



April 18, 2018

RECEIVED

APR 18 2018

CITY OF SONOMA

Rob Gjestland  
City of Sonoma, Planning Dept.  
No. 1 the Plaza  
Sonoma, CA

RE: Verizon Wireless Small Cell "Sonoma 004" on a new replacement Utility Pole near the southwest corner of Mariano Dr and 5<sup>th</sup> St West.

Dear Rob:

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), mounted on existing or replacement 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 the corner of Mariano Dr and 5<sup>th</sup> St W. 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.

The proposed nodes would be located on existing or replacement 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 utility poles.

The proposed location for this site currently consists of an approximately 47-foot-tall wooden utility pole located in the public right-of-way in front of the property near corner of Mariano Dr and 5<sup>th</sup> St W in Sonoma. Verizon would be installing a new replacement utility pole, adding equipment on the pole, and on the ground near the pole's base.

### Scope of Work:

- Install (1) canister antenna on a new 55' replacement utility pole.
- Install (3) new RRU-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 (3) new conduits for power, telco, and coax
- Install (1) new power cabinet placed on a new concrete pad near the pole
- Install (1) new handhole at ground level

### Antenna:

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 51.8 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 14.1 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.

### Ground Cabinet:

This project includes the installation of a ground-mounted cabinet that measures 53.8 inches high, 38 inches wide, and 24.9 inches deep and will be placed on a new concrete foundation. The cabinet supplies emergency backup power in the event of a power outage, allowing the facility to provide service during the event.

The design of the site is based on our experience with how best to integrate a wireless facility into the community. Current technology and demand from subscribers determines the size of our designs. We have worked with jurisdictions to develop the best design to meet our clients' needs as well as the needs of the communities.

### Additional Comments:

Verizon is siting in your city as this is an area where the demand and concentration are highest. We evaluated many locations before deciding on 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 is included in the resubmittal application to show the alternatives considered and to help demonstrate support for the selected proposed node location. Note below is further information to support improvements in residential neighbors.

#### 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.

#### Reservation of Rights:

Verizon has sited their equipment in the city's Public Right of Way, which makes space available for utilities to install their equipment, be it in residential, commercial, or industrial areas. To assist Planning to better lend project support and recommendation for approval, please find attached a copy of a brief description of utilities' rights. Italicized below is an excerpt:

*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.*

#### 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: <http://www.fcc.gov/oet/rfsafety/rf-faqs.html>. Included with our submittal is documentation from a 3<sup>rd</sup> 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](mailto: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)
  - ✓ 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 Wireless Data Usage

<https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-cl-520862.html>



# PROPOSED SITE LOCATION



Sonoma 004  
SW corner of Mariano Drive and 5<sup>th</sup>  
Street West  
Sonoma, CA 95476  
Location Code: 425159

**SONOMA 004**  
Verizon Location Code: 425159



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



EXISTING



PROPOSED



Sonoma 004  
 SW corner of Mariano Drive and 5<sup>th</sup>  
 Street West  
 Sonoma, CA 95476  
 Location Code: 425159

VIEW 1: LOOKING SOUTH ACROSS  
 MARIANO ST & 5<sup>TH</sup> STREET WEST  
 PHOTOSIMS PRODUCED 3/12/2018



The CBR Group  
 841 Arnold Dr., Suite A  
 Martinez, CA 94553  
[info@thecbrgroup.com](mailto:info@thecbrgroup.com)

## EXISTING



## PROPOSED



Sonoma 004  
 SW corner of Mariano Drive and 5<sup>th</sup>  
 Street West  
 Sonoma, CA 95476  
 Location Code: 425159

VIEW 2: LOOKING SOUTHWEST ACROSS  
 5<sup>TH</sup> STREET WEST  
 PHOTOSIMS PRODUCED 3/12/2018

verizon



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 841 Arnold Dr., Suite A  
 Martinez, CA 94553  
[info@thecbrgroup.com](mailto:info@thecbrgroup.com)



## EXISTING



## PROPOSED



Sonoma 004  
 SW corner of Mariano Drive and 5<sup>th</sup>  
 Street West  
 Sonoma, CA 95476  
 Location Code: 425159

VIEW 3: LOOKING WEST ACROSS  
 5<sup>TH</sup> STREET WEST  
 PHOTOSIMS PRODUCED 3/12/2018



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



## EXISTING



## PROPOSED



Sonoma 004  
 SW corner of Mariano Drive and 5<sup>th</sup>  
 Street West  
 Sonoma, CA 95476  
 Location Code: 425159

