA	95476				
Assessor's Parcel Number (s) R.O.W						
General Plan Land Use Designation		ng				
Brief Project Description Install Antenna W	/ith RRUs, Cables, Power cabinet and ment on pole on a replacement Utility po					

Submittal Requirements: SEE ATTACHED SHEET

I, the undersigned ("Applicant"), hereby state that I am the owner of record of the affected property or a duly authorized agent of the Property owner(s) (An agent must submit a letter of authorization signed by the property owner) and that all information submitted as part of this application is true and accurate. I agree to the terms, conditions and obligations set forth in this Application.

I agree that I will provide written notice to the Planning Department in the event that there is a change in Applicant's interest in the property, the project, or the billing address or contact person for said project. Said Notice shall be mailed first class, postage paid, certified mail to: Planning Department, No. 1 The Plaza, Sonoma, CA 95476. Applicant shall remain responsible for all outstanding costs incurred by City.

I agree to indemnify and hold City harmless for all costs and expenses, including attorney's fees, incurred by City or held to be the liability of the City in connection with Gity's defense of its actions in any proceeding brought in any State or Federal court challenging the City's actions with respect to the Applicant's project.

Signature Date

DATE STAMP WITH APPLICATION AND RETURN COPY TO:

Verizon Wireless 2785 Mitchell Drive, Bldg 9 Walnut Creek, CA 94598

Attn: Small Cell Real Estate Manager

PLEASE DATE STAMP TOGETHER WITH VERIZON WIRELESS APPLICATION

Verizon Wireless Reservation of Rights

We have attached Verizon Wireless's use permit application to install a wireless facility in the public right-of-way as more particularly described in the application. Please be advised that Verizon Wireless reserves all of its rights under California Public Utilities Code § 7901, the federal Telecommunications Act, Section 6409 of the Spectrum Act (codified at 47 U.S.C. § 1455(a)), the Federal Communications Commission ("FCC") ruling In Re: Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review, Etc., the FCC order In Re: Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies, Etc., FCC 14-153 (FCC October 17, 2014) and associated rules codified at 47 C.F.R. §1.40001, the licenses granted to it by the FCC, and all of its other rights that arise under any federal or state statute, regulation, or other legal authority (collectively, "Federal and State Rights"). Among other Federal and State Rights, California Public Utilities Code § 7901 grants a statewide franchise to telephone corporations such as Verizon Wireless to place telephone equipment in the public rights-of-way, and the use of the rights-of-way by telephone corporations is a matter of statewide concern that is not subject to local regulation except where such use incommodes the public use of a road or highway. In addition, the Telecommunications Act limits the authority of local jurisdictions by, among other restrictions, requiring final action within a reasonable period of time. In submitting this application, Verizon Wireless expressly reserves all of its Federal and State Rights, including, without limitation, its rights under federal and state law to challenge the requirement for a use permit for its proposed installation in the public rightof-way. Neither the act of submitting the application nor anything contained therein shall be construed as a waiver of any such rights.