SONOMA 007

303 W. NAPA STREET
SONOMA, CA 95476
STRUCTURE TYPE: STREET LIGHT POLE
LOCATION CODE: 425162

verizon

PROJECT DESCRIPTION

THIS IS AN UNMANNED WIRELESS TELECOMMUNICATION FACILITY FOR VERIZON WIRELESS CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTENNA AND ASSOCIATED EQUIPMENT. SCOPE OF WORK CONSISTS OF THE FOLLOWING:

1. INSTALL (N) COMMSCOPE METRO CELL INTEGRATED POLE AT GROUND LEVEL.
2. INSTALL (N) CANISTER ANTENNA ON (N) POLE.
3. INSTALL (N) FCC SIGNAGE ON (N) POLE.
4. INSTALL (1) (N) RRU INSIDE POLE BASE MODULE.
5. INSTALL (1) (N) DISCONNECT SWITCH INSIDE POLE BASE MODULE.
6. INSTALL (1) (N) PG&E SMART METER INSIDE POLE CONCEALMENT MODULE.

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)
2) 2016 CALIFORNIA RESIDENTIAL CODE (CRC)
3) 2016 CALIFORNIA HISTORICAL BUILDING CODE (CHBC)
4) 2016 CALIFORNIA EXISTING BUILDING CODE (CEBC)
5) 2016 CALIFORNIA GREEN BUILDINGS STANDARDS CODE (CGBSC)
6) 2016 CALIFORNIA FIRE CODE (CFC)
7) 2016 CALIFORNIA MECHANICAL CODE (CMC)
8) 2016 CALIFORNIA PLUMBING CODE (CPC)
9) 2016 CALIFORNIA ELECTRICAL CODE (CEC)
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

SHEET INDEX

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A-4	EQUIPMENT AND CONSTRUCTION DETAILS	C

OCCUPANCY AND CONSTRUCTION TYPE

OCCUPANCY : U (UNMANNED COMMUNICATIONS FACILITY)

CONSTRUCTION TYPE: –

HANDICAP REQUIREMENTS

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 & SECTION 1134B.2.1, EXCEPTION 4.

RADIO FREQUENCY DATA PLAN

INITIATIVE:	REVISION LEVEL	DATE:
–	–	–

GENERAL CONTRACTOR NOTES

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 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.

CALL 811 BEFORE YOU DIG — 811 SAFE DIGGING PARTNER

PROJECT TEAM

APPLICANT/LESSEE:

VERIZON WIRELESS
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

APPLICANT/ENGINEER:

THE CBR GROUP
2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
PH: (925) 246-3212
EMAIL: projects@thecbrgroup.com

PROJECT INFORMATION

CURRENT USE:
STREET LIGHT & TELECOMMUNICATIONS FACILITY

JURISDICTION:
SONOMA COUNTY

LATITUDE:
38.292217

LONGITUDE:
-122.463583

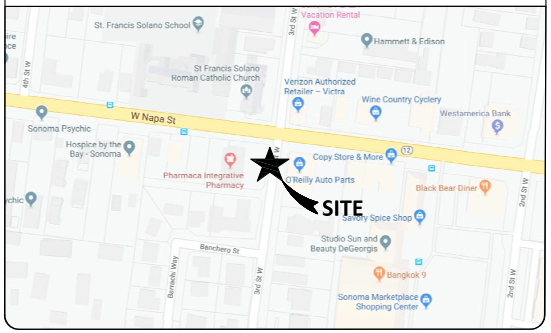
AMSL:
±82.5' AMSL

PROPERTY OWNER:
R.O.W.

POLE OWNER:
PG&E

POWER AGENCY:
PG&E
77 BEALE STREET
SAN FRANCISCO, CA 94109
PH: (800) 743-5000

VICINITY MAP



STRUCTURE PHOTO

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number: 425162

Site Name: SONOMA 007

Site Address: 303 W. NAPA STREET SONOMA, CA 95476

County: SONOMA COUNTY

Issued For: ZONING

REV	DATE	DESCRIPTION	BY
C	08/28/2019	DESIGN CHANGE	JG
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

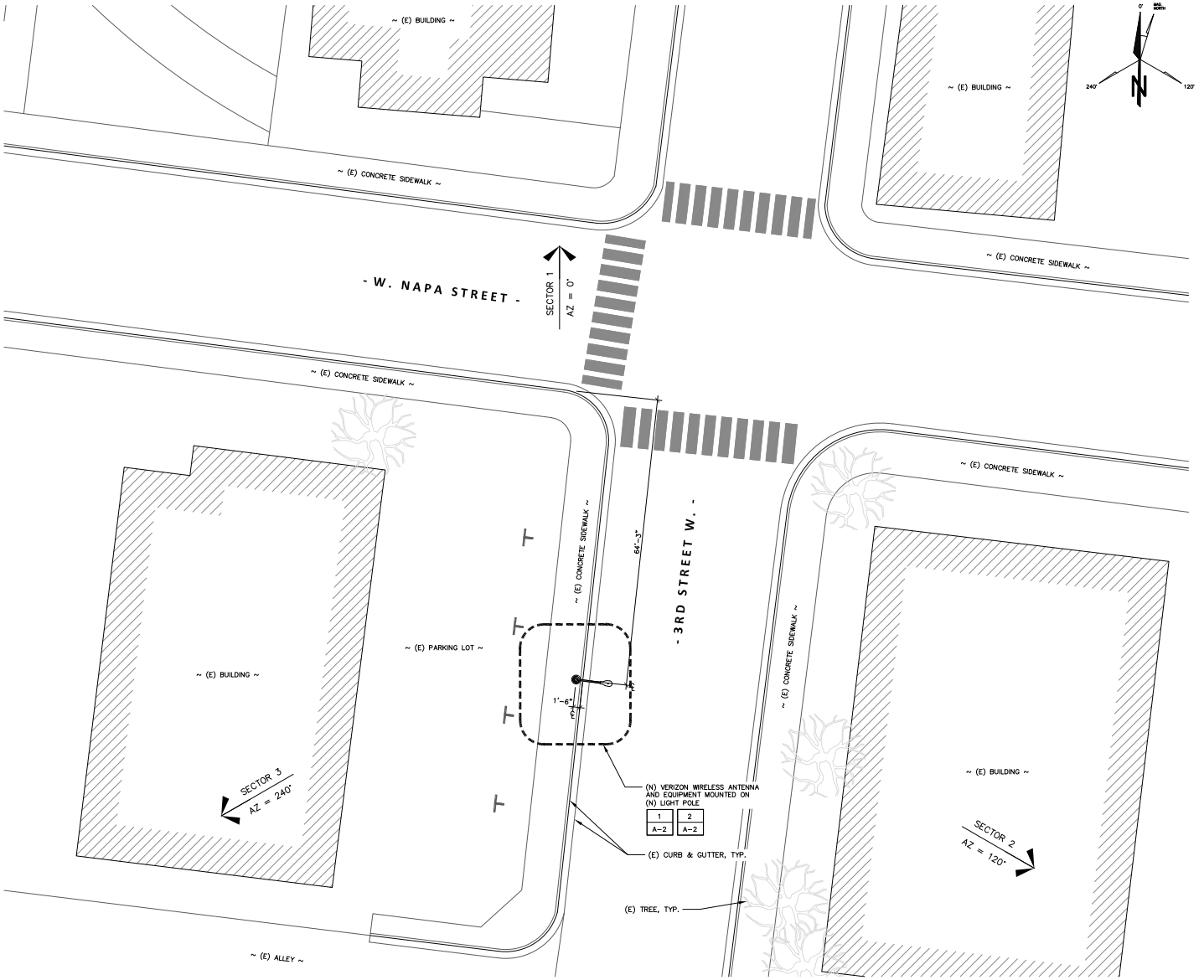
Licensor:

Sheet Title: TITLE SHEET

Sheet Number: T-1

SYMBOLS

- GRID REFERENCE
- DETAIL REFERENCE
- ELEVATION REFERENCE
- SECTION REFERENCE
- CENTERLINE
- PROPERTY/LEASE LINE
- MATCH LINE
- WORK POINT
- GROUND CONDUCTOR
- TELEPHONE CONDUIT
- ELECTRICAL CONDUIT
- COAXIAL CABLE
- OVERHEAD SERVICE CONDUCTORS
- GROUT OR PLASTER
- (E) BRICK
- (E) MASONRY
- CONCRETE
- EARTH
- GRAVEL
- PLYWOOD
- SAND
- WOOD CONTINUOUS
- WOOD BLOCKING
- STEEL
- (N) NEW
- (E) EXISTING
- NEW ANTENNA
- EXISTING ANTENNA
- GROUND ROD
- GROUND BUS BAR
- MECHANICAL GRND. CONN.
- CADWELD
- GROUND ACCESS WELL
- ELECTRIC BOX
- TELEPHONE BOX
- LIGHT POLE
- FND. MONUMENT
- SPOT ELEVATION
- SET POINT
- REVISION
- CENTERLINE



1 **OVERALL SITE PLAN**

SCALE: 3/32" = 1'-0"

0' 4' 8' 16' 32'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

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MARTINEZ, CA 94553
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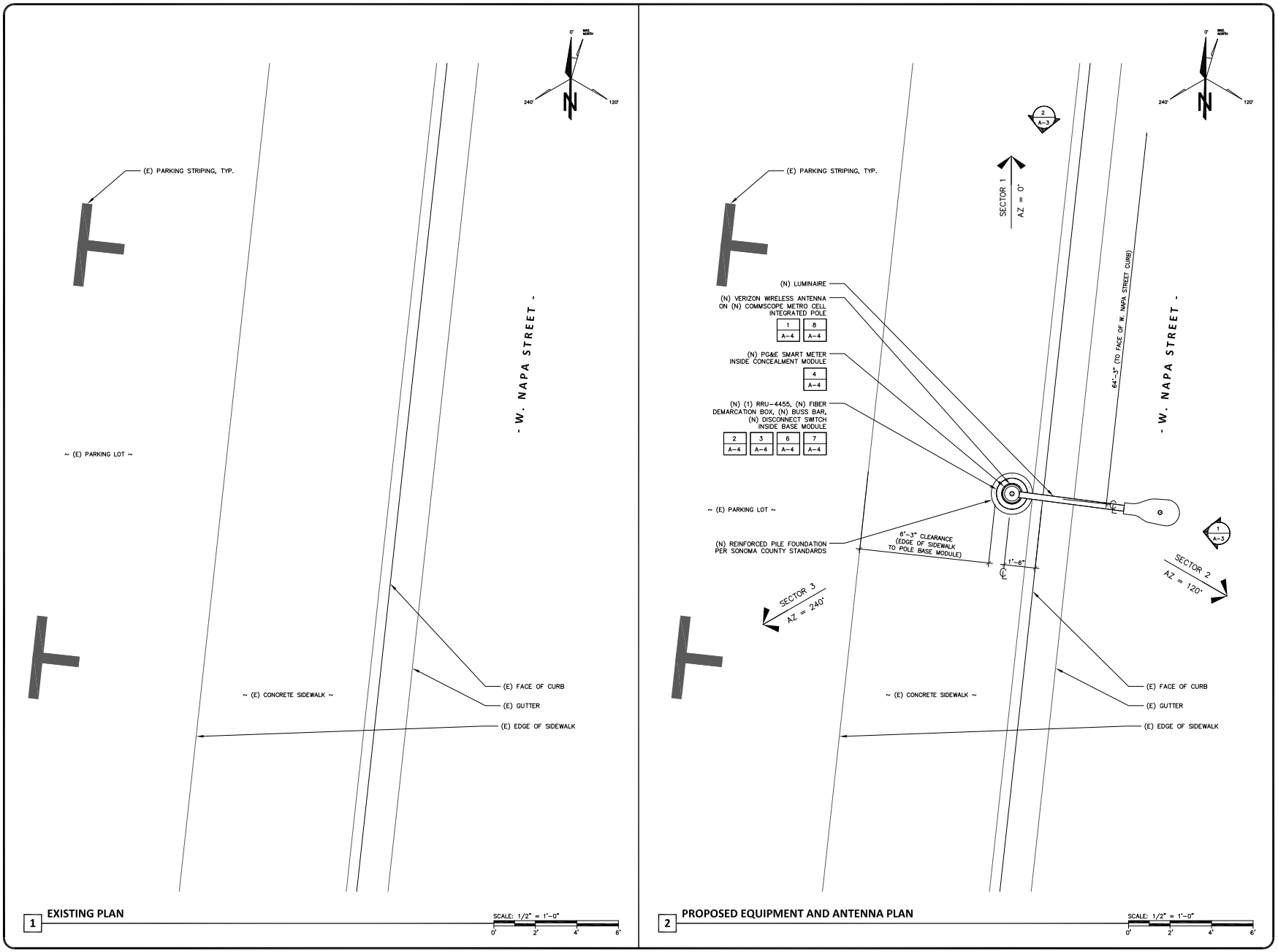
Licensor:

Sheet Title:
OVERALL SITE PLAN

Sheet Number:
A-1



1 **EXISTING PLAN** SCALE: 1/2" = 1'-0"

2 **PROPOSED EQUIPMENT AND ANTENNA PLAN** SCALE: 1/2" = 1'-0"

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

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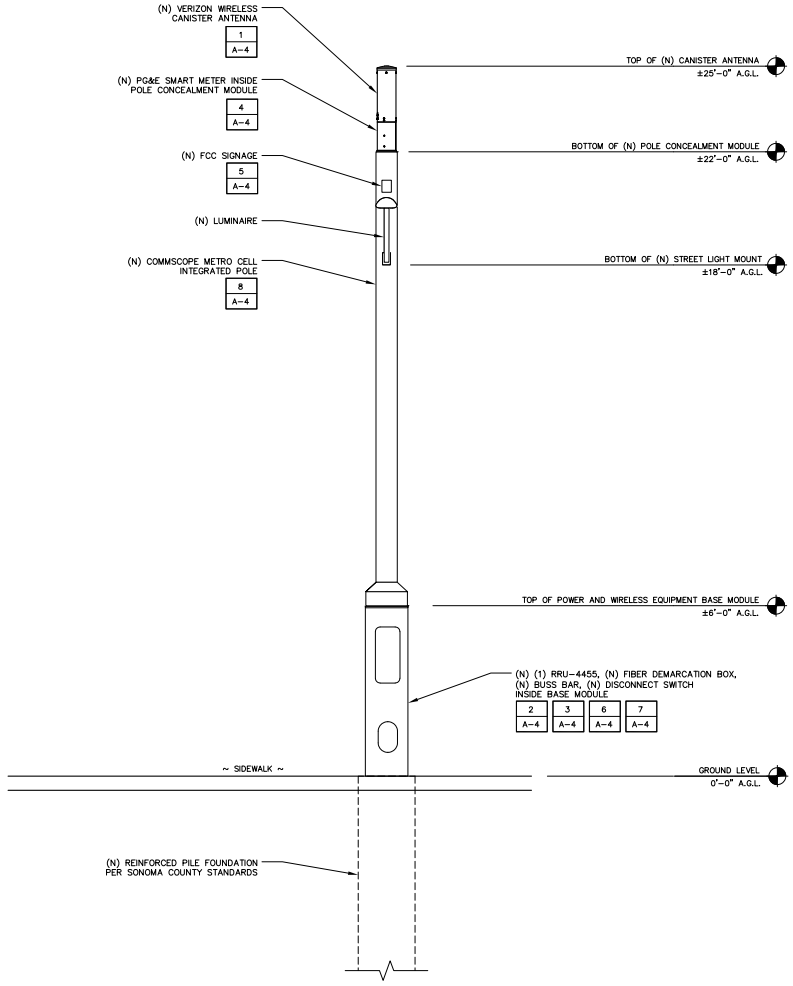
Licensor:

Sheet Title: EXISTING PLAN, PROPOSED EQUIPMENT AND ANTENNA PLAN

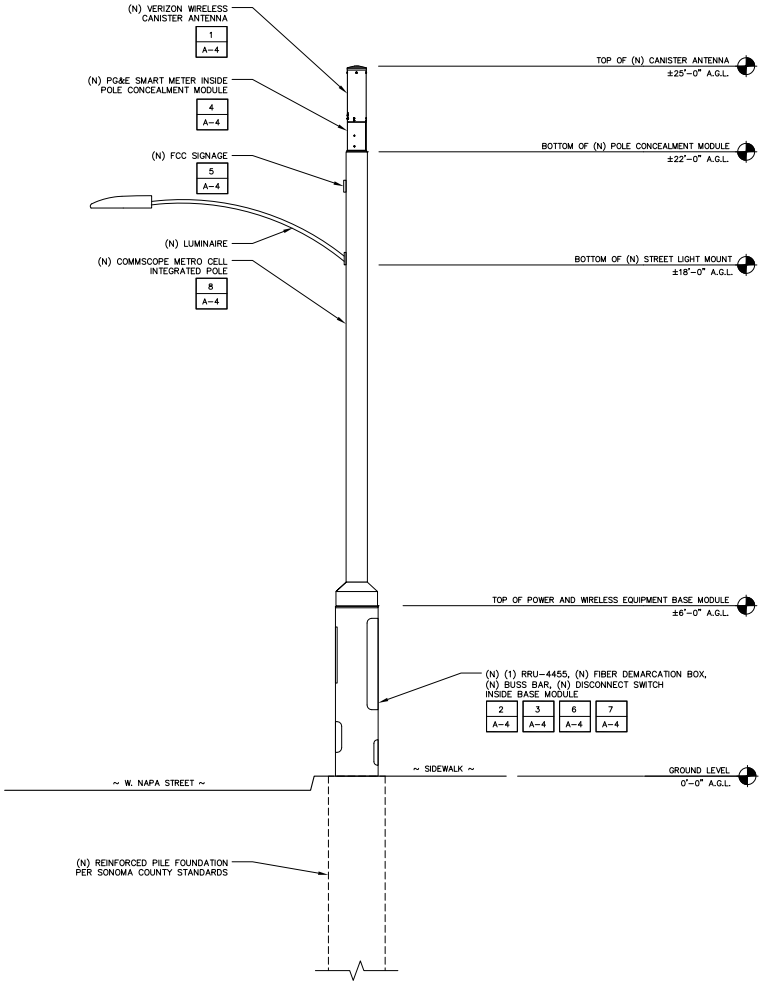
Sheet Number: **A-2**



1 **PROPOSED EAST ELEVATION**

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

0' 2' 4' 6'



2 **PROPOSED NORTH ELEVATION**

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

0' 2' 4' 6'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP
2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

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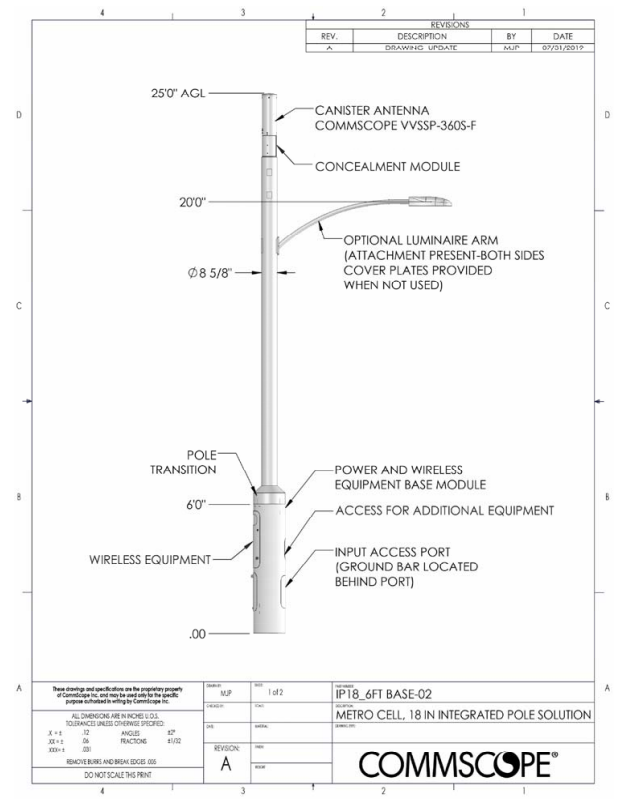
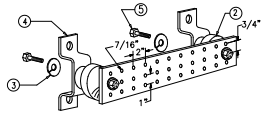
Licensor:

Sheet Title:
PROPOSED EAST AND NORTH ELEVATIONS

Sheet Number:
A-3



INTEGRATED POLE DETAIL (SIMILAR) — SCALE: N.T.S — 8



NOTES:

1. GALVANIZED STEEL GROUND BAR, ¼" X 20", NEWTON INSTRUMENT CO. CAT. NO. 8-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION. (ACTUAL GROUND BAR SIZE WILL VARY BASED ON NUMBER OF GROUND CONNECTIONS)
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
3. 5/8" LOCKWASHER, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUAL
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
5. 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1 OR EQUAL
6. INSULATORS SHALL BE ELIMINATED WHEN BONDING DIRECTLY TO TOWER/MONOPOLE STRUCTURE. CONNECTION TO TOWER/MONOPOLE STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

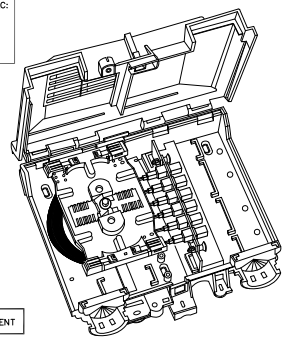
NOTE: ALL HARDWARE SHALL BE STAINLESS STEEL

BUSS BAR — SCALE: N.T.S — 6

DIMENSIONS:
8.54"x10"x2.88" (HxWxD)

CAPACITY:
6-PACK DUPLEX SC OR LC:
12 FIBERS

SPECIAL FEATURES:
AVAILABLE AS SINGLE OR
DUAL DOOR ENCLOSURE



OR APPROVED EQUIVALENT

FIBER DEMARCATION BOX DETAIL — SCALE: N.T.S — 3

NOTE:
CONTRACTOR TO INPUT SITE ID / SITE NAME / MARKET ID / PS LOCATION CODE

CAUTION

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY EXCEED the FCC Occupational exposure limit. Obey all posted signs and site guidelines.
Call Verizon Wireless at 1-800-264-6620 prior working beyond this point.

STATE: CA SWITCH: (SWITCH NAME)
SITE ID: (BS NUMBER)
SECTOR/NODE: (SWITCH NUMBER-CELL NUMBER-SITE NAME)

RSI 6404.5D

CAUTION SIGN (FCC SIGNAGE) — SCALE: N.T.S — 5

Radio 4455 Medium Power B2/25 & B66A for Street Macro applications

- **4 antenna ports, 4TX/4RX for 2 bands with common RF ports**
- **Up to 160W RF Power shared between 2 bands**
  - Examples:
    - 4x20W on each band or
    - 4x10W and 4x30W
- **Carrier Capacity:**
  - Up to (6DL/12UL) carrier and up to 60/65+70 MHZ CBW for LTE (B2 60M & B25 65M)
- 2x 10.1 Gbps CPRI, with max 3 Radios in cascading
- **Size and Weight:**

Radio 4455 - B2 & B66A	Height	Width	Depth	Weight
wo protruding items	30 in (760 mm)	10.4 in (262 mm)	6.9 in (169 mm)	59.5 lbs (27 Kg)
w protruding items	32.3 in (820 mm)	11.9 in (300 mm)	9.3/6.5 in (Round/Sq. mm 165mm)	

- AC power (Nominal voltage 100 - 250 V)
- Power 840 W (PSU max output)
- AISG RET,(1 ALD port, max 25W)
- Type 4.3-10 RF connectors
- IP 65, -40 to +55 C
- Support additional sun-shield, included in the protruding dimensions above

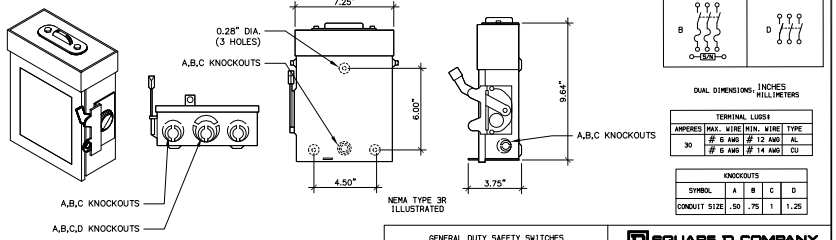
RRUS-4455 DETAIL — SCALE: N.T.S — 2

NOTES: FINISH - GRAY BAKED ENAMEL ELECTRODEPOSITED OVER CLEANED PHOSPHATIZED STEEL.
UL LISTED - FILE E-2875
ALL NEUTRALS - INSULATED GROUNDABLE
SUITABLE FOR USE AS SERVICE EQUIPMENT
TOP OF NEMA TYPE 3R SWITCHES HAVE PROVISIONS FOR MAXIMUM 2 1/2" BOLT-ON HUB.
SHORT CIRCUIT CURRENT RATINGS:
● 10,000 AMPERES.
10,000 AMPERES WHEN USED WITH OR PROTECTED BY CLASS H OR K FUSES.
100,000 AMPERES WITH CLASS R FUSES.
※ FOR CORNER GROUNDED DELTA SYSTEM.
■ PLUG FUSES
◆ LUGS SUITABLE FOR 60°C OR 75°C CONDUCTORS.