VIEW 4: LOOKING NORTHWEST ACROSS  
 5<sup>TH</sup> STREET WEST

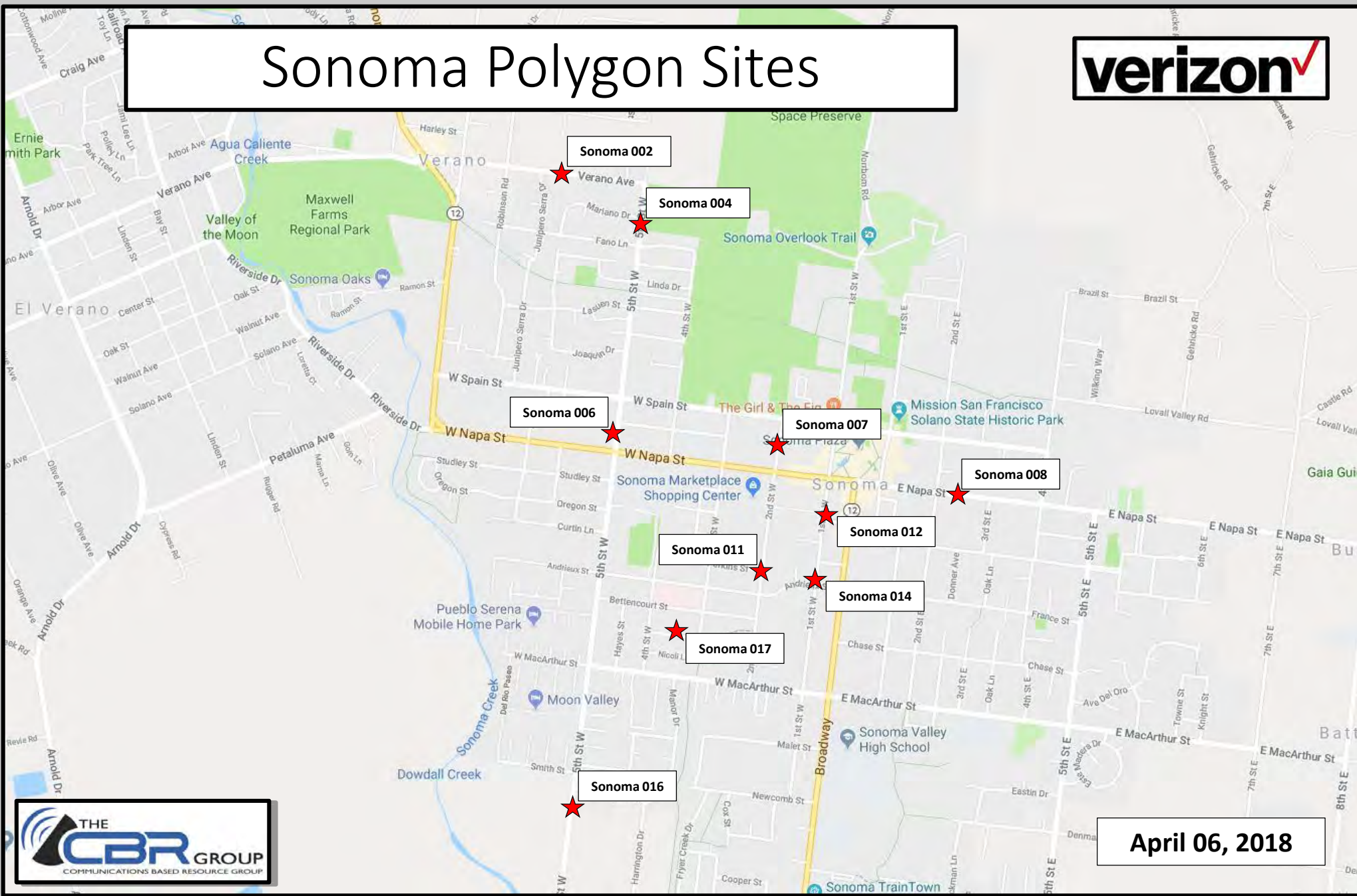
PHOTOSIMS PRODUCED 3/12/2018



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

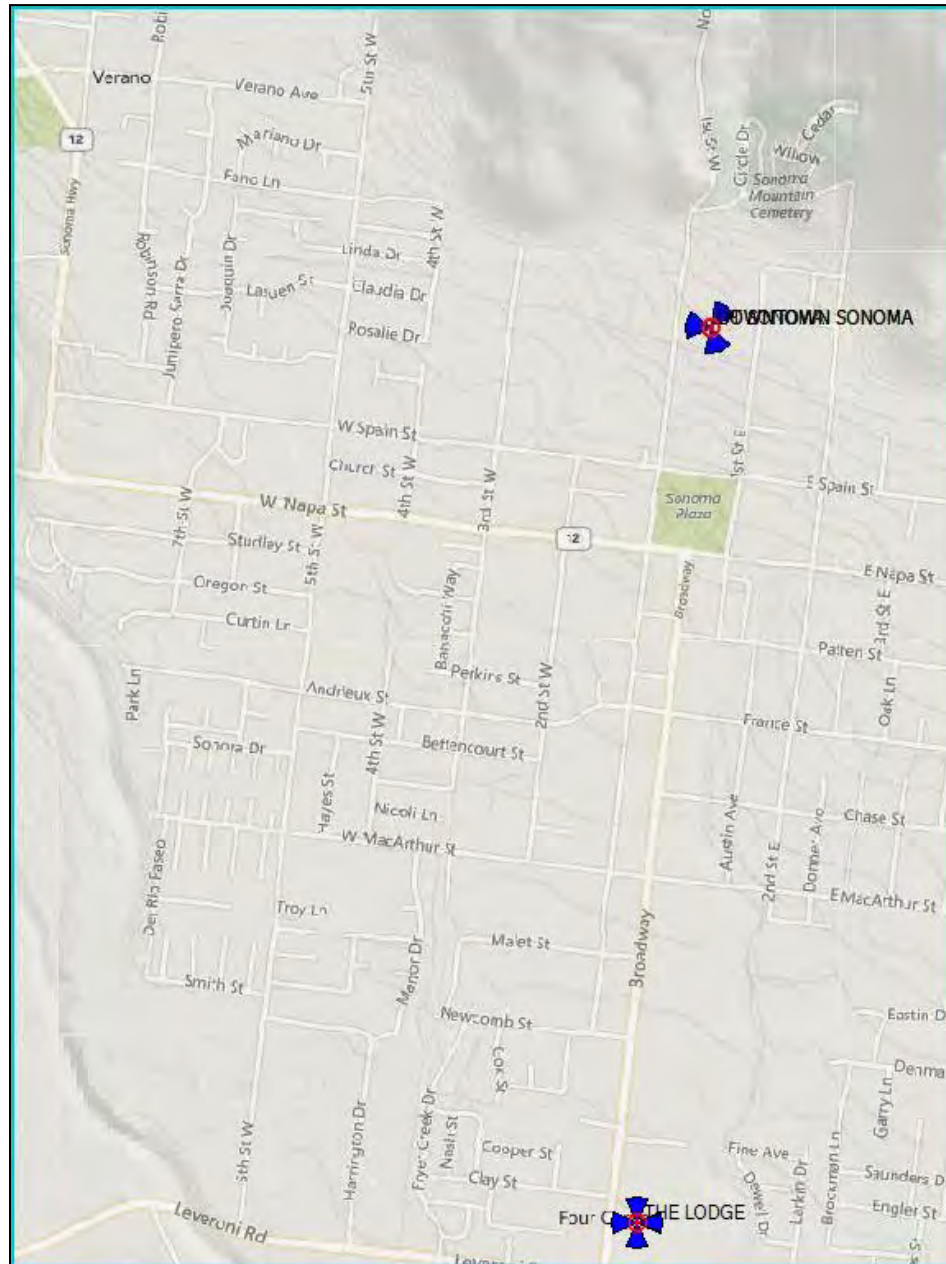


# Sonoma Polygon Sites



April 06, 2018

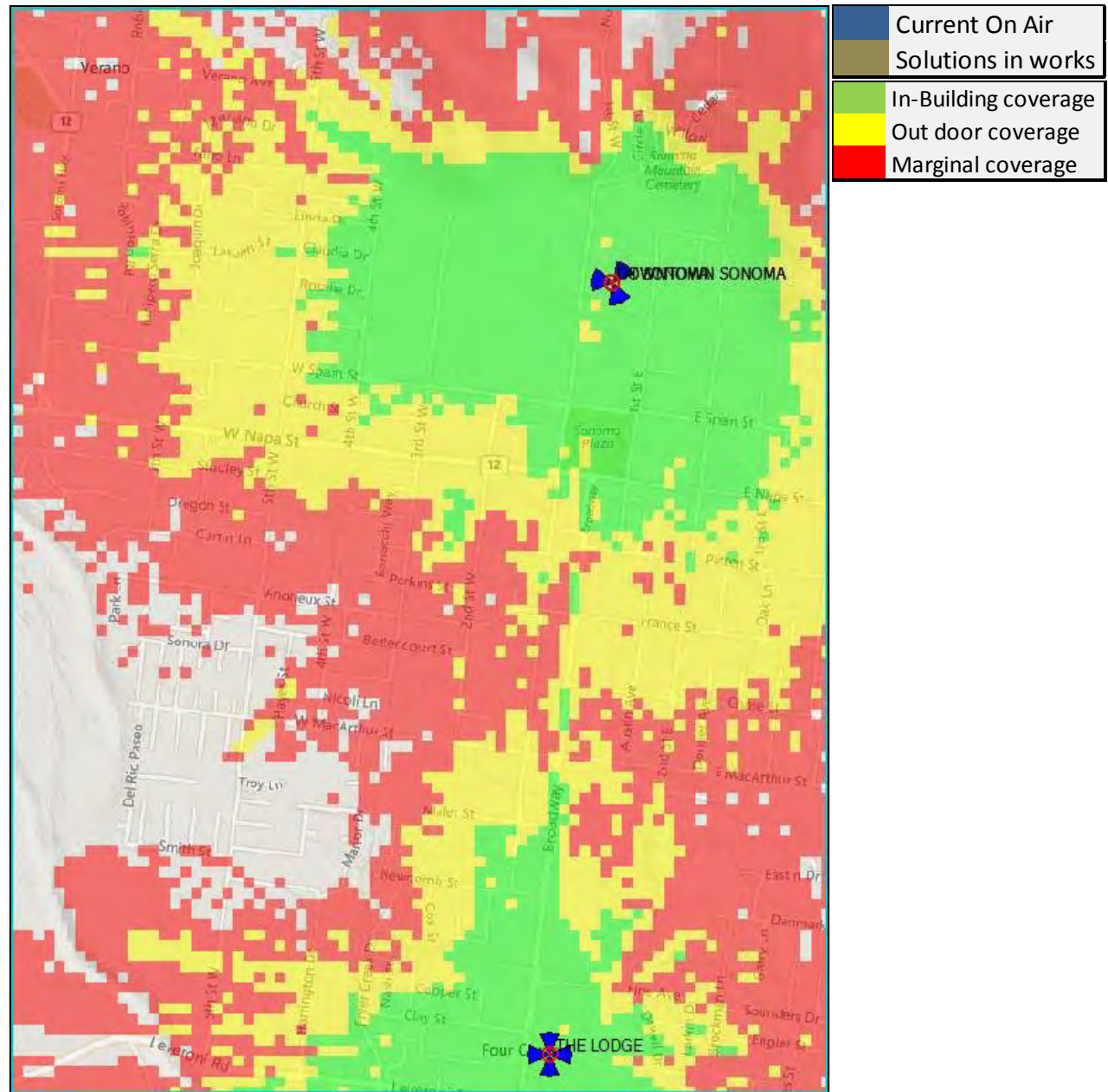
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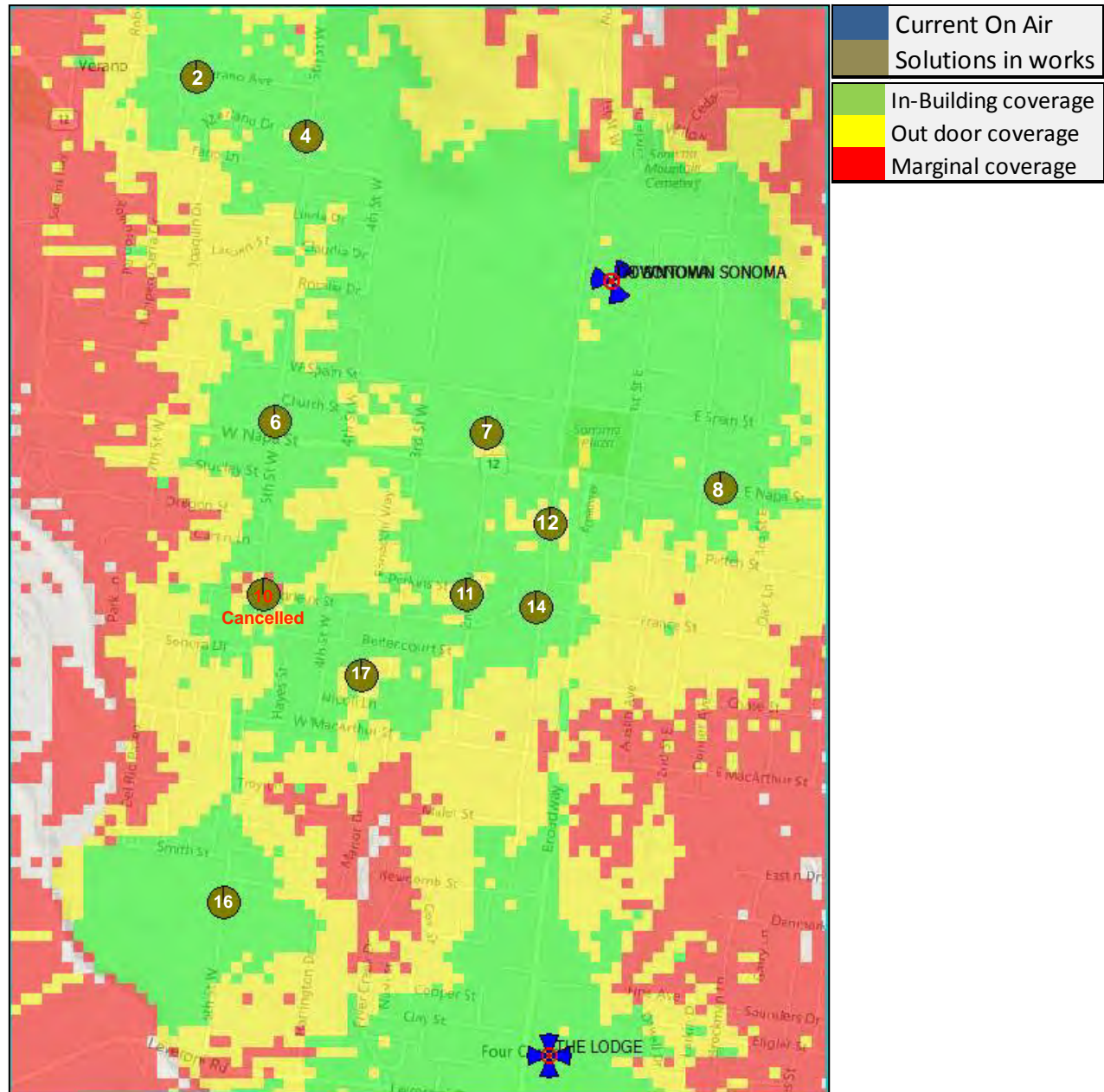
Current On Air  
Solutions in works



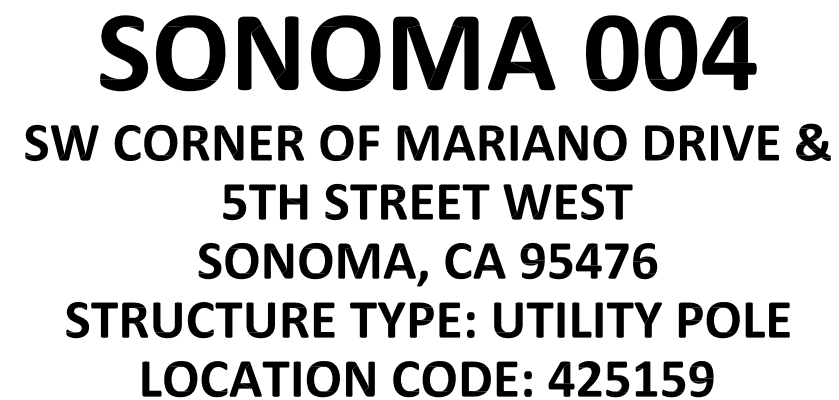
## Without Small cell\_ AWS Coverage



## With Small cell\_AWS\_Coverage







Prepared For:

**verizon** ✓

2785 MITCHELL DRIVE, SUITE 9  
WALNUT CREEK, CA 94598

Prepared For:


Site Number:	425159
Site Name:	SONOMA 004
Site Address:	SW CORNER OF MARIANO DRIVE & 5TH STREET WEST SONOMA, CA 95476
County:	SONOMA COUNTY

Engineer:

 **THE  
CBR  
GROUP**

841 ARNOLD DRIVE, SUITE A  
MARTINEZ, CA 94553  
[www. TheCBRGroup.com](http://www.TheCBRGroup.com)

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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.

Issued For:  
**CONSTRUCTION**

C	03/13/18	PLANNING COMMENTS	JG
B	09/26/17	100% CD'S FOR REVIEW	JG
A	09/07/17	90% CD'S FOR REVIEW	A.C
REV	DATE	DESCRIPTION	BY

Sheet Title:

TITLE SHEET

Sheet Number:

**T-1**


PROJECT DESCRIPTION	
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 MOUNTED ON (N) 55' REPLACEMENT POLE (47'-6" ABOVE GROUND LEVEL. 7'-6" UNDERGROUND EMBEDMENT).
2.	INSTALL (3) (N) RRU UNIT ON (N) REPLACEMENT POLE.
3.	INSTALL (2) (N) DISCONNECT SWITCHES ON (N) REPLACEMENT POLE.
4.	INSTALL (1) (N) ELECTRICAL METER ON (N) REPLACEMENT POLE.
5.	INSTALL (N) FCC SIGNAGE ON (N) REPLACEMENT POLE.
6.	INSTALL (N) GROUND RODS AND BUSS BAR.
7.	INSTALL (3) (N) CONDUITS FOR POWER, TELCO AND COAX.
8.	INSTALL (1) (N) POWER CABINET AT GROUND LEVEL.
9.	INSTALL (1) (N) HANDHOLE AT GROUND LEVEL.

## CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- 1) 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 IRC
- 3) 2016 CALIFORNIA HISTORICAL BUILDING CODE (CHBC)
- 4) 2016 CALIFORNIA EXISTING BUILDING CODE (CEBC), BASED ON THE 2009 IEBG
- 5) 2016 CALIFORNIA GREEN BUILDINGS STANDARDS CODE (CGBSC)
- 6) 2016 CALIFORNIA FIRE CODE (CFC), BASED ON THE 2009 IFC, WITH CALIFORNIA AMENDMENTS
- 7) 2016 CALIFORNIA MECHANICAL CODE (CMC), BASED ON THE 2009 UMC
- 8) 2016 CALIFORNIA PLUMBING CODE (CPC), BASED ON THE 2009 UPC
- 9) 2016 CALIFORNIA ELECTRICAL CODE (CEC) WITH CALIFORNIA AMENDMENTS, BASED ON THE 2008 NEC
- 10) 2016 CALIFORNIA ENERGY CODE (CEC)
- 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

RADIO FREQUENCY DATA PLAN	
REVISION LEVEL	DATE:
—	XX/XX/XXXX

GENERAL CONTRACTOR NOTES	
<p>DO NOT SCALE DRAWINGS</p> <p>THESE DRAWINGS ARE FORMATTED TO BE FULL SIZE AT 24" x 36". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOBSITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME.</p>	

**PROJECT TEAM**

---

APPLICANT/LESSEE:

VERIZON WIRELESS  
2785 MITCHELL DRIVE, BLDG 9  
WALNUT CREEK, CA 94598  
CONTACT: JENNIFER HAAS  
PH: (650) 759-1377  
EMAIL: jennifer.haas@verizonwireless.com

SITE ACQUISITION MANAGER  
(APPLICANT AGENT FOR VERIZON):

THE CBR GROUP  
841 ARNOLD DRIVE, SUITE A  
MARTINEZ, CA 94553  
CONTACT: CHRISTY BELTRAN  
PH: (415) 806-2323  
EMAIL: christy@thecbrgroup.com

CONSTRUCTION:

VERIZON WIRELESS  
2785 MITCHELL DRIVE, BLDG 9  
WALNUT CREEK, CA 94598  
CONTACT: JOSHUA HAN  
PH: (415) 867-4987  
EMAIL: joshua.han@verizonwireless.com

ENGINEER:

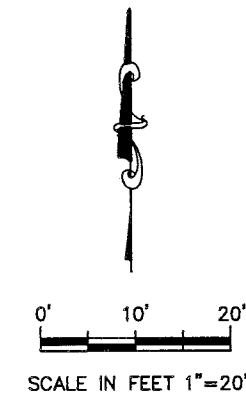
THE CBR GROUP  
841 ARNOLD DRIVE, SUITE A  
MARTINEZ, CA 94553  
CONTACT: MATT FREEDMAN  
PH: (925) 798-2100  
EMAIL: matt@thecbrgroup.com

RF ENGINEER:  
VERIZON WIRELESS  
2785 MITCHELL DRIVE, BLDG 9  
WALNUT CREEK, CA 94598  
CONTACT: BENJAMIN SANTA MARIA  
PH: . (925) 239-9186  
EMAIL: Benjamin.SantaMaria@verizonwireless.com

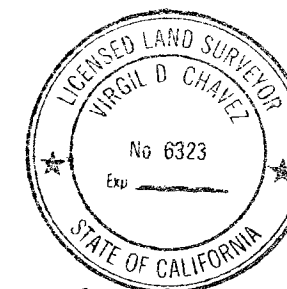
PROJECT INFORMATION	
<u>SITE INFORMATION:</u>	<u>POLE OWNER:</u>
SITE NUMBER: 425159	PG&E
SITE NAME: SONOMA 004	<u>POWER AGENCY:</u>
SITE ADDRESS: SW CORNER OF MARIANO DRIVE & 5TH STREET WEST SONOMA, CA 95476	PG&E 77 BEALE STREET SAN FRANCISCO, CA 94105 PH: (800) 743-5000
A.P.N. NUMBER: R.O.W.	
CURRENT USE: UTILITY POLE	
PROPOSED USE: UTILITY POLE AND TELECOMMUNICATIONS FACILITY	
JURISDICTION: CITY OF SONOMA	
LATITUDE: 38.3006492	
LONGITUDE: -122.4669976	
GROUND ELEVATION: 100.3'± A.M.S.L.	