CATALOG NUMBER	VOLTAGE RATINGS	WIRING DIAG.	HORSEPOWER RATINGS 120VAC STD. 1ø	120VAC MAX. 1ø	240VAC STD. 1ø	240VAC STD. 3ø	240VAC MAX. 1ø	240VAC MAX. 3ø
D211NRB◆■	240VAC	A	1/2	2	1 1/2	-	3	-
D221NRB	240VAC	A	-	-	1 1/2	3※	3	7 1/2※
D321NRB	240VAC	B	-	-	1 1/2	3	3	7 1/2
DU221RB	240VAC	C	-	-	-	-	3	-
DU321RB	240VAC	D	-	-	-	-	3	7 1/2

WIRING DIAGRAMS

FUSIBLE	NOT FUSIBLE
A (S/N)	C
B (S/N)	D



DUAL DIMENSIONS: INCHES
MILLIMETERS

TERMINAL LUGS# AMPERES	MAX. WIRE	MIN. WIRE	TYPE
30	# 6 AWG	# 12 AWG	AL
	# 6 AWG	# 14 AWG	CU

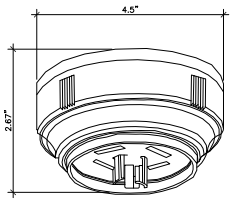
KNOCKOUTS SYMBOL	A	B	C	D
CONDUIT SIZE	.50	.75	1	1.25

GENERAL DUTY SAFETY SWITCHES
VISIBLE BLADE TYPE
30 AMPERE
ENCLOSURE - NEMA TYPE 3R RAINPROOF

SQUARE D COMPANY
DWG.NO. 1852

SHUTDOWN DISCONNECT SWITCH — SCALE: N.T.S — 7

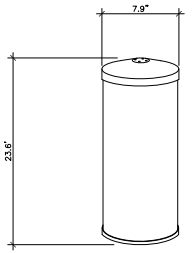
- UNIVERSAL AC INPUT 90V~305V, 50/60HZ
- AMPERE RATING: 15A MAX CONTINUOUS
- ADVANCED METERING INFRASTRUCTURE (AMI) NETWORK COMMUNICATION CARD REMOTELY SEND ENERGY USAGE BACK TO THE HEAD-END SYSTEM:
- DATE RATE: 50 TO 300 KBPS
- FREQUENCY RANGE: 902-928 MHZ
- SPREAD SPECTRUM: FREQUENCY HOPPING
- TRANSMITTER OUTPUT: -98DBM FOR 10% PER
- PROTOCOL: IEEE 802.15.4G



PG&E SMART METER DETAIL — SCALE: N.T.S — 4

MANUFACTURER: COMMSCOPE
DIMENSIONS: 23.6" x 7.9"ø
WEIGHT: 15.4 LBS

OR APPROVED EQUIVALENT



ANTENNA DETAIL — SCALE: N.T.S — 1

Prepared For:
verizon
2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:
THE CBR GROUP
2840 HOWE ROAD, SUITE E
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Licensor:

Sheet Title: EQUIPMENT AND CONSTRUCTION DETAILS

Sheet Number: A-4

Verizon Wireless • Proposed Small Cell (No. 425162 "Sonoma 007")
303 West Napa Street • Sonoma, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate its small cell (No. 425162 "Sonoma 007") proposed to be sited in Sonoma, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install a cylindrical antenna on a light pole to be sited in the public right-of-way near 303 West Napa Street in Sonoma. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive limit for exposures of unlimited duration at several wireless service bands are as follows:

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

General Facility Requirements

Small cells typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are typically mounted on the support pole or placed in a cabinet at ground level, and they are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies

assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including drawings by The CBR Group, dated August 6, 2019, it is proposed to install one CommScope Model VVSSP-360S-F, 2-foot tall, omnidirectional* cylindrical antenna on top of the new light pole to be sited in the public right-of-way on the west side of Third Street West, adjacent to the single-story commercial building at 303 West Napa Street in Sonoma. The antenna would employ 7° downtilt and would be mounted at an effective height of about 24 feet above ground. The maximum effective radiated power proposed in any direction is 460 watts, representing simultaneous operation at 230 watts each for AWS and PCS service. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.023 mW/cm^2, which is 2.3% of the applicable public exposure limit. The maximum calculated level at the second-story elevation of any nearby building† is 6.2% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

* Assumed to be omnidirectional, although manufacturer's patterns show reduced power in certain directions.

† Located at least 45 feet away, based on the drawings.

No Recommended Compliance Measures

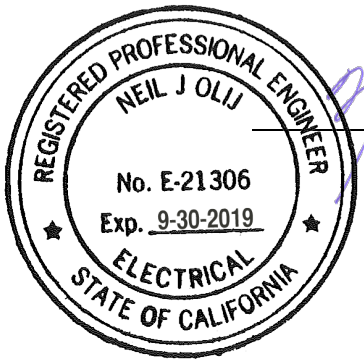
Due to its mounting location and height, the antenna would not be accessible to unauthorized persons, and so no measures are necessary to comply with the FCC public exposure guidelines. It is presumed that Verizon will, as an FCC licensee, take adequate steps to ensure that its employees or contractors receive appropriate training and comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the small cell proposed by Verizon Wireless near 303 West Napa Street in Sonoma, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating small cells.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.



Neil J. Olij, P.E.
707/996-5200

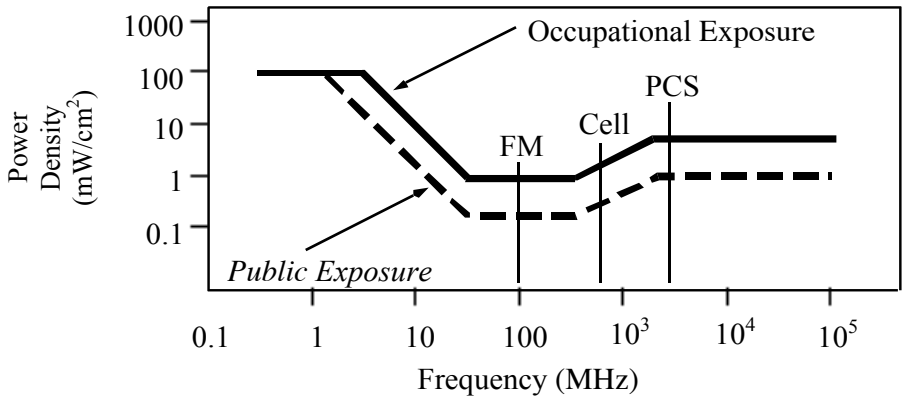
August 8, 2019

FCC Radio Frequency Protection Guide

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

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

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



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

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

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

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

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

where θ_{BW} = half-power beamwidth of antenna, in degrees,
P_{net} = net power input to antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of antenna, in meters, and
η = aperture efficiency (unitless, typically 0.5-0.8).

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

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

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

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

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

SHOT MAP

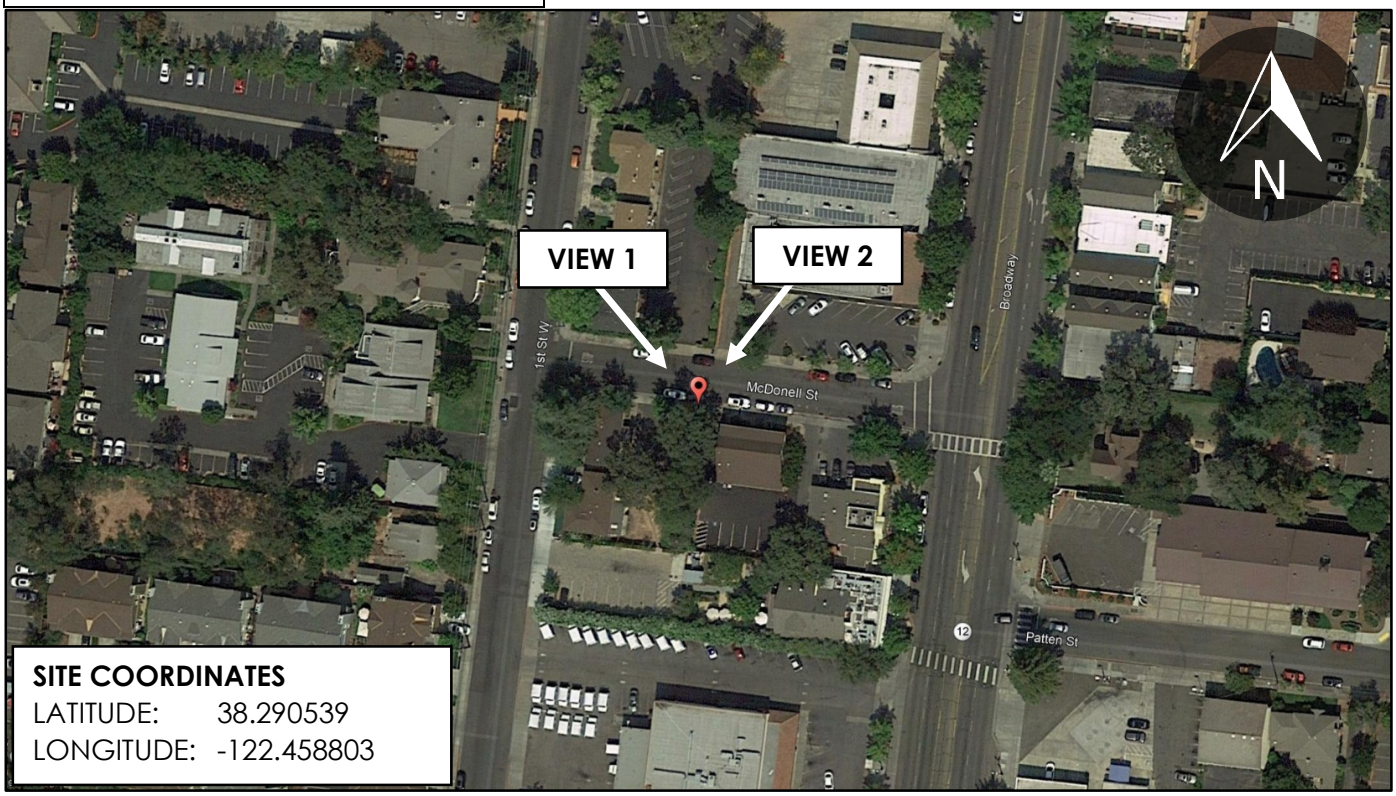
SONOMA 012_Alternate

25 McDonell Street

Location Code: 425102

PROPOSED SITE LOCATION

verizon



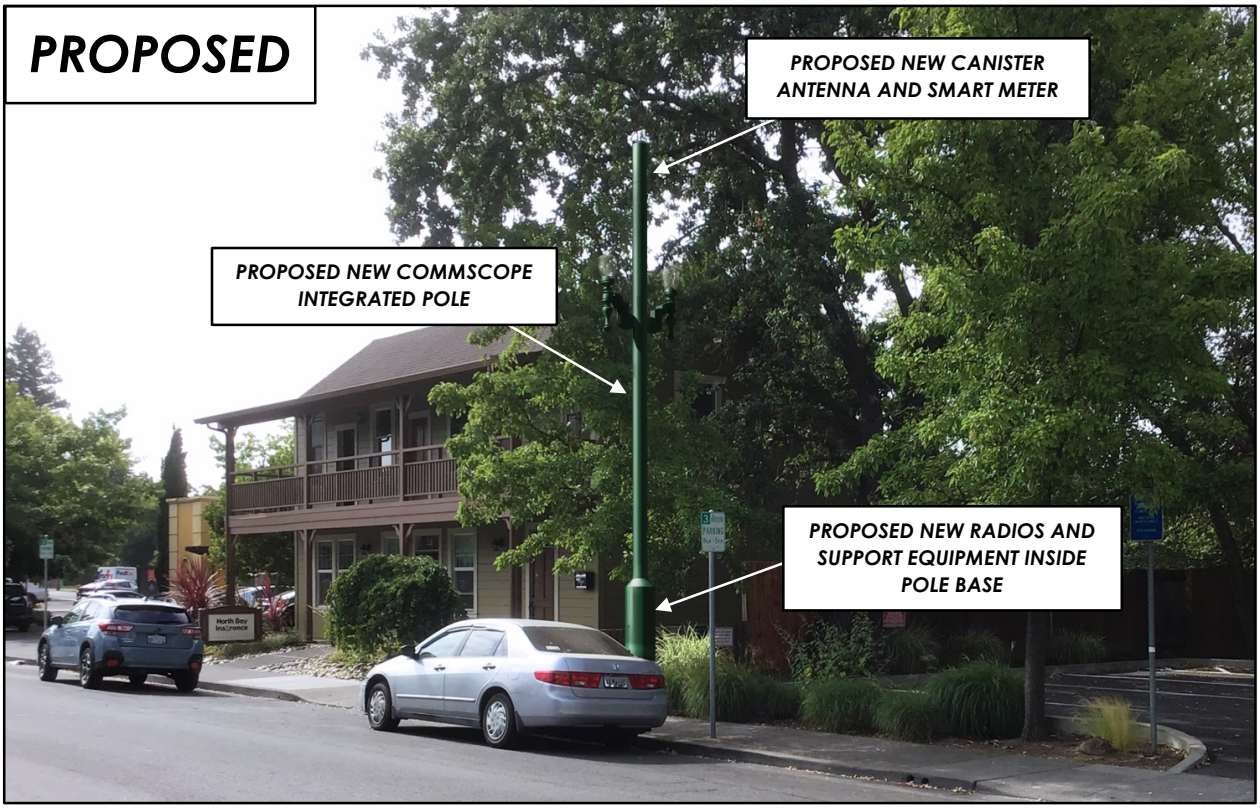
SITE COORDINATES
LATITUDE: 38.290539
LONGITUDE: -122.458803

SONOMA 012_Alternate
25 McDonell Street
Sonoma, CA 95476
Location Code: 425102

The CBR Group
2840 Howe Road, Ste. E
Martinez, CA 94553
info@thecbrgroup.com

EXISTING

PROPOSED



SONOMA 012_Alternate 25 McDonell Street Sonoma, CA 95476 Location Code: 425102	**VIEW 1: LOOKING SOUTHEAST ACROSS MCDONELL STREET** PHOTOSIMS PRODUCED 08/05/2019	THE CBR GROUP The CBR Group 2840 Howe Road, Ste. E Martinez, CA 94553 info@thecbrgroup.com

EXISTING

PROPOSED

SONOMA 012_Alternate 25 McDonell Street Sonoma, CA 95476 Location Code: 425102	**VIEW 2: LOOKING SOUTHWEST ACROSS MCDONELL STREET** PHOTOSIMS PRODUCED 08/05/2019	THE CBR GROUP	The CBR Group 2840 Howe Road, Ste. E Martinez, CA 94553 info@thecbrgroup.com

SONOMA 012

25 MCDONELL STREET
SONOMA, CA 95476
STRUCTURE TYPE: STREET LIGHT
LOCATION CODE: 425102

verizon

PROJECT DESCRIPTION

THIS IS AN UNMANNED WIRELESS TELECOMMUNICATION FACILITY FOR VERIZON WIRELESS CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTENNA AND ASSOCIATED EQUIPMENT. SCOPE OF WORK CONSISTS OF THE FOLLOWING:

1. INSTALL (N) COMMSCOPE METRO CELL INTEGRATED POLE AT GROUND LEVEL.
2. INSTALL (N) CANISTER ANTENNA ON (N) POLE.
3. INSTALL (N) FCC SIGNAGE ON (N) POLE.
4. INSTALL (1) (N) RRU INSIDE POLE BASE MODULE.
5. INSTALL (1) (N) DISCONNECT SWITCH INSIDE POLE BASE MODULE.
6. INSTALL (1) (N) PG&E SMART METER INSIDE POLE CONCEALMENT MODULE.

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)
2) 2016 CALIFORNIA RESIDENTIAL CODE (CRC)
3) 2016 CALIFORNIA HISTORICAL BUILDING CODE (CHBC)
4) 2016 CALIFORNIA EXISTING BUILDING CODE (CEBC)
5) 2016 CALIFORNIA GREEN BUILDINGS STANDARDS CODE (CGBSC)
6) 2016 CALIFORNIA FIRE CODE (CFC)
7) 2016 CALIFORNIA MECHANICAL CODE (CMC)
8) 2016 CALIFORNIA PLUMBING CODE (CPC)
9) 2016 CALIFORNIA ELECTRICAL CODE (CEC)
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

SHEET INDEX

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OCCUPANCY AND CONSTRUCTION TYPE

OCCUPANCY : U (UNMANNED COMMUNICATIONS FACILITY)

CONSTRUCTION TYPE: –

HANDICAP REQUIREMENTS

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 11038.1, EXCEPTION 1 & SECTION 11348.2.1, EXCEPTION 4.

RADIO FREQUENCY DATA PLAN

INITIATIVE:	REVISION LEVEL	DATE:
–	–	–

GENERAL CONTRACTOR NOTES

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 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.

CALL 811 BEFORE YOU DIG — 811 — DIGGING PARTNER

PROJECT TEAM

APPLICANT/LESSEE:

VERIZON WIRELESS
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

APPLICANT/ENGINEER:

THE CBR GROUP
2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
PH: (925) 246-3212
EMAIL: projects@thecbrgroup.com

PROJECT INFORMATION

PROPOSED USE:
STREET LIGHT & TELECOMMUNICATIONS FACILITY

JURISDICTION:
SONOMA COUNTY

LATITUDE:
38.290539

LONGITUDE:
-122.458803

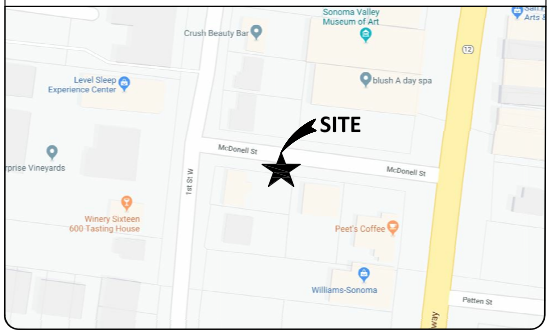
AMSL:
±80.0' AMSL

PROPERTY OWNER:
R.O.W.

POLE OWNER:
PG&E

POWER AGENCY:
PG&E
77 BEALE STREET
SAN FRANCISCO, CA 94109
PH: (800) 743-5000

VICINITY MAP



STRUCTURE PHOTO

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number: 425102

Site Name: SONOMA 012

Site Address: 25 MCDONELL STREET SONOMA, CA 95476

County: SONOMA COUNTY

Issued For: ZONING

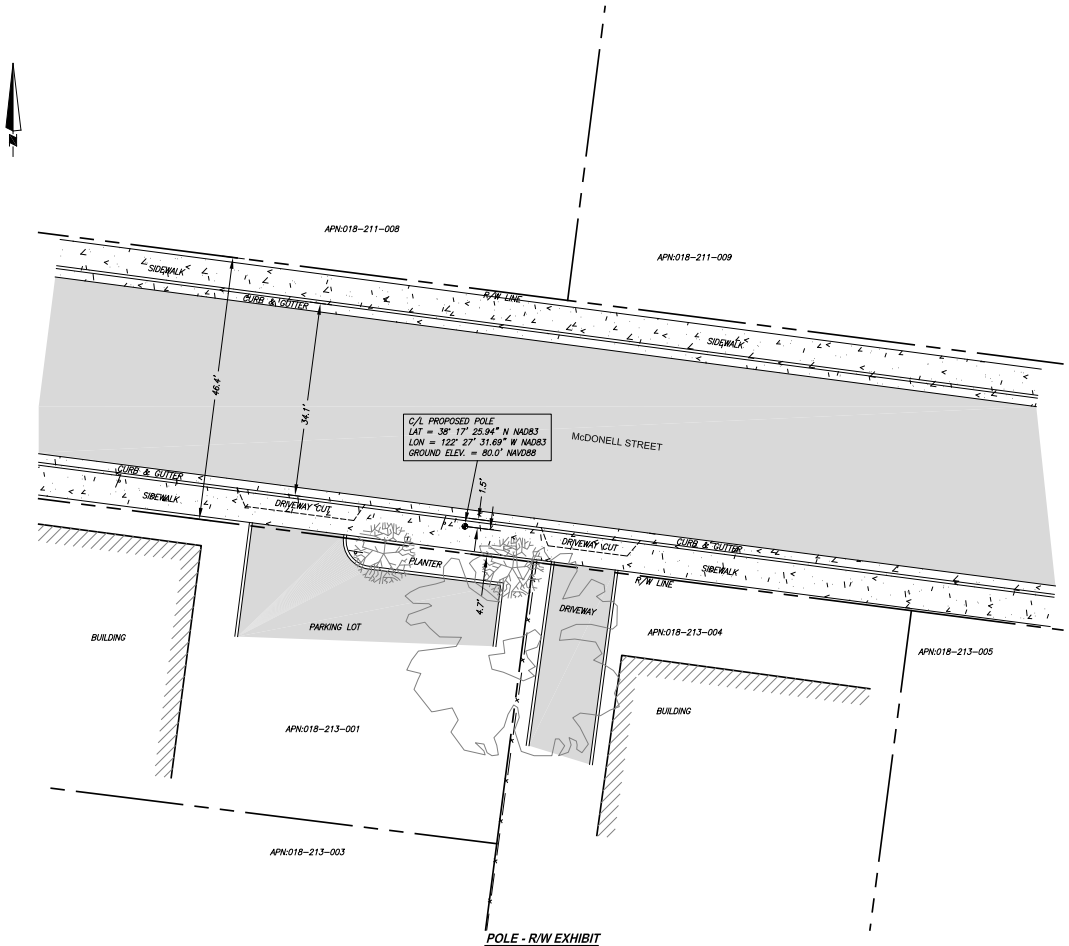
REV.	DATE	DESCRIPTION	BY
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

Licensor:

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

Sheet Title: TITLE SHEET

Sheet Number: T-1



POLE - R/W EXHIBIT
1"=10'

SURVEY NOTES

1. ALL LATITUDES AND LONGITUDES ARE NAD 83, ALL ELEVATIONS ARE NAVD 88 (UNLESS NOTED OTHERWISE).

2. ALL BOUNDARY INFORMATION SHOWN HEREON HAS BEEN COMPILED FROM RECORD DATA. THIS IS NOT A BOUNDARY SURVEY.

3. DATE OF FIELD SURVEY JULY 23, 2019.

4. NO PRELIMINARY TITLE REPORT HAS BEEN PROVIDED. ANY EASEMENTS OR OTHER TITLE RELATED ISSUES NOT INCLUDED IN SAID REPORT WHICH ARE PART OF THE TITLE PROCESS MAY OR MAY NOT HAVE BEEN ADDRESSED, TIMOTHY F. SCHAD, L.S. ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR BOUNDARY OR TITLE ITEMS ADDRESSED HEREON. THIS IS NOT A BOUNDARY SURVEY.

GEODETIC LOCATION

DATE OF SURVEY: JULY 23, 2019
SITE NUMBER / NAME: "SONOMA 012"
TYPE: PROPOSED POLE
SITE ADDRESS: 25 McDONELL STREET
SONOMA, CA. 95476

I, TIMOTHY SCHAD, HEREBY CERTIFY THE GEODETIC COORDINATES AT THE CENTER OF THE PROPOSED POLE TO BE:

LATITUDE= 38° 17' 25.94" NORTH (NAD83) (38.290539° NORTH)
LONGITUDE= 122° 27' 31.69" WEST (NAD83) (122.458803° WEST)

GROUND ELEVATION= 80.0 NAVD88 (0.0' A.G.L.)