[illegible]

OCCUPANCY AND CONSTRUCTION TYPE
<p>OCCUPANCY : S-2 (UNMANNED)</p> <p>CONSTRUCTION TYPE: IIB</p> <p><u>HANDICAP REQUIREMENTS</u></p> <p>FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION, ACCESSIBILITY ACCESS AND REQUIREMENTS ARE NOT REQUIRED, IN ACCORDANCE WITH CALIFORNIA STATE ADMINISTRATIVE CODE, PART 2, TITLE 24, SECTION 1103B.1, EXCEPTION 1 &amp; SECTION 1134B.2.1, EXCEPTION 4.</p>



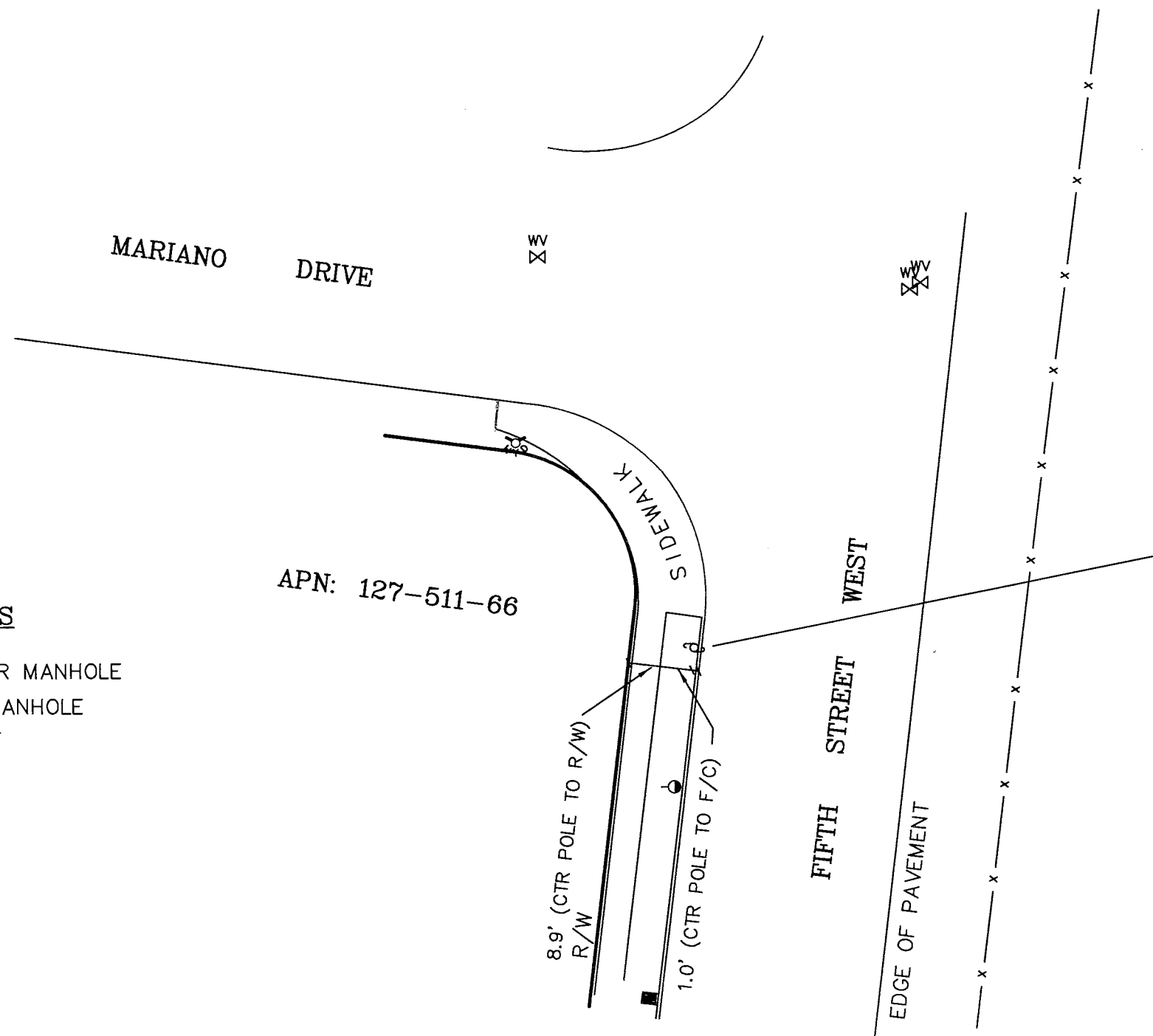
EXISTING UTILITY POLE  
LAT = N38°18'02.34" NAD83  
LAT = N38.3006492 NAD83  
LONG = W122°28'01.19" NAD83  
LONG = W122.4669976 NAD83  
TOP OF POLE ELEV= 137.95' NAVD88  
GROUND ELEV= 100.35' NAVD88



*Virgil D. Chavez*

# LEGEND/REFERENCES

- SS - SANITARY SEWER MANHOLE
- SD - STORM DRAIN MANHOLE
- - DRAINAGE INLET
- ▨ - CATCH BASIN
- ⊙ - JPOLE
- - GUY ANCHOR
- - WATER METER
- ⊗ - FIRE HYDRANT
- ⊗ - WATER VALVE
- R/W - RIGHT OF WAY
- - RIGHT OF WAY

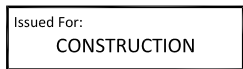
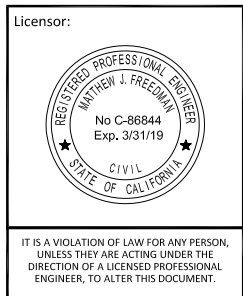
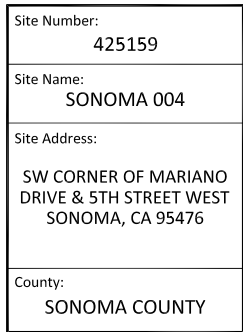
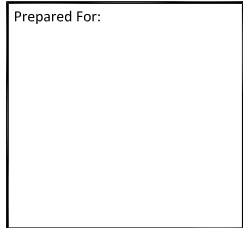
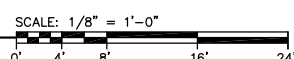
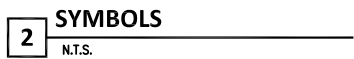


DATE:		AUGUST, 2017	
DRAWN BY:		RRS	
SCALE:		1"= 20'	
CHECKED:		VC	
PROJ. MGR:	VC	DC FILE:	365901
PROJ. NO.	365901	CAD FILE:	365901

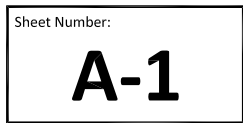
UTILITY POLE EXHIBIT  
SONOMA 004  
SONOMA, CA

VIRGIL CHAVEZ LAND SURVEYING  
721 TUOLUMNE STREET, VALLEJO, CA. 94590  
PHONE: (707) 553-2476

SHEET NO.  
1  
OF  
1 SHEETS



C	03/13/18	PLANNING COMMENTS	JG
B	09/26/17	100% CD'S FOR REVIEW	JG
A	09/07/17	90% CD'S FOR REVIEW	A.C
REV	DATE	DESCRIPTION	BY



1 EXISTING EQUIPMENT AND ANTENNA

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

2 PROPOSED EQUIPMENT AND ANTENNA

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

Prepared For:

**verizon**  
2785 MITCHELL DRIVE, SUITE 9  
WALNUT CREEK, CA 94598

Prepared For:

Site Number:

425159

Site Name:

SONOMA 004

Site Address:

SW CORNER OF MARIANO  
DRIVE & 5TH STREET WEST  
SONOMA, CA 95476

County:

SONOMA COUNTY

Engineer:

**THE CBR GROUP**  
841 ARNOLD DRIVE, SUITE A  
MARTINEZ, CA 94553  
www.TheCBRGroup.com

Licenser:



IT IS A VIOLATION OF LAW FOR ANY PERSON,  
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DIRECTION OF A LICENSED PROFESSIONAL  
ENGINEER, TO ALTER THIS DOCUMENT.

Issued For:

CONSTRUCTION

REV	DATE	DESCRIPTION	BY
C	03/13/18	PLANNING COMMENTS	JG
B	09/26/17	100% CD'S FOR REVIEW	JG
A	09/07/17	90% CD'S FOR REVIEW	A.C

Sheet Title:

EXISTING AND PROPOSED  
EQUIPMENT AND  
ANTENNA PLANS

Sheet Number:

A-2

Prepared For:



Prepared For:

Site Number:

425159

Site Name:

SONOMA 004

Site Address:

SW CORNER OF MARIANO  
DRIVE & 5TH STREET WEST  
SONOMA, CA 95476

County:

SONOMA COUNTY

Engineer:



Licenser:



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UNLESS THEY ARE ACTING UNDER THE  
DIRECTION OF A LICENSED PROFESSIONAL  
ENGINEER, TO ALTER THIS DOCUMENT.

Issued For:

CONSTRUCTION

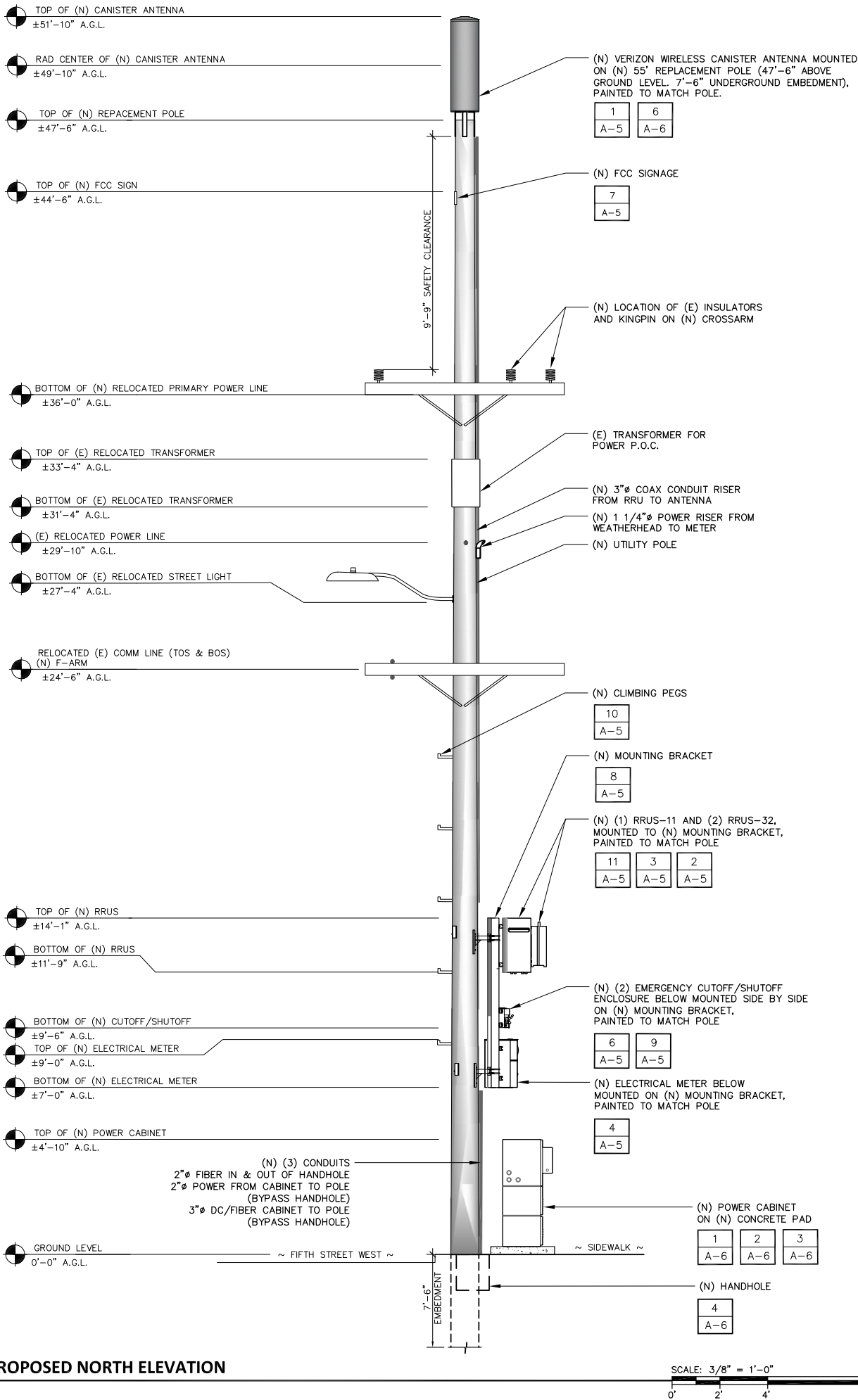
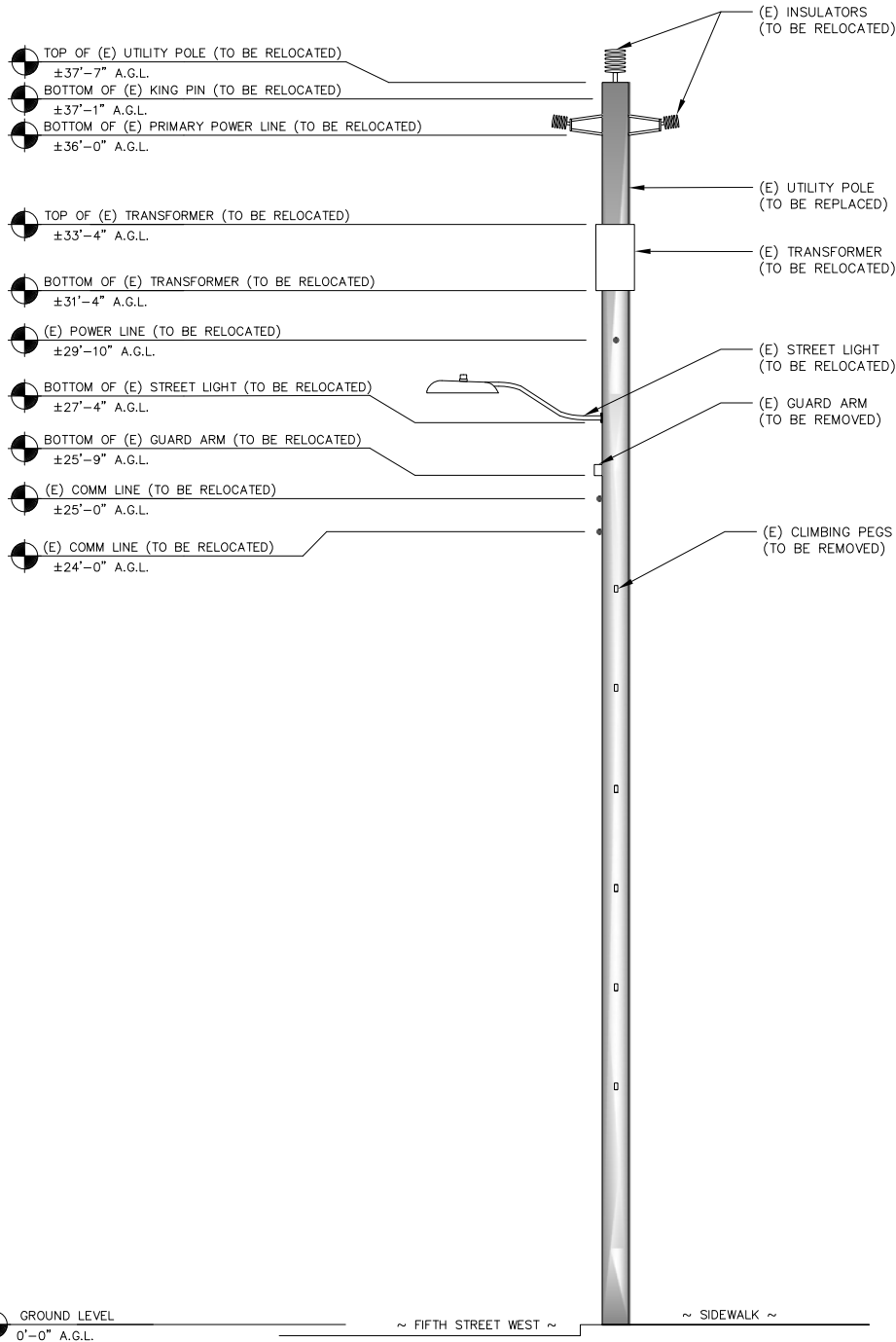
REV	DATE	DESCRIPTION	BY
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A	09/07/17	90% CD'S FOR REVIEW	A.C