THE ACCURACY STANDARDS FOR THIS CERTIFICATION ARE AS FOLLOWS:

GEODETIC COORDINATES: +/- FIFTEEN (15) FEET (NAD-83)
ELEVATIONS: +/- THREE (3) FEET (NAVD-88)

LEGEND

———	PROPERTY LINE
——— · ———	FLOW LINE
—— TEL —— TEL ——	TELEPHONE LINE
—— E —— E ——	ELECTRIC LINE
—— E&T —— E&T ——	ELECTRIC AND TELEPHONE LINES
—— x —— x ——	FENCE
– – – – – – –	ADJOINER
OG	ORIGINAL GROUND
TC	TOP OF CURB
BFC	BOTTOM FACE OF CURB
TW	TOP OF WALL
BW	BOTTOM OF WALL
TBW	TOP BACK OF WALK
Ⓖ	GROUND WELL
C/L	CENTERLINE

verizonwireless

TIMOTHY SCHAD, L.S.
10699 ROUND VALLEY RD.
GRASS VALLEY, CA. 95949
PHONE: (530) 271-7477
TIM@INITIALPOINT.COM

PROJECT NO:
DRAWN BY:
CHECKED BY:

REV	DATE	DESCRIPTION

PROFESSIONAL LAND SURVEYOR
TIMOTHY F. SCHAD
LS 6021
Exp. 3/31/21
STATE OF CALIFORNIA

8-1-2019

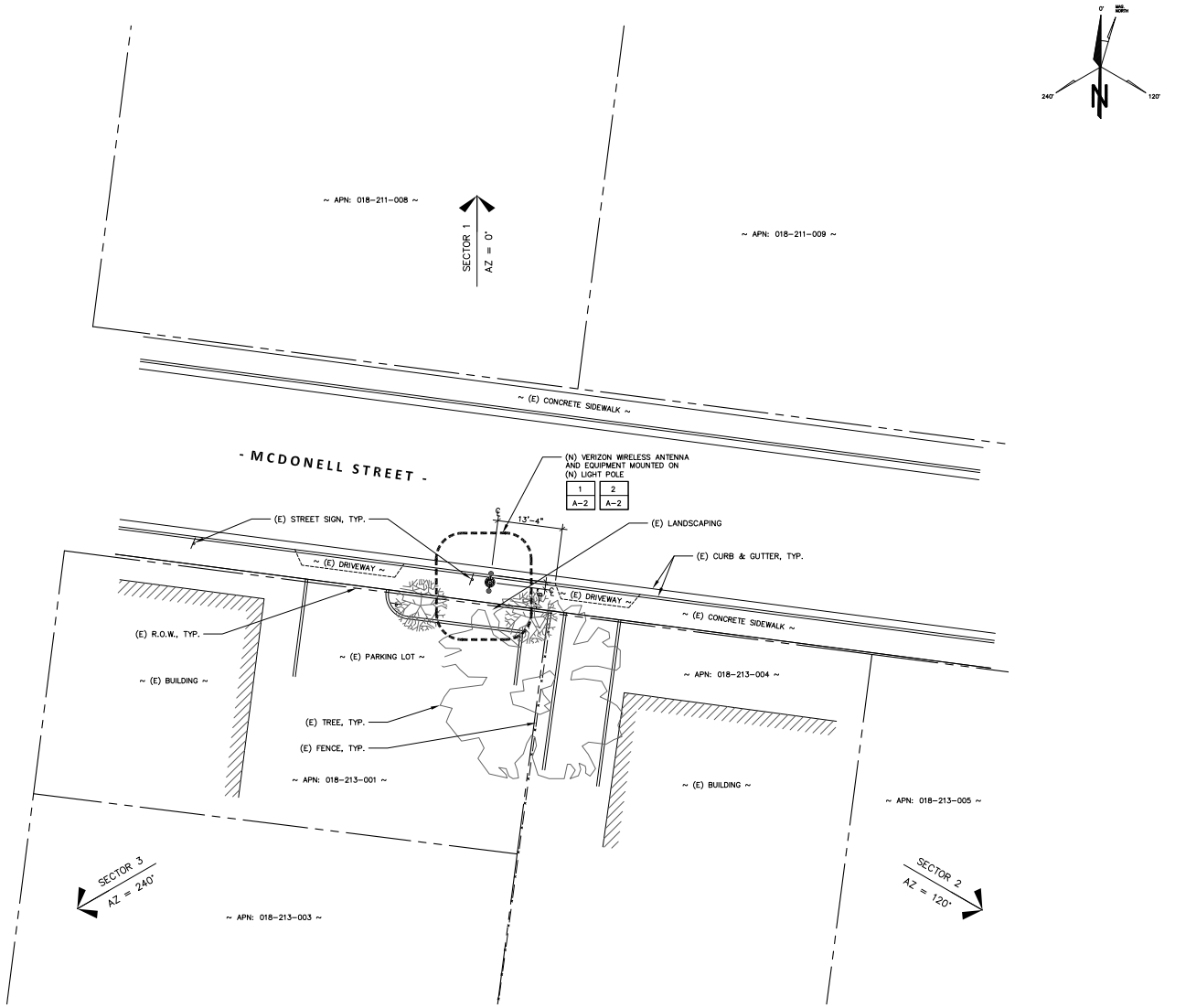
SONOMA 012
25 McDONELL STREET
SONOMA, CA. 95476
SONOMA COUNTY
ADJACENT TO
APN:018-213-001

SHEET TITLE
UTILITY POLE EXHIBIT

SHEET NUMBER
LS-1

SYMBOLS

- GRID REFERENCE
- DETAIL REFERENCE
- ELEVATION REFERENCE
- SECTION REFERENCE
- CENTERLINE
- PROPERTY/LEASE LINE
- MATCH LINE
- WORK POINT
- GROUND CONDUCTOR
- TELEPHONE CONDUIT
- ELECTRICAL CONDUIT
- COAXIAL CABLE
- OVERHEAD SERVICE CONDUCTORS
- GROUT OR PLASTER
- (E) BRICK
- (E) MASONRY
- CONCRETE
- EARTH
- GRAVEL
- PLYWOOD
- SAND
- WOOD CONTINUOUS
- WOOD BLOCKING
- STEEL
- (N) NEW
- (E) EXISTING
- NEW ANTENNA
- EXISTING ANTENNA
- GROUND ROD
- GROUND BUS BAR
- MECHANICAL GRND. CONN.
- CADWELD
- GROUND ACCESS WELL
- ELECTRIC BOX
- TELEPHONE BOX
- LIGHT POLE
- FND. MONUMENT
- SPOT ELEVATION
- SET POINT
- REVISION
- CENTERLINE



1 **OVERALL SITE PLAN**

SCALE: 3/32" = 1'-0"

0' 4' 8' 16' 32'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number:
425102

Site Name:
SONOMA 012

Site Address:
25 MCDONELL STREET
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County:
SONOMA COUNTY

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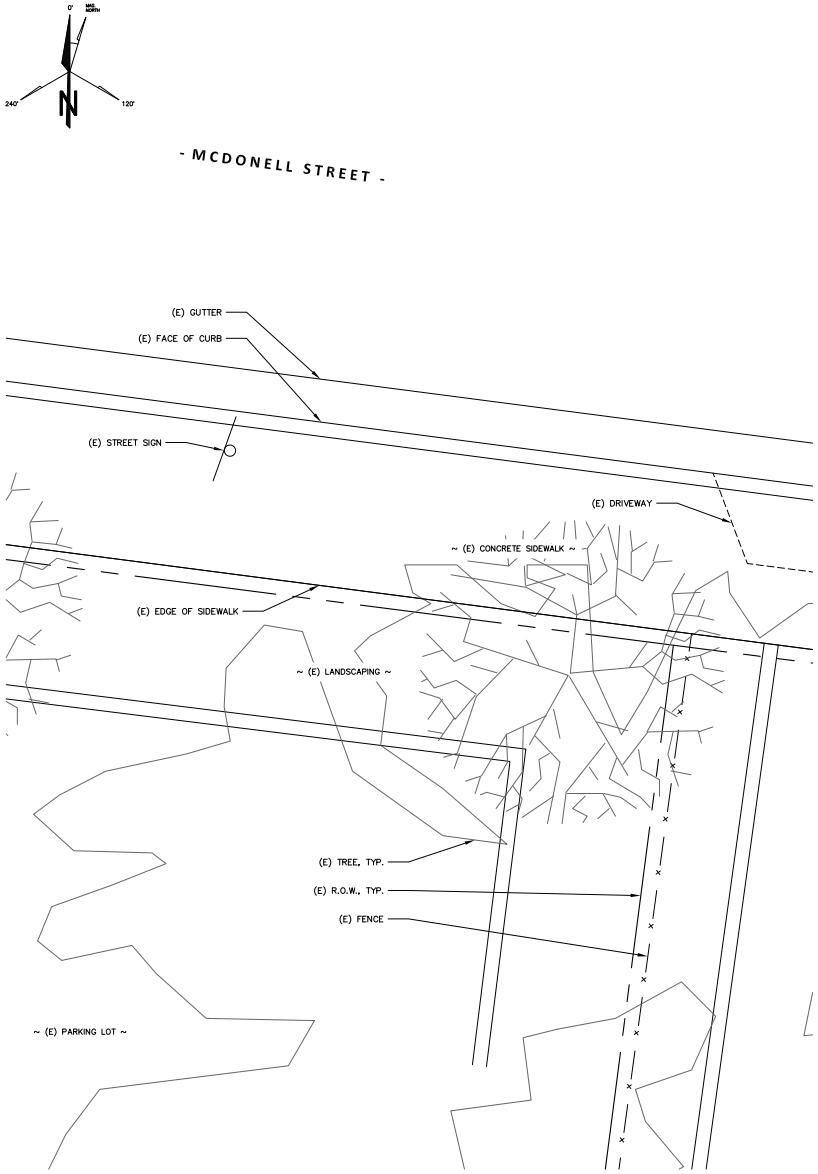
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

Licensor:

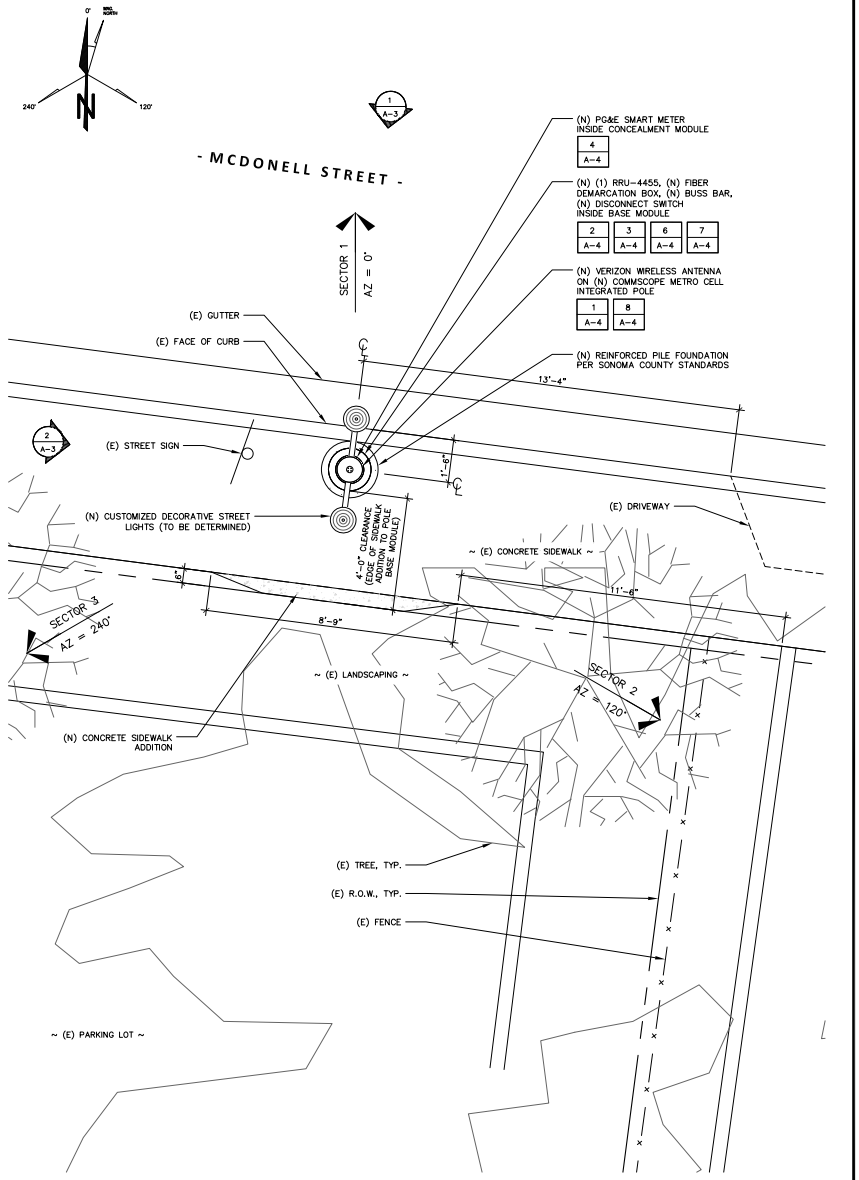
Sheet Title:
OVERALL SITE PLAN

Sheet Number:
A-1



1 EXISTING PLAN

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



2 PROPOSED EQUIPMENT AND ANTENNA PLAN

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

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

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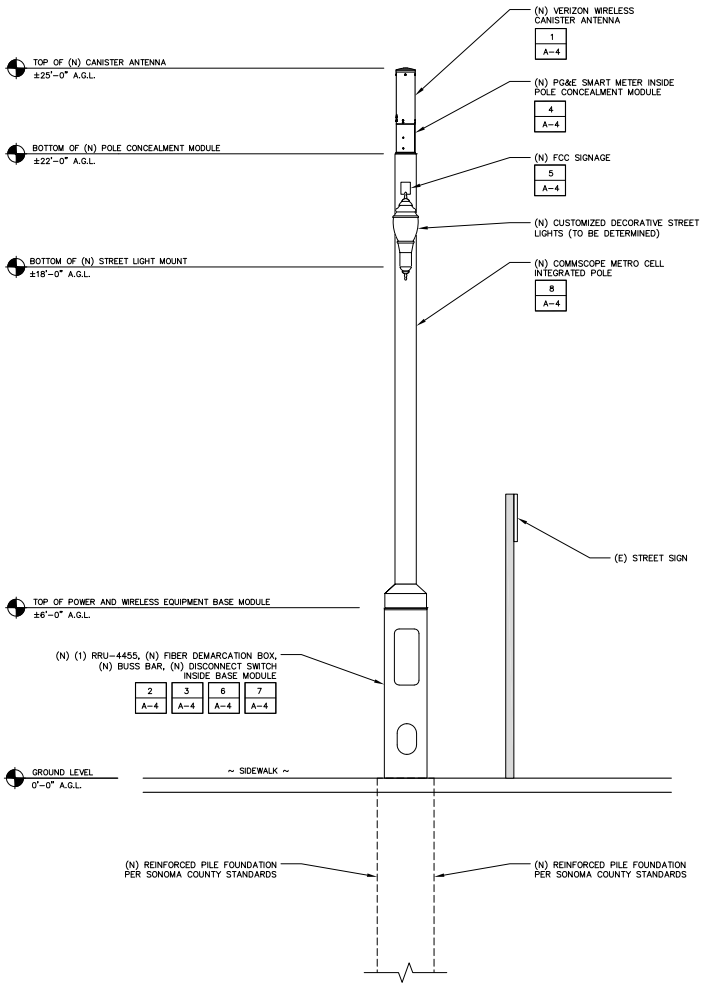
Licensor:

Sheet Title:
EXISTING PLAN, PROPOSED EQUIPMENT AND ANTENNA PLAN

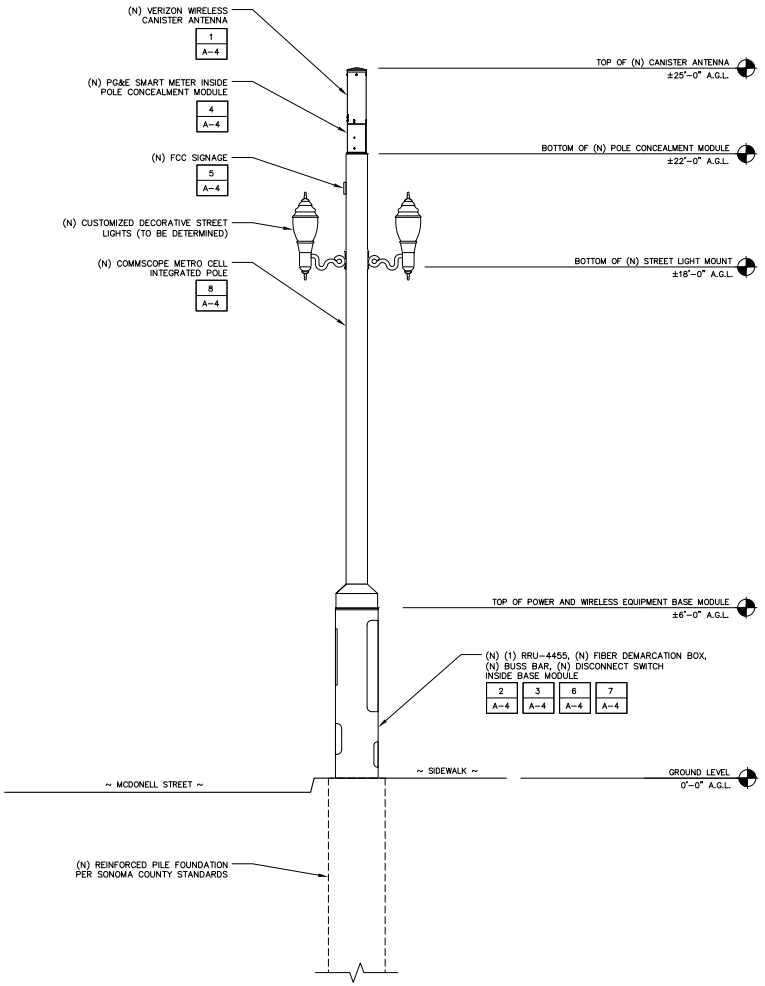
Sheet Number:
A-2



1 **PROPOSED NORTH ELEVATION**

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

0' 2' 4' 8'



2 **PROPOSED WEST ELEVATION**

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

0' 2' 4' 8'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

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425102

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SONOMA, CA 95476

County:
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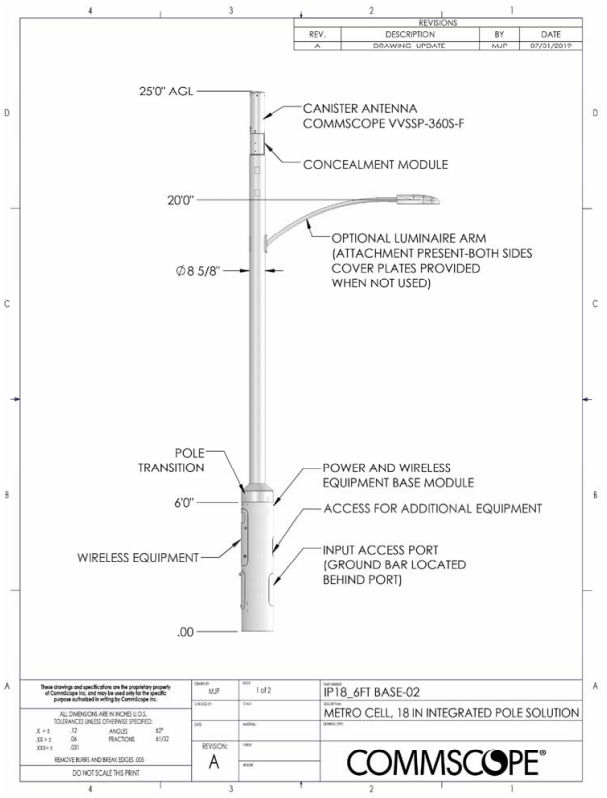
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

Licensor:

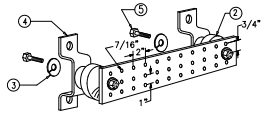
Sheet Title:
PROPOSED NORTH AND WEST ELEVATIONS

Sheet Number:
A-3



INTEGRATED POLE DETAIL (SIMILAR)

SCALE: N.T.S | 8



NOTES:

1. GALVANIZED STEEL GROUND BAR, ¼" X 20", NEWTON INSTRUMENT CO. CAT. NO. 8-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION. (ACTUAL GROUND BAR SIZE WILL VARY BASED ON NUMBER OF GROUND CONNECTIONS)
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
3. 5/8" LOCKWASHER, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUAL
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
5. 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1 OR EQUAL
6. INSULATORS SHALL BE ELIMINATED WHEN BONDING DIRECTLY TO TOWER/MONOPOLE STRUCTURE. CONNECTION TO TOWER/MONOPOLE STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

NOTE: ALL HARDWARE SHALL BE STAINLESS STEEL

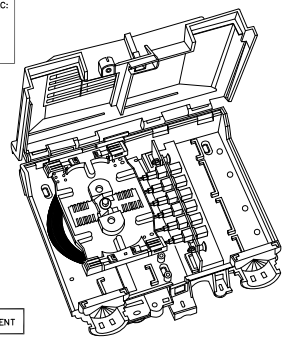
BUSS BAR

SCALE: N.T.S | 6

DIMENSIONS:
8.54"x10"x2.88" (HxWxD)

CAPACITY:
6-PACK DUPLEX SC OR LC:
12 FIBERS

SPECIAL FEATURES:
AVAILABLE AS SINGLE OR
DUAL DOOR ENCLOSURE



OR APPROVED EQUIVALENT

FIBER DEMARCATION BOX DETAIL

SCALE: N.T.S | 3

NOTE:
CONTRACTOR TO INPUT SITE ID / SITE NAME / MARKET ID / PS LOCATION CODE

CAUTION

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY EXCEED the FCC Occupational exposure limit. Obey all posted signs and site guidelines.
Call Verizon Wireless at 1-800-264-6620 prior working beyond this point.

STATE: CA SWITCH: (SWITCH NAME)
SITE ID: (BS NUMBER)
SECTOR/NODE: (SWITCH NUMBER-CELL NUMBER-SITE NAME)

RSI 6404.5D

CAUTION SIGN (FCC SIGNAGE)

SCALE: N.T.S | 5

Radio 4455 Medium Power B2/25 & B66A for Street Macro applications

- **4 antenna ports, 4TX/4RX for 2 bands with common RF ports**
- **Up to 160W RF Power shared between 2 bands**
  - Examples:
    - 4x20W on each band or
    - 4x10W and 4x30W
- **Carrier Capacity:**
  - Up to (6DL/12UL) carrier and up to 60/65+70 MHZ CBW for LTE (B2 60M & B25 65M)
- 2x 10.1 Gbps CPRI, with max 3 Radios in cascading
- **Size and Weight:**

Radio 4455 - B2 & B66A	Height	Width	Depth	Weight
wo protruding items	30 in (760 mm)	19.4 in (262 mm)	6.9 in (169 mm)	59.5 lbs (27 Kg)
w protruding items	32.3 in (820 mm)	11.9 in (300 mm)	9.3/6.5 in (Round/Sq. mm 165mm)	

- AC power (Nominal voltage 100 - 250 V)
- Power 840 W (PSU max output)
- AISG RET,(1 ALD port, max 25W)
- Type 4.3-10 RF connectors
- IP 65, -40 to +55 C
- Support additional sun-shield, included in the protruding dimensions above

RRUS-4455 DETAIL

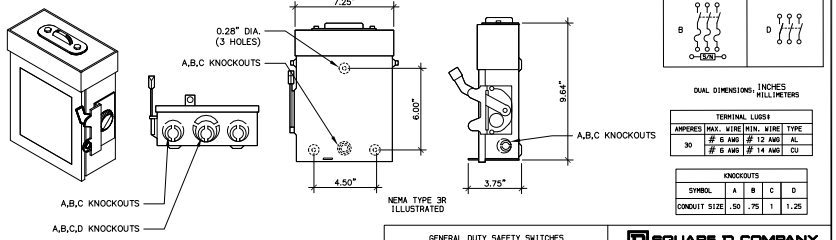
SCALE: N.T.S | 2

NOTES: FINISH - GRAY BAKED ENAMEL ELECTRODEPOSITED OVER CLEANED PHOSPHATIZED STEEL.
UL LISTED - FILE E-2875
ALL NEUTRALS - INSULATED GROUNDABLE
SUITABLE FOR USE AS SERVICE EQUIPMENT
TOP OF NEMA TYPE 3R SWITCHES HAVE PROVISIONS FOR MAXIMUM 2 1/2" BOLT-ON HUB.
SHORT CIRCUIT CURRENT RATINGS:
● 10,000 AMPERES.
10,000 AMPERES WHEN USED WITH OR PROTECTED BY CLASS H OR K FUSES.
100,000 AMPERES WITH CLASS R FUSES.
※ FOR CORNER GROUNDED DELTA SYSTEM.
■ PLUG FUSES
◆ LUGS SUITABLE FOR 60°C OR 75°C CONDUCTORS.

CATALOG NUMBER	VOLTAGE RATINGS	WIRING DIAG.	HORSEPOWER RATINGS 120VAC STD. 1ø	120VAC MAX. 1ø	240VAC STD. 1ø	240VAC STD. 3ø	240VAC MAX. 1ø	240VAC MAX. 3ø
D211NRB●■	240VAC	A	1/2	2	1 1/2	-	3	-
D221NRB	240VAC	A	-	-	1 1/2	3※	3	7 1/2※
D321NRB	240VAC	B	-	-	1 1/2	3	3	7 1/2
DU221RB	240VAC	C	-	-	-	-	3	-
DU321RB	240VAC	D	-	-	-	-	3	7 1/2

WIRING DIAGRAMS

FUSIBLE	NOT FUSIBLE
A (S/N)	C
B (S/N)	D



DUAL DIMENSIONS: INCHES
MILLIMETERS

TERMINAL LUGS# AMPERES	MAX. WIRE	MIN. WIRE	TYPE
30	# 6 AWG	# 12 AWG	AL
	# 6 AWG	# 14 AWG	CU

KNOCKOUTS SYMBOL	A	B	C	D
CONDUIT SIZE	.50	.75	1	1.25

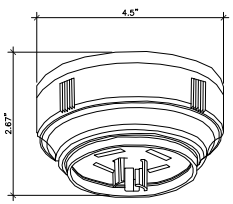
GENERAL DUTY SAFETY SWITCHES
VISIBLE BLADE TYPE
30 AMPERE
ENCLOSURE - NEMA TYPE 3R RAINPROOF

SQUARE D COMPANY
DWG.NO. 1852

SHUTDOWN DISCONNECT SWITCH

SCALE: N.T.S | 7

- UNIVERSAL AC INPUT 90V~305V, 50/60HZ
- AMPERE RATING: 15A MAX CONTINUOUS
- ADVANCED METERING INFRASTRUCTURE (AMI) NETWORK COMMUNICATION CARD REMOTELY SEND ENERGY USAGE BACK TO THE HEAD-END SYSTEM:
- DATE RATE: 50 TO 300 KBPS
- FREQUENCY RANGE: 902-928 MHZ
- SPREAD SPECTRUM: FREQUENCY HOPPING
- TRANSMITTER OUTPUT: -98DBM FOR 10% PER
- PROTOCOL: IEEE 802.15.4G

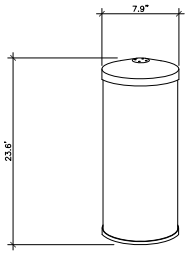


PG&E SMART METER DETAIL

SCALE: N.T.S | 4

MANUFACTURER: COMMSCOPE
DIMENSIONS: 23.6" x 7.9"ø
WEIGHT: 15.4 LBS

OR APPROVED EQUIVALENT



ANTENNA DETAIL

SCALE: N.T.S | 1

Prepared For:
verizon
2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:
THE CBR GROUP
2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number: 425102
Site Name: SONOMA 012
Site Address: 25 MCDONELL STREET SONOMA, CA 95476
County: SONOMA COUNTY

Issued For: ZONING

REV.	DATE	DESCRIPTION	BY
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

Licensor:

Sheet Title: EQUIPMENT AND CONSTRUCTION DETAILS

Sheet Number: A-4

SITE ID: SONOMA 012
25 McDonell Street
Sonoma, CA 95476
Location Code: 425102
Site Coordinates: 38.290539, -122.458803

PROPOSED SITE LOCATION
SONOMA 012

SITE ID: SONOMA 012
25 McDonell Street
Sonoma, CA 95476
Location Code: 425102
Site Coordinates: 38.290539, -122.458803

verizon

EXISTING

PROPOSED

View 1: Looking southwest across McDonell Street I Photosim produced 8/27/19

THE CBR GROUP

SITE ID: SONOMA 012
25 McDonell Street
Sonoma, CA 95476
Location Code: 425102
Site Coordinates: 38.290539, -122.458803

verizon

EXISTING

PROPOSED

View 2: Looking south across McDonell Street I Photosim produced 8/27/19

THE CBR GROUP

SONOMA 012

25 MCDONELL STREET
SONOMA, CA 95476
STRUCTURE TYPE: STREET LIGHT
LOCATION CODE: 425102

verizon

PROJECT DESCRIPTION

THIS IS AN UNMANNED WIRELESS TELECOMMUNICATION FACILITY FOR VERIZON WIRELESS CONSISTING OF THE INSTALLATION AND OPERATION OF AN ANTENNA AND ASSOCIATED EQUIPMENT. SCOPE OF WORK CONSISTS OF THE FOLLOWING:

1. INSTALL (N) COMMSCOPE METRO CELL INTEGRATED POLE AT GROUND LEVEL.
2. INSTALL (N) CANISTER ANTENNA ON (N) POLE.
3. INSTALL (N) FCC SIGNAGE ON (N) POLE.
4. INSTALL (1) (N) RRU INSIDE POLE BASE MODULE.
5. INSTALL (1) (N) DISCONNECT SWITCH INSIDE POLE BASE MODULE.
6. INSTALL (1) (N) PG&E SMART METER INSIDE POLE CONCEALMENT MODULE.

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)
2) 2016 CALIFORNIA RESIDENTIAL CODE (CRC)
3) 2016 CALIFORNIA HISTORICAL BUILDING CODE (CHBC)
4) 2016 CALIFORNIA EXISTING BUILDING CODE (CEBC)
5) 2016 CALIFORNIA GREEN BUILDINGS STANDARDS CODE (CGBSC)
6) 2016 CALIFORNIA FIRE CODE (CFC)
7) 2016 CALIFORNIA MECHANICAL CODE (CMC)
8) 2016 CALIFORNIA PLUMBING CODE (CPC)
9) 2016 CALIFORNIA ELECTRICAL CODE (CEC)
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

SHEET INDEX

		REV
T-1	TITLE SHEET	C
LS-1	UTILITY POLE EXHIBIT (TOPOGRAPHIC SURVEY)	C
A-1	OVERALL SITE PLAN	C
A-2	EXISTING PLAN, PROPOSED EQUIPMENT AND ANTENNA PLAN	C
A-3	PROPOSED NORTH & WEST ELEVATIONS	C
A-4	EQUIPMENT AND CONSTRUCTION DETAILS	C

OCCUPANCY AND CONSTRUCTION TYPE

OCCUPANCY : U (UNMANNED COMMUNICATIONS FACILITY)

CONSTRUCTION TYPE: –

HANDICAP REQUIREMENTS

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 11038.1, EXCEPTION 1 & SECTION 11348.2.1, EXCEPTION 4.

RADIO FREQUENCY DATA PLAN

INITIATIVE:	REVISION LEVEL	DATE:
–	–	–

GENERAL CONTRACTOR NOTES

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 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.

CALL 811 BEFORE YOU DIG — 811 — USA DIGGING PARTNER

PROJECT TEAM

APPLICANT/LESSEE:

VERIZON WIRELESS
2785 MITCHELL DRIVE, BLDG 9
WALNUT CREEK, CA 94598

APPLICANT/ENGINEER:

THE CBR GROUP
2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
PH: (925) 246-3212
EMAIL: projects@thecbrgroup.com

PROJECT INFORMATION

PROPOSED USE:
STREET LIGHT & TELECOMMUNICATIONS FACILITY

JURISDICTION:
SONOMA COUNTY

LATITUDE:
38.290539

LONGITUDE:
-122.458803

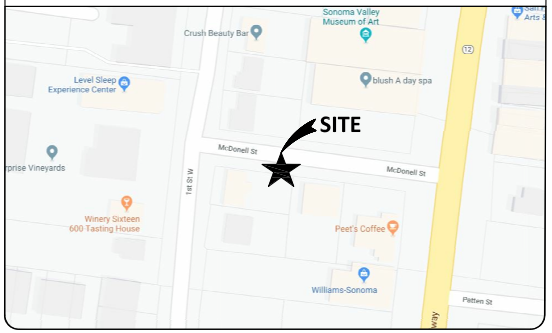
AMSL:
±80.0' AMSL

PROPERTY OWNER:
R.O.W.

POLE OWNER:
PG&E

POWER AGENCY:
PG&E
77 BEALE STREET
SAN FRANCISCO, CA 94109
PH: (800) 743-5000

VICINITY MAP



STRUCTURE PHOTO

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number: 425102

Site Name: SONOMA 012

Site Address: 25 MCDONELL STREET SONOMA, CA 95476

County: SONOMA COUNTY

Issued For: ZONING

REV	DATE	DESCRIPTION	BY
C	08/28/2019	DESIGN CHANGE	JG
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

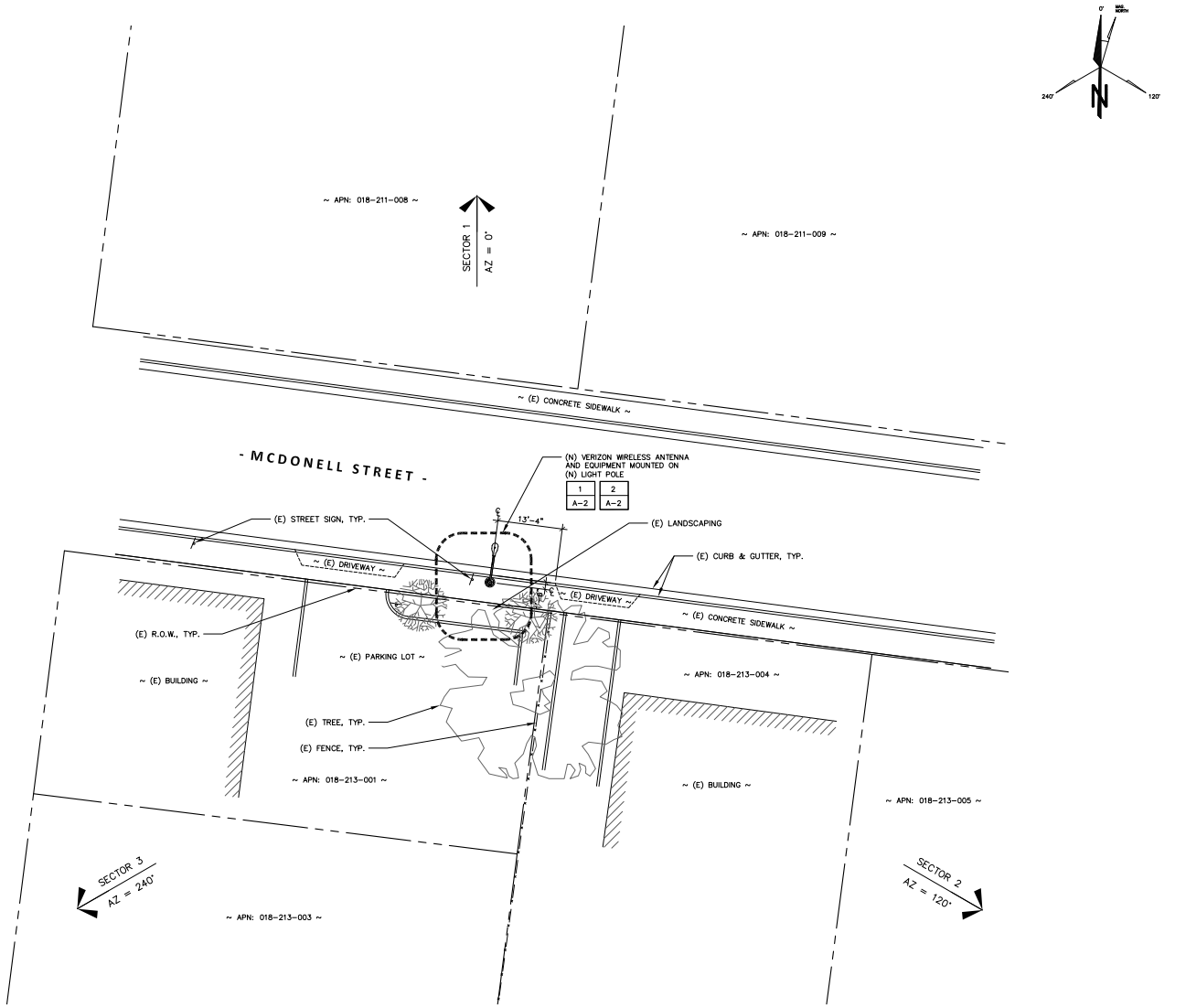
Licensor:

Sheet Title: TITLE SHEET

Sheet Number: **T-1**

SYMBOLS

- GRID REFERENCE
- DETAIL REFERENCE
- ELEVATION REFERENCE
- SECTION REFERENCE
- CENTERLINE
- PROPERTY/LEASE LINE
- MATCH LINE
- WORK POINT
- GROUND CONDUCTOR
- TELEPHONE CONDUIT
- ELECTRICAL CONDUIT
- COAXIAL CABLE
- OVERHEAD SERVICE CONDUCTORS
- GROUT OR PLASTER
- (E) BRICK
- (E) MASONRY
- CONCRETE
- EARTH
- GRAVEL
- PLYWOOD
- SAND
- WOOD CONTINUOUS
- WOOD BLOCKING
- STEEL
- (N) NEW
- (E) EXISTING
- NEW ANTENNA
- EXISTING ANTENNA
- GROUND ROD
- GROUND BUS BAR
- MECHANICAL GRND. CONN.
- CADWELD
- GROUND ACCESS WELL
- ELECTRIC BOX
- TELEPHONE BOX
- LIGHT POLE
- FND. MONUMENT
- SPOT ELEVATION
- SET POINT
- REVISION
- CENTERLINE