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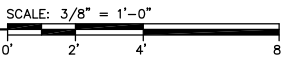
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NORTH ELEVATIONS

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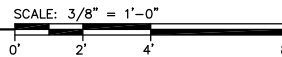
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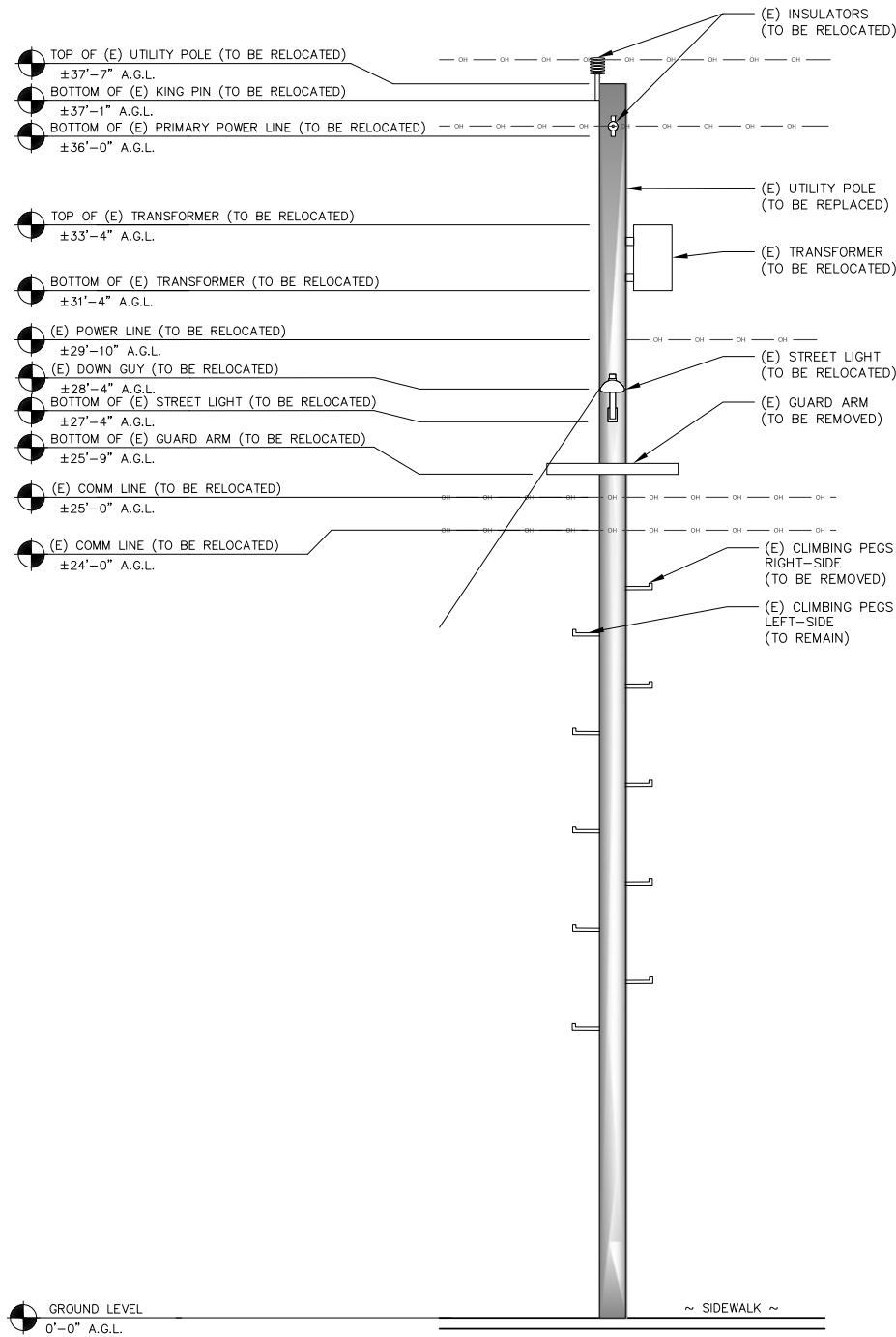
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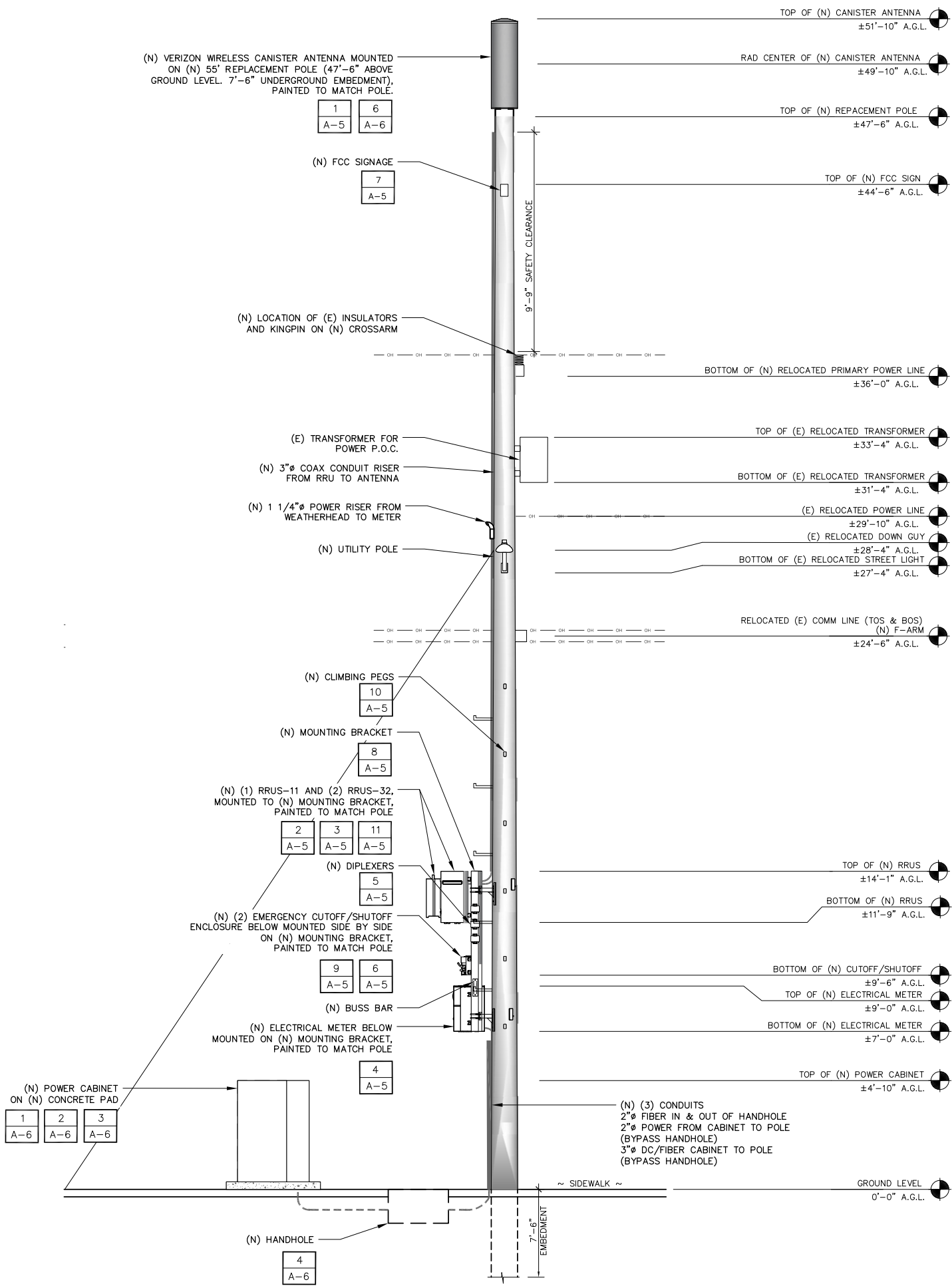
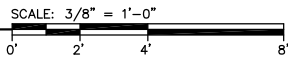
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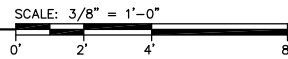




1 EXISTING EAST ELEVATION



2 PROPOSED EAST ELEVATION



Prepared For:

**verizon**

2785 MITCHELL DRIVE, SUITE 9  
WALNUT CREEK, CA 94598

Prepared For:

Site Number:  
425159

Site Name:  
SONOMA 004

Site Address:  
SW CORNER OF MARIANO  
DRIVE & 5TH STREET WEST  
SONOMA, CA 95476

County:  
SONOMA COUNTY

Engineer:

**THE CBR GROUP**

841 ARNOLD DRIVE, SUITE A  
MARTINEZ, CA 94553  
www.TheCBRGroup.com

Licenser:

REGISTERED PROFESSIONAL ENGINEER  
MATTHEW J. FREEDMAN  
No C-86844  
Exp. 3/31/19  
CIVIL  
STATE OF CALIFORNIA

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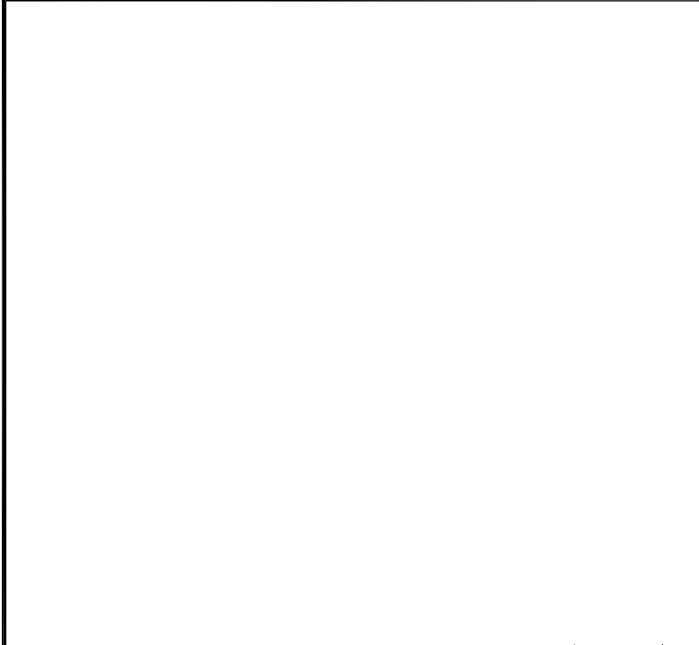
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EXISTING AND PROPOSED  
EAST ELEVATIONS

Sheet Number:  
**A-4**

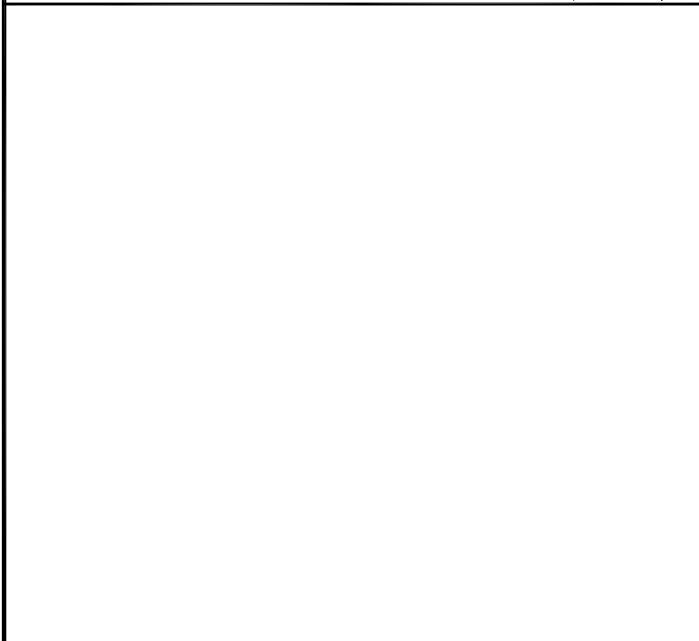




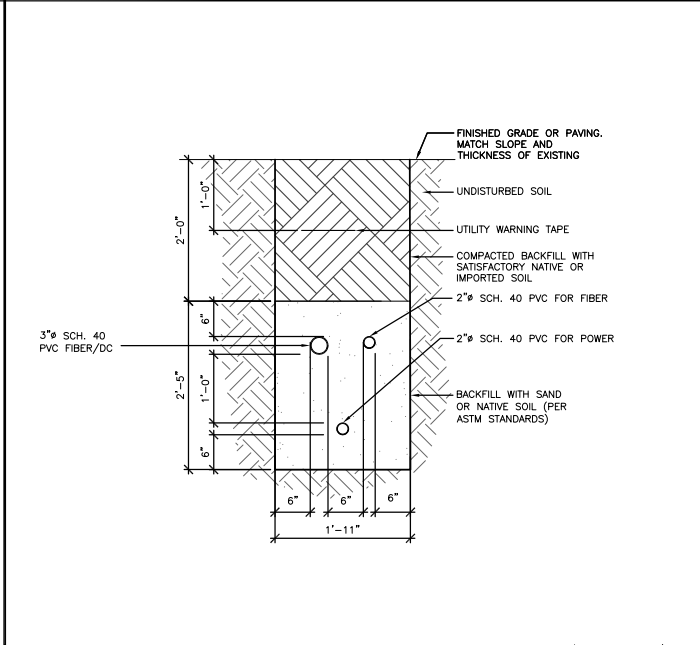
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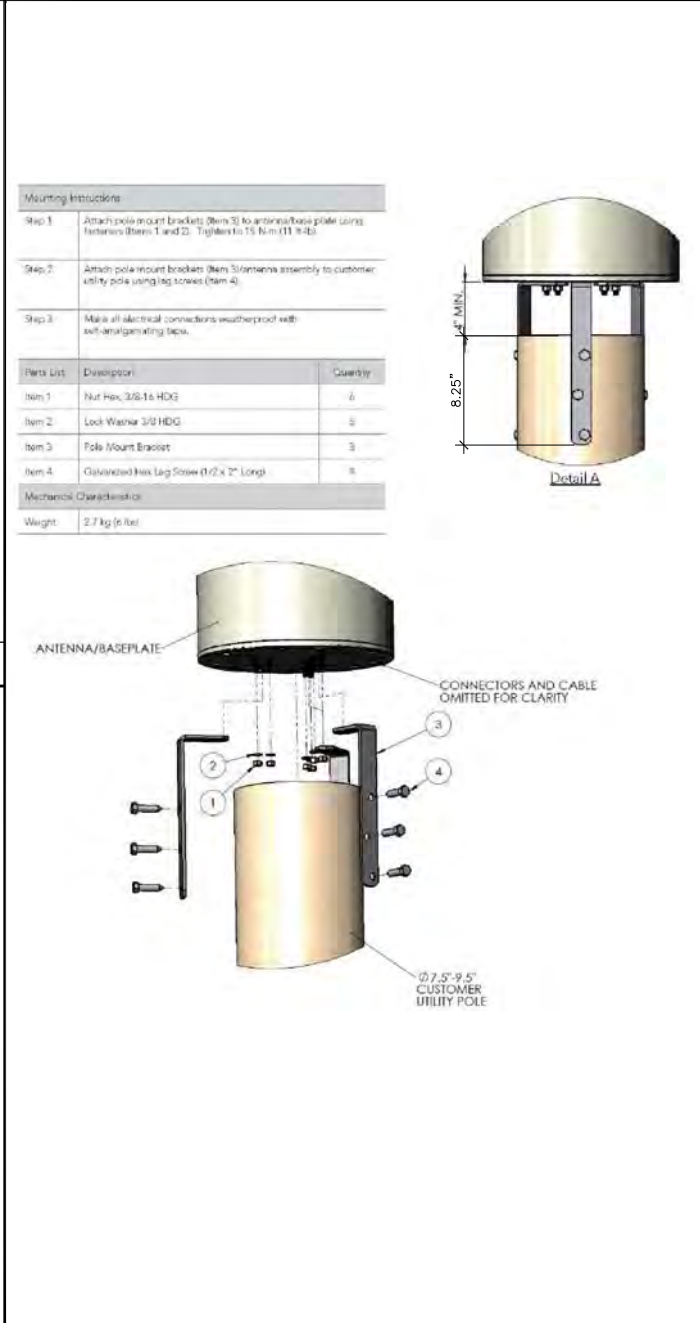
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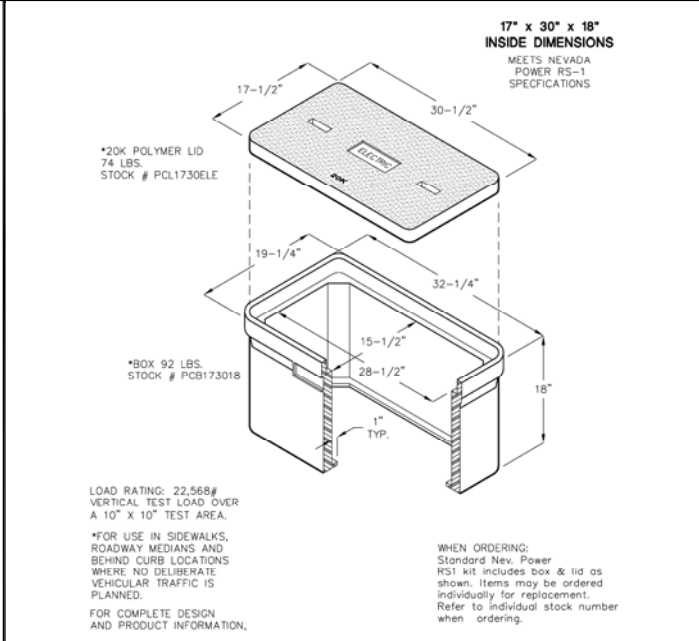
TRENCH DETAIL



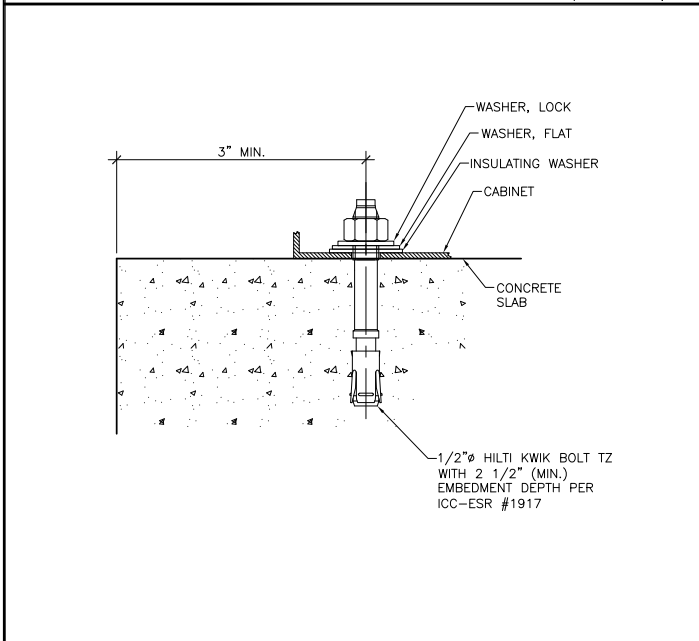
WB3X-MKS-01 ANTENNA MOUNT DETAIL



NOT USED



HANDHOLE DETAIL

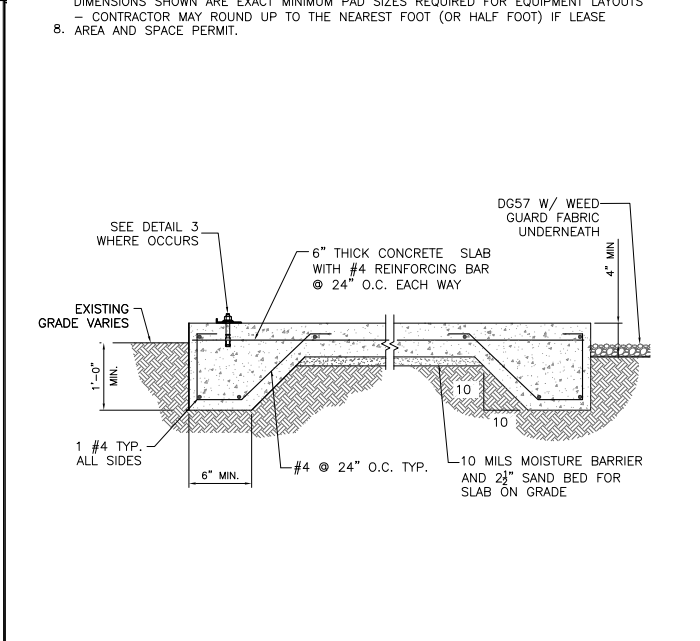


ANCHORAGE DETAIL

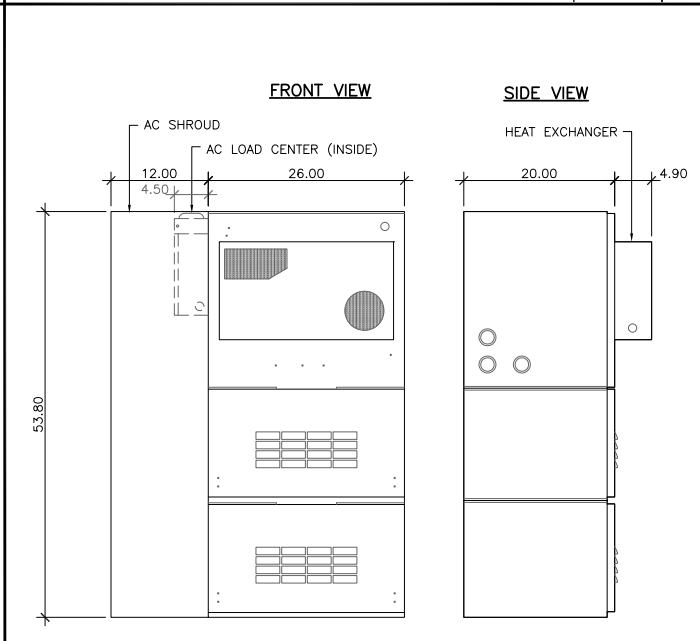
CONCRETE AND REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION PER CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:  
  
CONCRETE CAST AGAINST EARTH.....3 IN.  
CONCRETE EXPOSED TO EARTH OR WEATHER:  
#6 AND LARGER .....2 IN.  
#5 AND SMALLER & WWF .....1 1/2 IN.  
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:  
SLAB AND WALL .....3/4 IN.  
BEAMS AND COLUMNS .....1 1/2 IN.
- A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL, UNLESS NOTED OTHERWISE. SPECIAL INSPECTIONS, WHEN REQUIRED BY GOVERNING CODES SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.
- GRAVEL SHALL BE NATURAL OR CRUSHED STONE WITH 100% PASSING 1 INCH SIEVE.
- DIMENSIONS SHOWN ARE EXACT MINIMUM PAD SIZES REQUIRED FOR EQUIPMENT LAYOUTS - CONTRACTOR MAY ROUND UP TO THE NEAREST FOOT (OR HALF FOOT) IF LEASE
- AREA AND SPACE PERMIT.

NOT USED



CONCRETE PAD DETAIL



POWER CABINET DETAIL

Prepared For:

**verizon**

2785 MITCHELL DRIVE, SUITE 9  
WALNUT CREEK, CA 94598

Prepared For:

Site Number:  
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Site Name:  
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Site Address:  
SW CORNER OF MARIANO  
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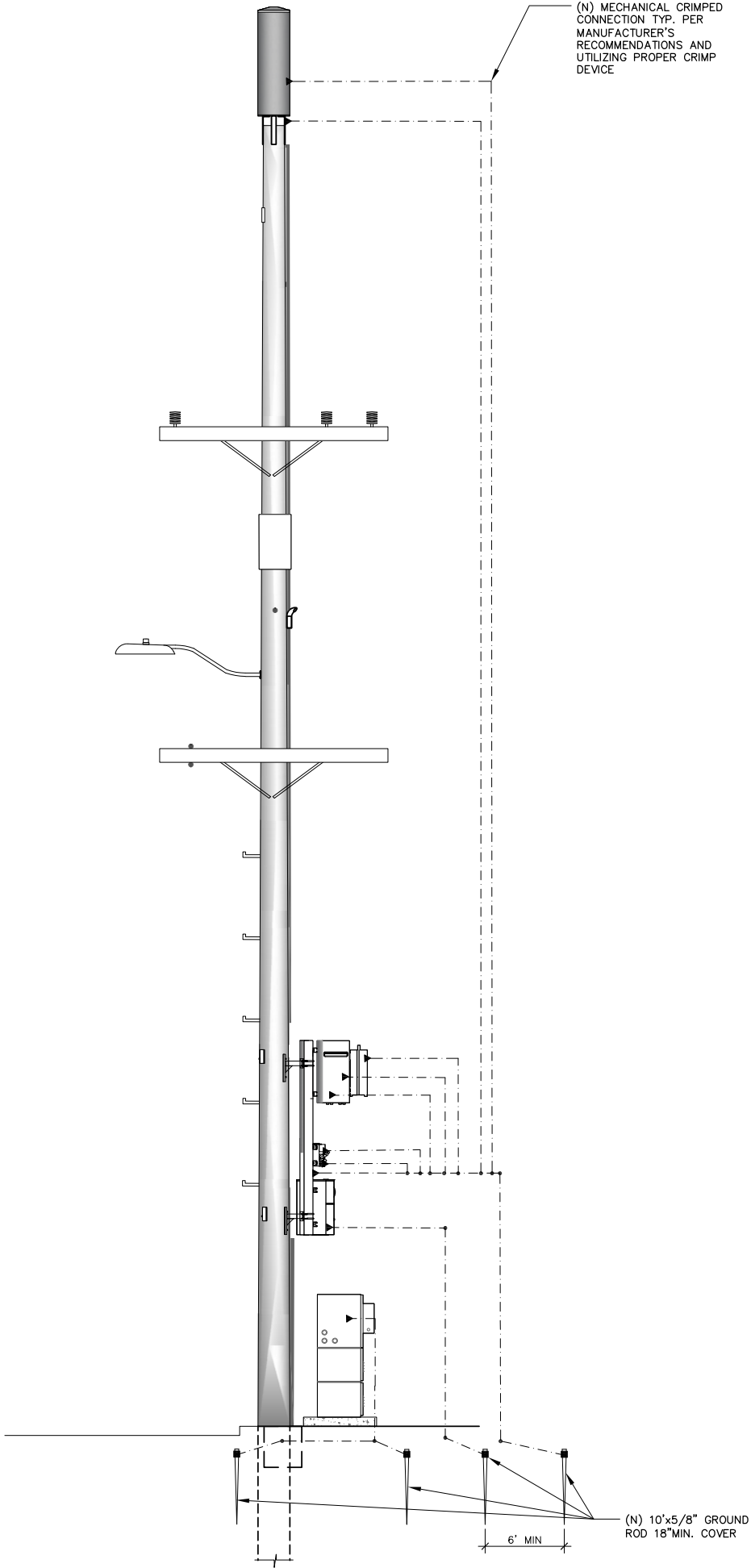
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Sheet Title:  
EQUIPMENT AND  
CONSTRUCTION  
DETAILS

Sheet Number:  
**A-6**





1 POLE GROUNDING DIAGRAM

POWER AND TELCO CONNECTIONS:

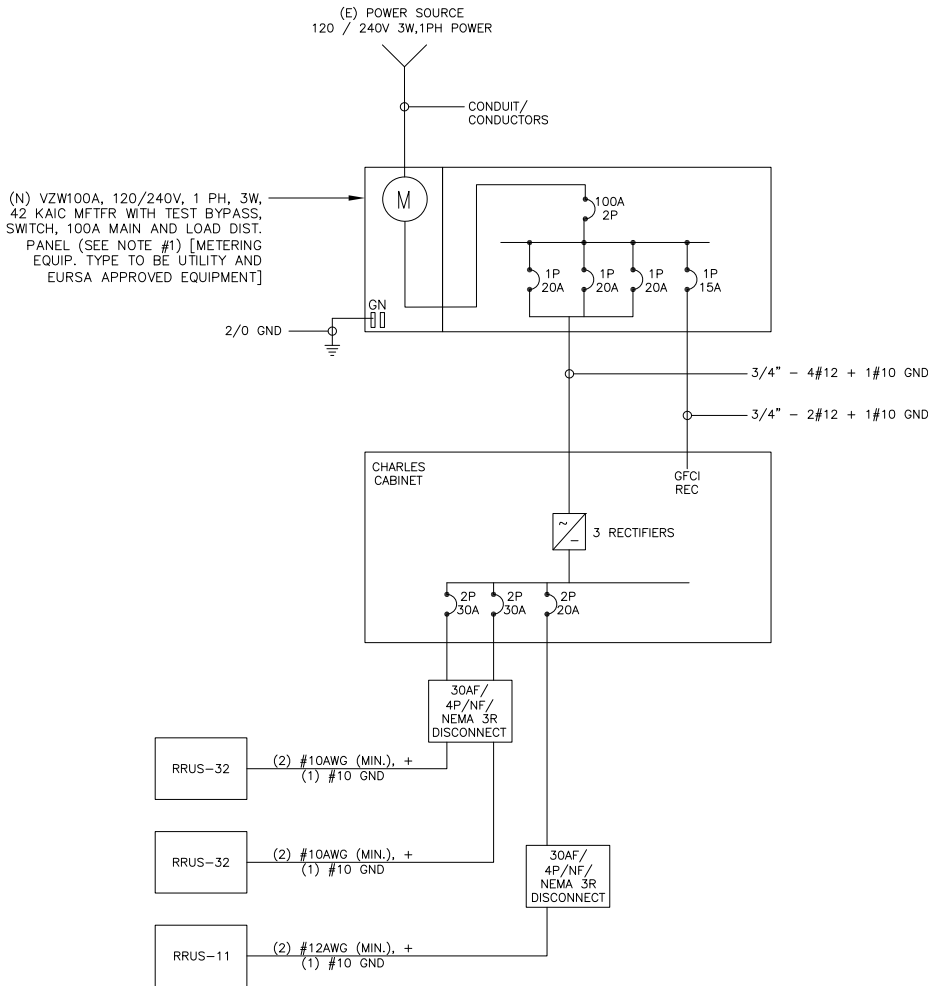
1. POWER AND TELCO POINT OF CONNECTION AND ROUTE ARE PRELIMINARY AND SUBJECT TO CHANGE TO CONFIRMATION BY THE UTILITY COMPANIES RESPECTIVELY.
2. CONTRACT SHALL COORDINATE WITH UTILITY COMPANY FOR FINAL AND EXACT WORK/MATERIALS REQUIREMENTS AND CONSTRUCT TO UTILITY ENGINEERING PLAN AND SPECIFICATIONS ONLY WHERE APPLICABLE PRE PROJECT SCOPE OF WORK.
3. CONTRACT SHALL FURNISH AND INSTALL CONDUIT, PULL WIRES, CABLE PULL BOXES, CONCRETE ENCASEMENT OF CONDUIT, TRANSFORMER PAD, BARRIERS, RISER TRENCHING, BACK FILL AND UTILITY FEES, AND INCLUDE REQUIREMENTS IN THE SCOPE
4. CONTRACTOR SHALL LABEL ALL MAIN DISCONNECT SWITCHES AS REQUIRED BY CODE.

POWER AND TELCO CONNECTIONS:

1. SUBCONTRACTOR SHALL PROVIDE METER WITH DIST. PANEL AND BREAKERS FOR POWER TO THE BTS UNITS AND THE BTS/UTILITY CABINET.
2. ALL SERVICE EQUIPMENT AND INSTALLATIONS SHALL COMPLY WITH THE N.E.C. AND UTILITY COMPANY AND LOCAL CODE REQUIREMENTS.
3. SUBCONTRACTOR SHALL PROVIDE ELECTRICAL SERVICE ENTRANCE EQUIPMENT WITH FAULT CURRENT RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT FROM THE POWER UTILITY.
4. FIELD ROUTE CONDUIT TO CABINETS AS REQUIRED.
5. MAXIMUM ONE WAY CIRCUIT RUN NOT TO EXCEED 75 FEET.

GENERAL ELECTRICAL NOTES:

1. PROVIDE ALL ELECTRICAL WORK & MATERIALS AS SHOWN ON THE DWGS, AS CALLED FOR HEREIN, & AS IS NECESSARY TO FURNISH A COMPLETE INSTALLATION.
2. THE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ADOPTED CALIFORNIA ELECTRICAL CODE, STATE OF CALIFORNIA TITLE24, ALL OTHER APPLICABLE CODES AND ORDINANCES & THE REQUIREMENTS OF THE FIRE MARSHALL. ALL EQUIPMENT & WIRING SHALL BEAR THE APPROVAL STAMP OF UNDERWRITERS LABORATORY (UL) OR AN APPROVED TESTING LABORATORY, PAYMENT FOR ALL INSPECTION FEES AND PERMITS ARE PART OF THIS CONTRACT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND GOOD CONDITION OF ALL MATERIALS & EQUIPMENT FOR THE ENTIRE INSTALLATION & UNIT COMPLETION OF WORK, ERECT & MAINTAIN APPROVED & SUITABLE BARRIERS, PROTECTIVE DEVICES & WARNING SIGNS, BE FULLY RESPONSIBLE FOR ANY LOSS OR INJURY TO PERSONS OR PROPERTY RESULTING FROM NEGLIGENCE AND/OR ENFORCEMENT OF ALL SAFETY PRECAUTIONS & WARNINGS.
4. COORDINATE THE ELECTRICAL INSTALLATION WITH ALL OTHER TRADES.
5. ALL SAW CUTTING, TRENCHING, BACK FILLING & PATCHING SHALL BE PART OF THIS CONTRACT.
6. FINALIZE ALL ELECTRICAL SERVICE ARRANGEMENTS, INCLUDING VERIFICATION OF LOCATIONS, DETAILS, COORDINATION OF THE INSTALLATION & PAYMENT OF ACCRUED CHARGES WITH LOCAL POWER COMPANY, VERIFY LOCATION FOR FACILITIES & DETAILS WITH POWER UTILITY, IN ADDITION TO THE REQUIREMENTS SHOWN IN THE CONTRACT DOCUMENTS, WORK SHALL COMPLY WITH CONSTRUCTION STANDARDS & SERVICE REQUIREMENTS OF THE RESPECTIVE UTILITIES, INCLUDING ANY SUPPLEMENTAL DWGS ISSUED & SHALL BE SUBJECT TO APPROVAL OF THESE UTILITIES.
7. ALL WIRING SHALL BE COPPER, INSULATION FOR BRANCH CIRCUIT CONDUCTORS SHALL BE TYPE "THWN" CONDUCTORS LARGER AND #6 AWG MAY BE TYPE "THWN" OR "TWN".
8. PROVIDE CONDUIT SEALS FOR ALL CONDUITS PENETRATING WEATHERPROOFING OR WEATHERPROOF ENCLOSURE ENVELOPE. MASTIC SEAL ALL CONDUIT OPENING PENETRATIONS COMPLETELY WATERTIGHT.
9. UNLESS SHOWN OTHERWISE, FUSED DISCONNECT SWITCHES SHALL BE PROVIDED WITH LOW-PEAK, S\UAL ELEMENT FUSES SIZED TO EQUIPMENT NAMEPLATE FUSE CURRENT RATING. MOTOR STARTERS SHALL BE PROVIDED WITH SIMILARLY SIZED FUSIBLE ELEMENTS, SWITCHES AND OTHER OUTDOOR EQUIPMENT SHALL BE RATED NEMA 3R AND/OR UL LISTED FOR WET ENVIRONMENT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING THE GROUNDING SYSTEM AND ENSURING A 5 OHM OR LESS GROUNDING PATH, ADDITIONAL GROUND RODS AND/OR CHEMICAL ROD SYSTEM SHALL BE USED TO ACHIEVE THIS REQUIREMENT.



2 SINGLE LINE DIAGRAM  
N.T.S.

LOAD CALCULATIONS-VERIZON WIRELESS

EXISTING LOAD: 0 AMPS  
NEW LOAD: 10.0 AMPS MAX  
NEW TOTAL LOAD: 10.0 AMPS MAX

POWER AND TELCO DESIGN IS BASED ON INITIAL SITE VISIT.

CONTRACTOR SHALL OBTAIN CURRENT UTILITY COORDINATOR PLANS PRIOR TO START OF CONSTRUCTION.

AVAILABLE FAULT CURRENT PER UTILITY.

NOTE: CONTRACTOR TO CHECK WITH UTILITY TO ENSURE ELEC. METER IS BRACED FOR ACTUAL FAULT CURRENT.

Prepared For:

**verizon**  
2785 MITCHELL DRIVE, SUITE 9  
WALNUT CREEK, CA 94598

Prepared For:

Site Number:

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Site Name:

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Site Address:

SW CORNER OF MARIANO  
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County:

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Engineer:



841 ARNOLD DRIVE, SUITE A  
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www.TheCBRGroup.com

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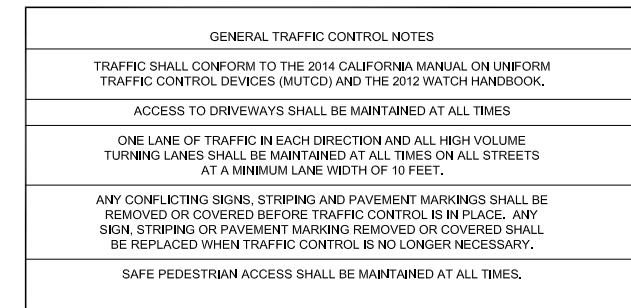
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ELECTRICAL GROUND  
DIAGRAMS, SINGLE LINE  
DIAGRAM














Sheet Number:

E-1





POSTED SPEED LIMIT - MPH	MERGING TAPER LENGTH "L" - FEET	SHIFTING TAPER LENGTH "L/2" - FEET	SHOULDER TAPER LENGTH "L/3" - FEET	SIGN SPACING ADVANCE OF TAPER & BETWEEN SIGNS - FEET
20	80	40	27	100
25	125	63	42	100
30	180	90	60	250
35	245	123	82	250
40	320	160	107	250
45	540	270	180	350
50	600	300	200	350
55	660	330	220	350

	TYPE III BARRICADE W/ SIGN
	TYPE II BARRICADE W/ SIGN
	CHANNELIZING DEVICE
	TRAFFIC CONE WITH CLIP ON SIGN
	SIGN
	SIGNALIZED INTERSECTION
	ARROW PANEL (FLASHING ARROW) (WHERE REQUIRED)
	HIGH LEVEL WARNING DEVICE (FLAGTREE) (OPTIONAL)
	FLAGGER
TANS	TOW AWAY NO STOPPING ____ TO ____ (SHOW HOURS)
TANSAT	TOW AWAY NO STOPPING ANY TIME
	WORK ZONE (ACTIVITY AREA) LIMITS
	DIRECTION OF TRAFFIC (NOT PAVEMENT MARKING)
	ROADWAY DESIGNATION (A THROUGH D)
	SITE





# VERIZON SMALL CELL FOR SONOMA POLYGON ALTERNATIVE SITE ANALYSIS

Verizon Small Cell Node "Sonoma 004" (near 53 5<sup>th</sup> Street W.)

Prepared September 18, 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

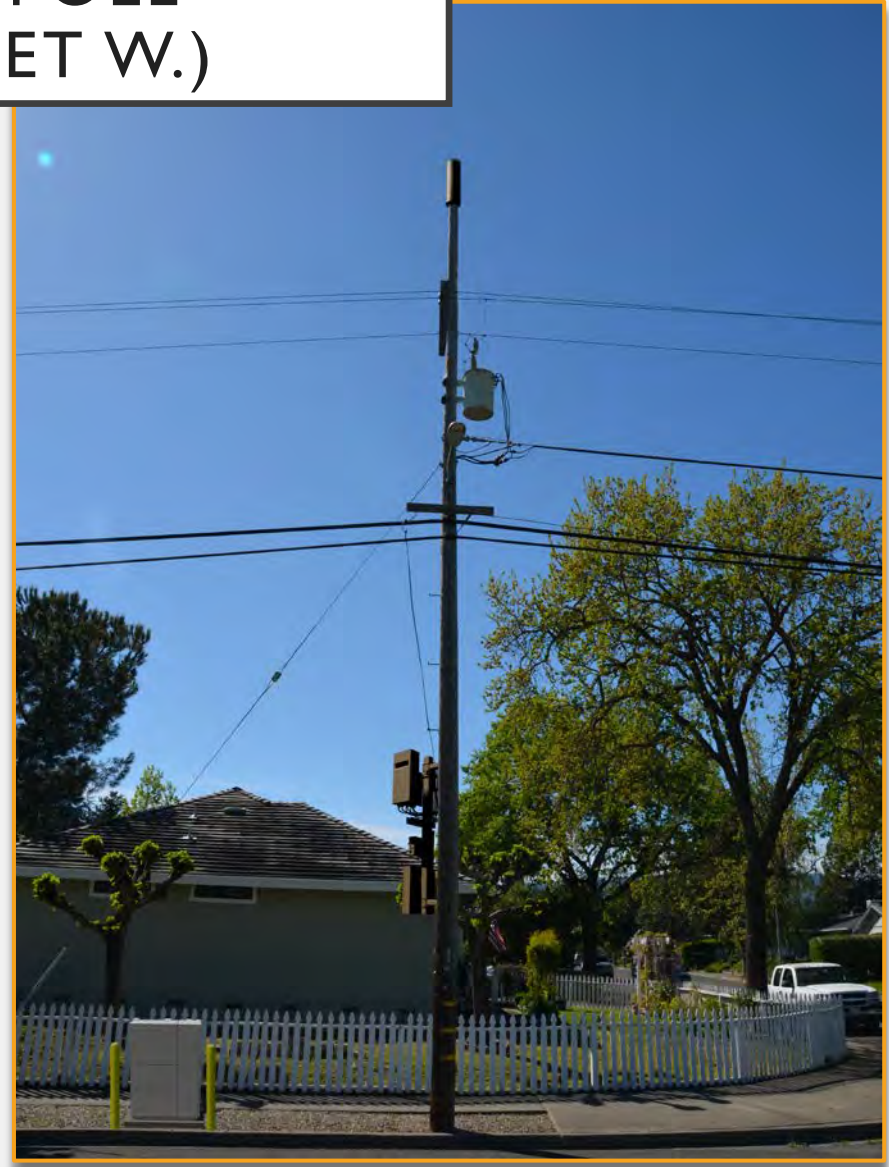
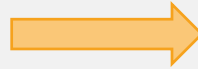
- In addition to the proposed existing wooden utility pole location for this Node, Verizon considered poles immediately adjacent to the proposed pole to explain why it was selected.
- Existing antenna towers, monopoles, and rooftops located more than 150 feet from the proposed location are not viable 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





# PROPOSED POLE (53 5<sup>TH</sup> STREET W.)



## ALTERNATE SITE #1 (19019 5<sup>TH</sup> STREET W)

### Node - Alternative Site #1

This alternative location is a wood utility pole located in the Public ROW. The nearest address is 19019 5<sup>th</sup> Street W.

### Pole Elimination Justification:

This pole is not feasible for Verizon to locate on as it will not comply with G095 JPA Pole Standards as it will cause the climbing space to be blocked on the pole due to the risers needed for the site and run up the pole. One quadrant on pole needs to be left open for the technicians to climb up and down the pole.



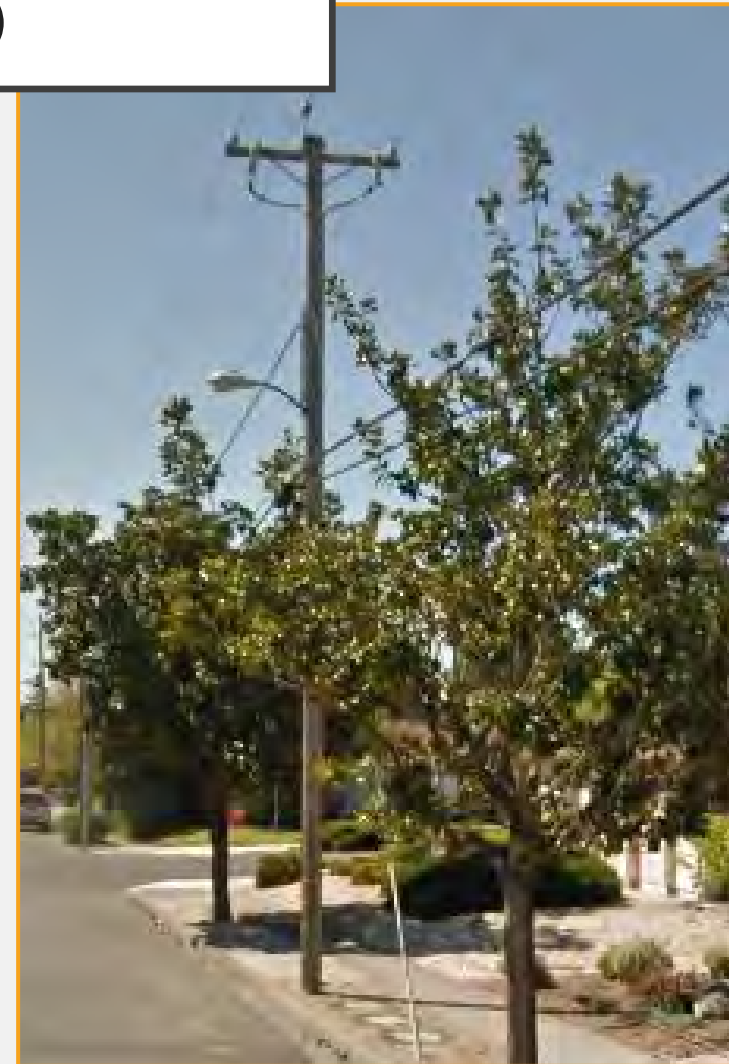
## ALTERNATE SITE #2 (61 5<sup>TH</sup> STREET W)

### Node - Alternative Site #2

This alternative location is a wood utility pole located in the Public ROW. This pole is located near 61 5<sup>th</sup> Street W.

### Pole Elimination Justification:

This pole is not feasible for Verizon to locate on as it will not comply with G095 JPA Pole Standards as it will cause the climbing space to be blocked on the pole due to the risers need for the site and run up the pole. One quadrant on pole needs to be left open for the technicians to climb up and down the pole.



## ALTERNATE SITE #3 (530 MARIANO DR)



### Node - Alternative Site #3

This alternative location is a wood utility pole located in the Public ROW. The nearest address is 530 Mariano Dr.

### Pole Elimination Justification:

This candidate was eliminated as the City does not have a Master License Agreement in place for Verizon to locate equipment on the existing City Light 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.

Typical Macro facility – industry standard sized colocateable facility with full compliment of radios



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. 425159  
Sonoma 004  
The SW Corner of Mariano Drive and 5th Street West  
Sonoma, California 95476  
Sonoma County  
38° 18' 2.34" N, -122° 28' 1.19" W NAD83

EBI Project No. 6217004166  
September 26, 2017



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

Prepared by:  
 **EBI Consulting**  
environmental | engineering | due diligence

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<b>APPENDIX B RADIO FREQUENCY ELECTROMAGNETIC ENERGY SAFETY / SIGNAGE PLANS</b>	
<b>APPENDIX C ROOFVIEW® EXPORT FILES</b>	

## 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 425159 located at the SW Corner of Mariano Drive and 5th Street West 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 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.

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 **0.90** percent of the FCC's general public limit (**0.18** 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.



## 1.0 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 the SW Corner of Mariano Drive and 5th Street West 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)	X	Y	Z
AI	700	1	40	Omni	3.35	49.83 ft AGL	50	50	47.83
Amphenol	1900	1	40		7.35				
CUUT360X12Fxyz	2100	1	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 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.

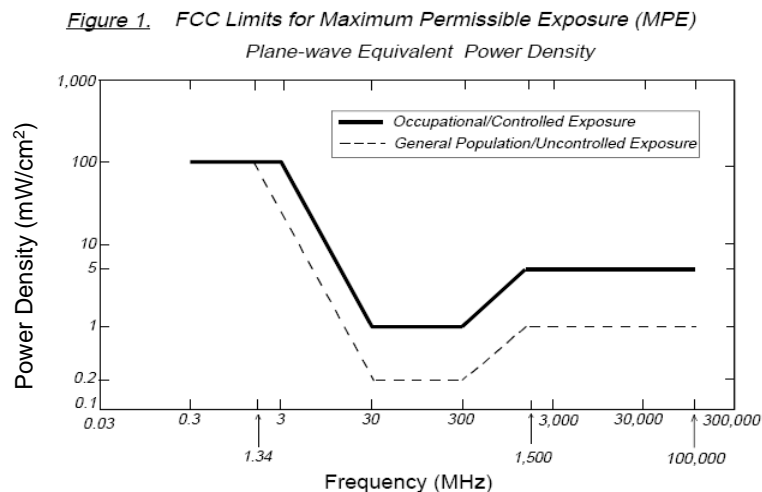
The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm<sup>2</sup>). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm<sup>2</sup>) and an uncontrolled MPE of 1 mW/cm<sup>2</sup> for equipment operating in the 1900 MHz frequency range. For the Verizon equipment operating at 700 MHz or 850 MHz, the FCC's occupational MPE is 2.83 mW/cm<sup>2</sup> and an uncontrolled MPE of 0.57 mW/cm<sup>2</sup>. 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 <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	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/cm <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time [E] <sup>2</sup> , [H] <sup>2</sup> , or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
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 <sup>2</sup>	1.00 mW/cm <sup>2</sup>
Cellular Telephone	870 MHz	2.90 mW/cm <sup>2</sup>	0.58 mW/cm <sup>2</sup>
Specialized Mobile Radio	855 MHz	2.85 mW/cm <sup>2</sup>	0.57 mW/cm <sup>2</sup>
Most Restrictive Freq. Range	30-300 MHz	1.00 mW/cm <sup>2</sup>	0.20 mW/cm <sup>2</sup>

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 0.90 percent of the FCC's general public limit (0.18 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 425159 located at the SW Corner of Mariano Drive and 5th Street West 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**

Reviewed and Approved by:



sealed 27sep2017

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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.







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# **Appendix B**

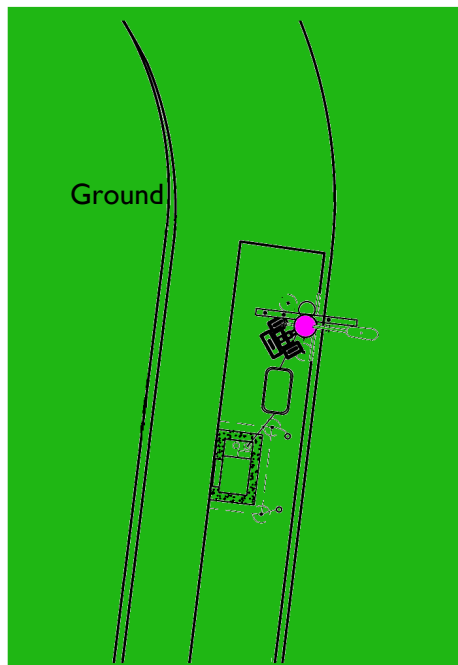
## **Radio Frequency Electromagnetic Energy**

### **Safety / Signage Plans**

# % FCC Public Exposure Limit

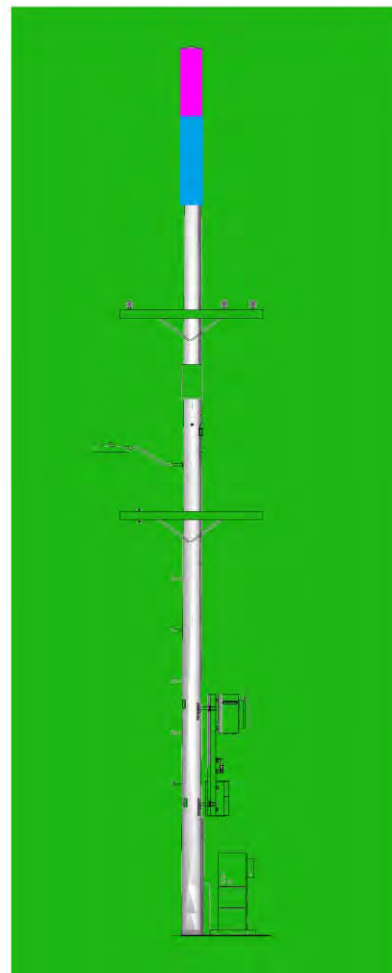
	Exposure Level $\geq 5,000$
	$500 < \text{Exposure Level} \leq 5,000$
	$100 < \text{Exposure Level} \leq 500$
	Exposure Level $\leq 100$

## Ground Level



 Verizon Antennas

## Down Pole



## Roofview: Composite Exposure Levels

Facility Operator: Verizon Wireless

Site Name: Sonoma 004

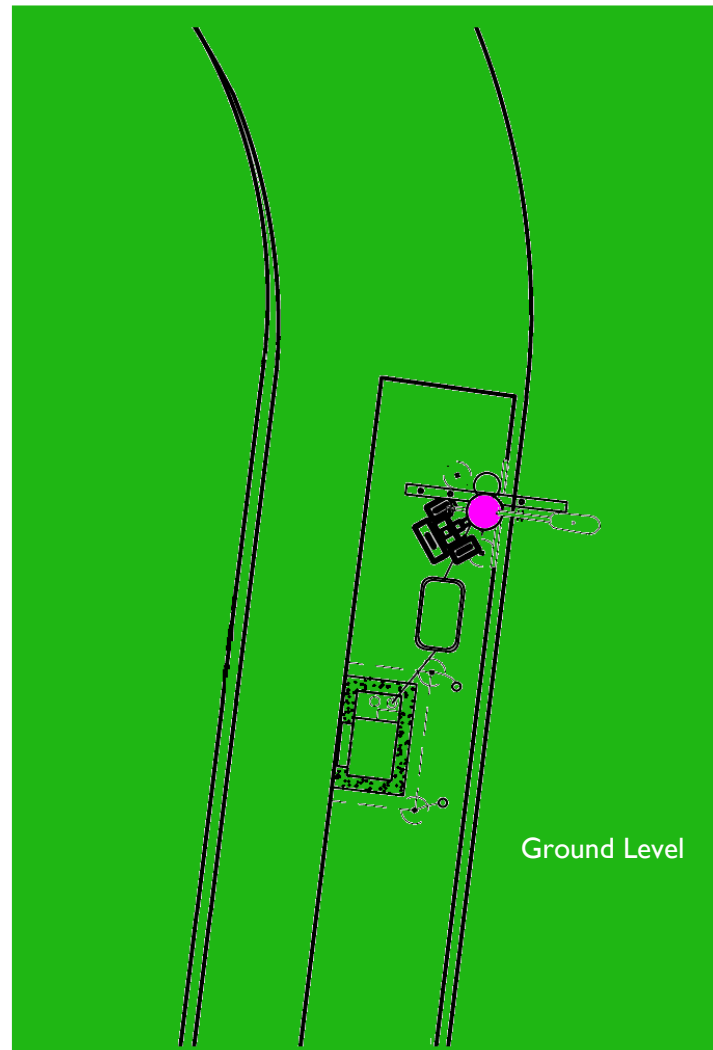
Verizon Site Number: 425159

Report Date: 09-26-17

**% FCC Public Exposure Limit**



Exposure Level > 5  
Exposure Level ≤ 5



**Verizon Antennas**



**Roofview: Verizon Exposure Levels**

**Facility Operator:** Verizon Wireless

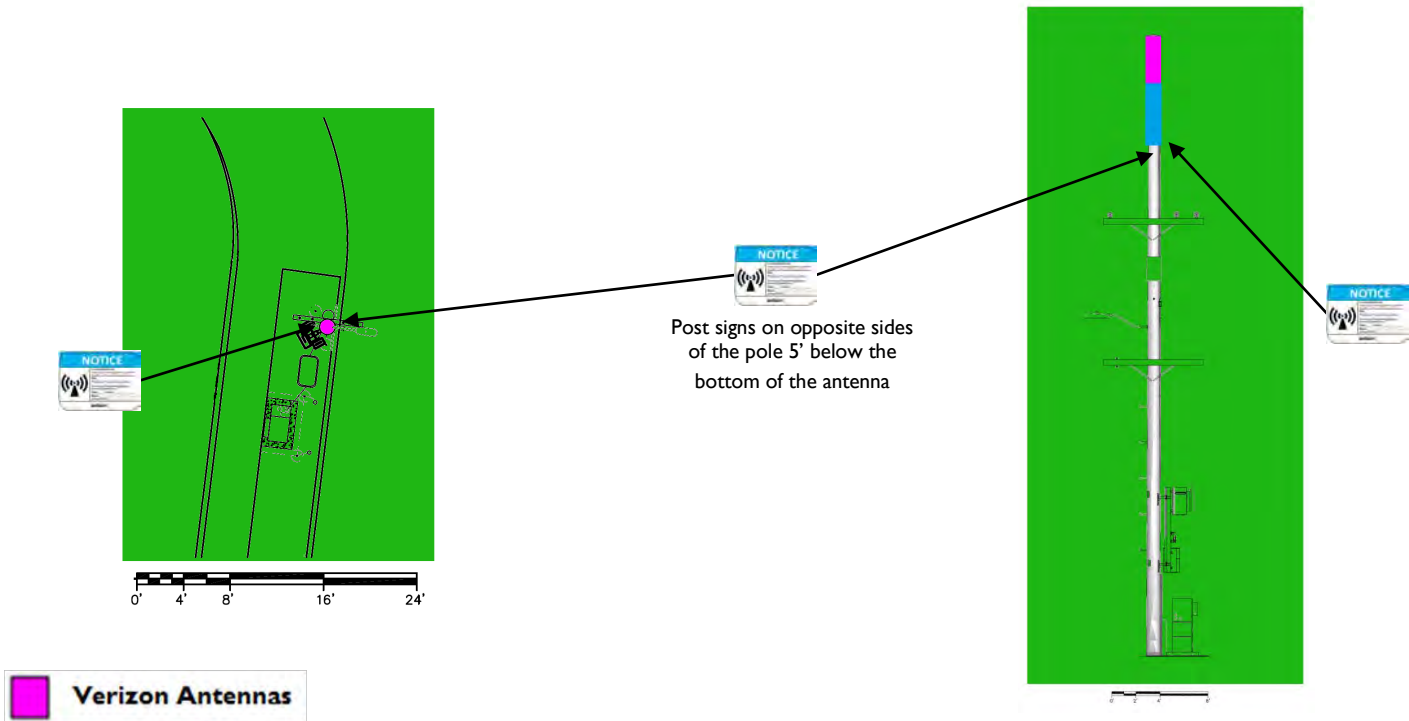
**Site Name:** Sonoma 004


**Verizon Site Number:** 425159

**Report Date:** 09-26-17



# Verizon Signage Plan



Sign Image	Description	Posting Instructions	Required Signage
	<b>Blue Notice Sign</b> 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**

StartMapDefinition

Roof Max YRoof Max XMap Max YMap Max X Y Offset X Offset Number of envelope  
120 120 140 140 20 20 1 \$AES81:\$E` \$AES81:\$ET\$200

List Of Areas  
\$AES81:\$ET\$200

StartSettingsData

Standard Method Uptime Scale Facto Low Thr Low Color Mid Thr Mid Color Hi Thr Hi Color Over Color Ap Ht Mult Ap Ht Method  
4 2 1 1 100 1 500 4 5000 2 3 1.5 1

StartAntennaData

It is advisable to provide an ID (ant 1) for all antennas

ID	Name	Freq	Power	Count	Len	Type	Loss	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	Uptime Profile	ON flag
VZW A1	LTE	700	40	1	0	0	1			Amphenol	CUUT360X12Fxyz	50	50	47.83		4	3.35	360;0		ON•
VZW A1	LTE	1900	40	1	0	0	1			Amphenol	CUUT360X12Fxyz	50	50	47.83		4	7.35	360;0		ON•
VZW A1	LTE	2100	40	1	0	0	1			Amphenol	CUUT360X12Fxyz	50	50	47.83		4	7.85	360;0		ON•

StartSymbolData

Sym	Map Mark	Roof X	Roof Y	Map Label	Description ( notes for this table only )
Sym		5	35	AC Unit	Sample symbols
Sym		14	5	Roof Access	
Sym		45	5	AC Unit	
Sym		45	20	Ladder	



# City of Sonoma

Planning Department  
Revised 04/25/17

Sonoma 004  
RECEIVED

SEP 28 2017

## Uniform Application

CITY OF SONOMA

*Before submitting your application, have you checked with:*

✓ Planning Department?    ✓ Building Department?    ✓ Public Works Department?    ✓ Fire Department?

### Applicant Information

Name Verizon Wireless C/O The CBR Group

Address 841 Arnold Dr., Suite A, Martinez, CA, 94553

Phone (415-215-5485) Christy@thecbrgroup.com

### Owner Information

Name N/A Pole is located in Public R.O.W.

Address \_\_\_\_\_

Phone \_\_\_\_\_

### Type of Application

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Environmental Review                   | <input type="checkbox"/> Rezoning/Annexation                            | <input checked="" type="checkbox"/> Design Review   |
| <input type="checkbox"/> Conditional Use Permit                 | <input type="checkbox"/> Rezoning:<br>from _____ to _____               | <input type="checkbox"/> Demolition Permit          |
| <input type="checkbox"/> Conditional Use Permit (Minor)         | <input type="checkbox"/> General Plan<br>Amendment: from _____ to _____ | <input type="checkbox"/> Certificate of Compliance  |
| <input type="checkbox"/> Tentative Subdivision Map (5+ lots)    | <input type="checkbox"/> Variance                                       | <input type="checkbox"/> Lot Line Adjustment/Merger |
| <input type="checkbox"/> Tentative Parcel Map (4 or fewer lots) | <input type="checkbox"/> Exception                                      | <input type="checkbox"/> Public Notice              |
| <input type="checkbox"/> Planned Unit Development               |   | <input type="checkbox"/> Other: _____               |

**Notice of special fees:** The following special fees may also apply to your application:

- 1) **Public Notice Fee:** To cover costs associated with required newspaper and mailed public notices.
- 2) **County Processing Fee:** Applies to environmental review. Collected at application submittal.
- 3) **Fish and Game Fee:** Negative Declaration and EIR. Collected at application submittal. May be waived if project meets specific criteria.

Project Location (by address or nearest cross-street) SW corner of Mariano Drive & 5th Street West, Sonoma CA 95476

Assessor's Parcel Number (s) \_\_\_\_\_ R.O.W. \_\_\_\_\_

General Plan Land Use Designation \_\_\_\_\_ Zoning \_\_\_\_\_

Brief Project Description Install Antenna With RRUs, Cables, Power cabinet and associated Equipment on pole on a replacement Utility pole

### 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 City'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 9/28/17



**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 right-of-way. Neither the act of submitting the application nor anything contained therein shall be construed as a waiver of any such rights.