1 **OVERALL SITE PLAN**

SCALE: 3/32" = 1'-0"

0' 4' 8' 16' 32'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

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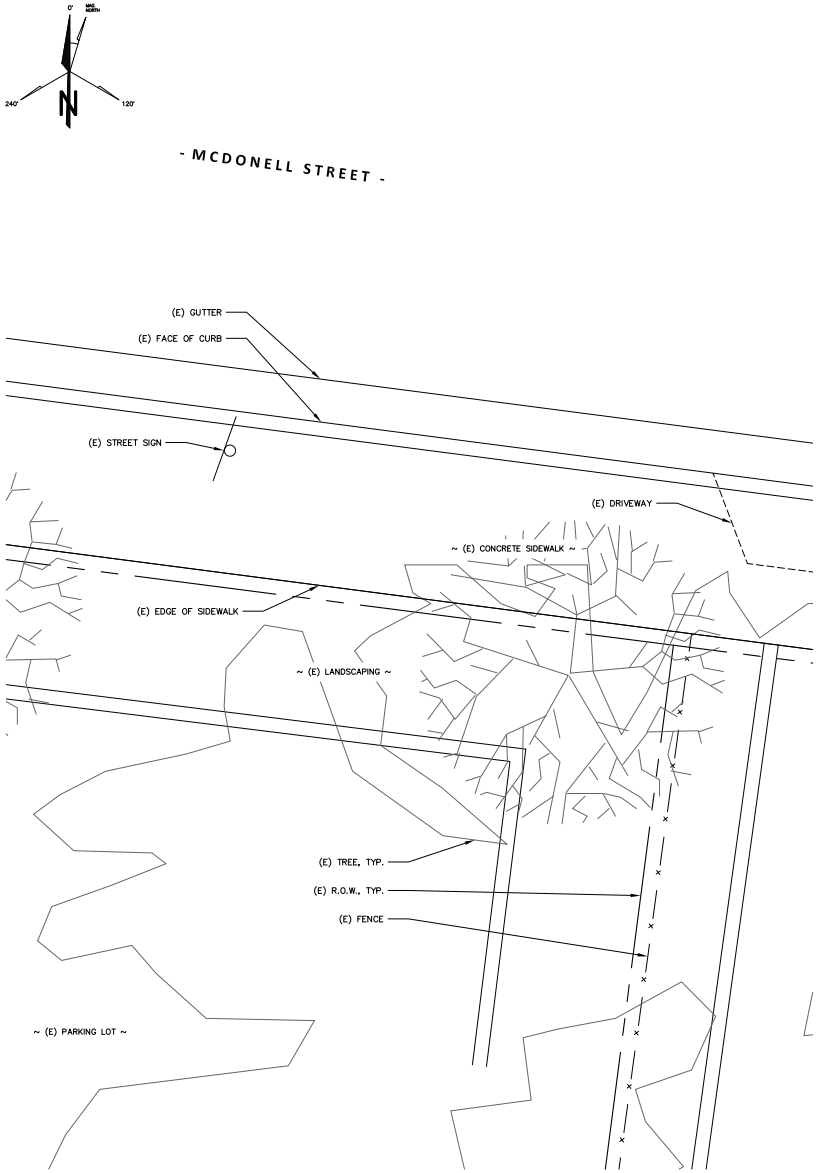
Licensor:

Sheet Title:
OVERALL SITE PLAN

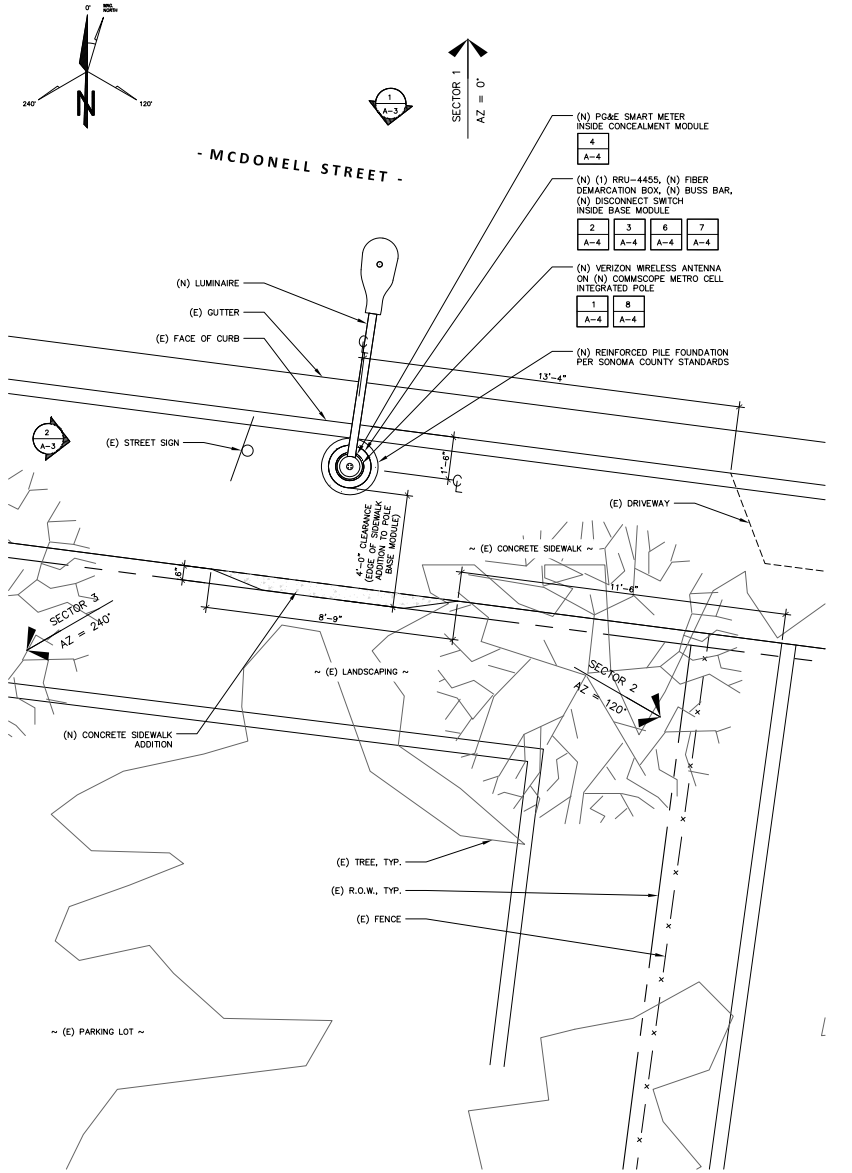
Sheet Number:
A-1



1 EXISTING PLAN

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

0' 2' 4' 6'



2 PROPOSED EQUIPMENT AND ANTENNA PLAN

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

0' 2' 4' 6'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number:
425102

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25 MCDONELL STREET
SONOMA, CA 95476

County:
SONOMA COUNTY

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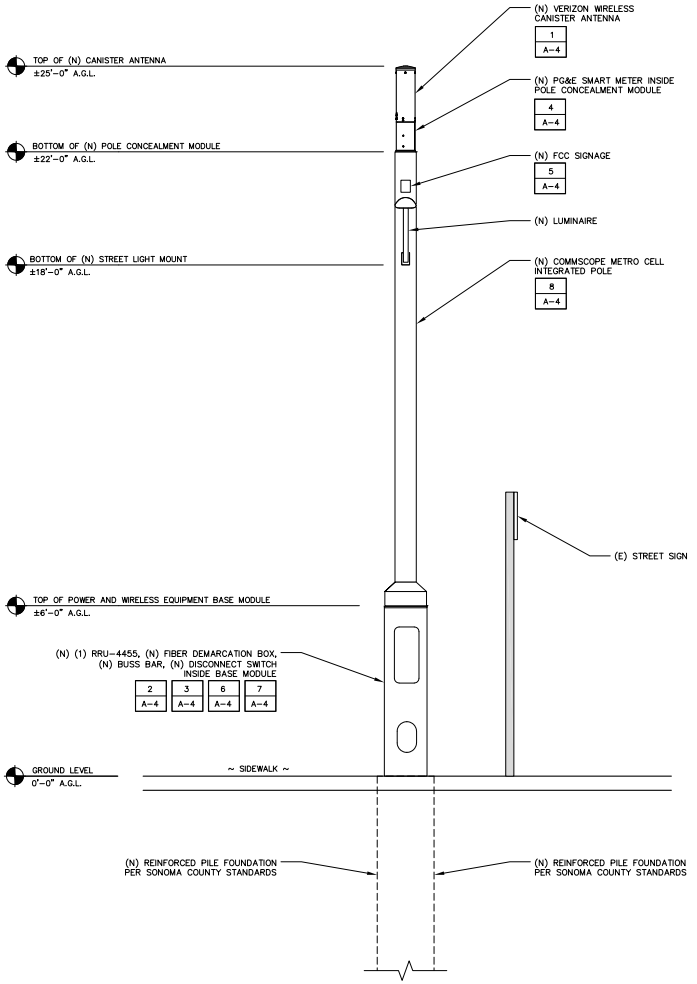
REV.	DATE	DESCRIPTION	BY
C	08/28/2019	DESIGN CHANGE	JG
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

Licensor:

Sheet Title:
EXISTING PLAN, PROPOSED EQUIPMENT AND ANTENNA PLAN

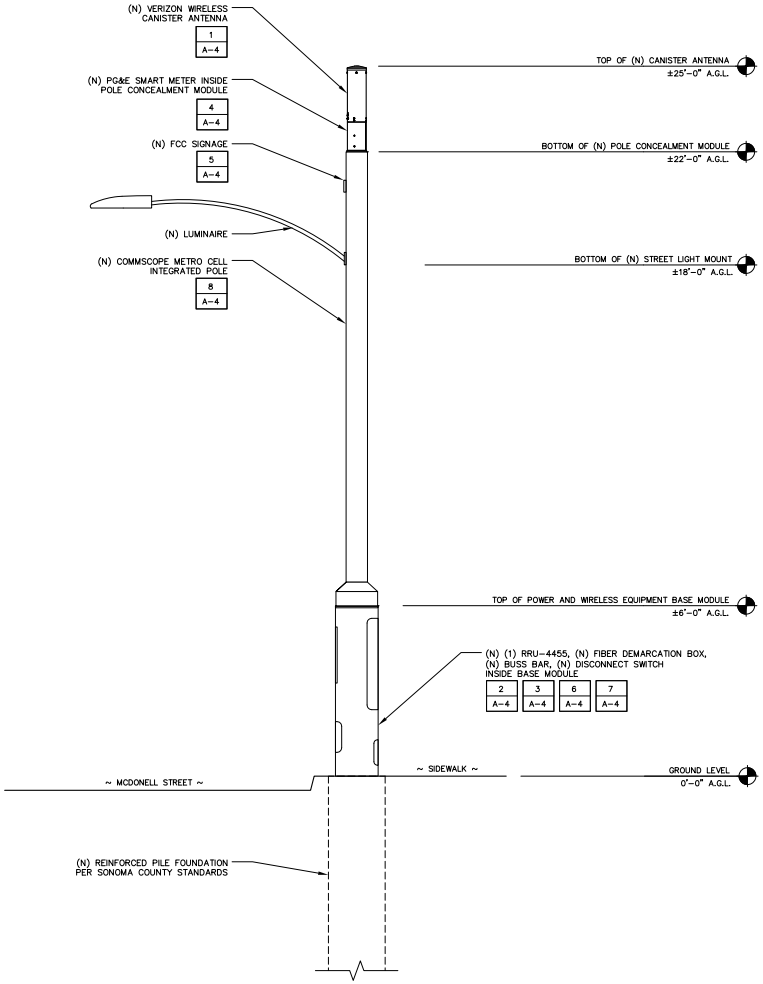
Sheet Number:
A-2



1 **PROPOSED NORTH ELEVATION**

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

0' 2' 4' 6'



2 **PROPOSED WEST ELEVATION**

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

0' 2' 4' 6'

Prepared For:

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:

THE CBR GROUP

2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number:
425102

Site Name:
SONOMA 012

Site Address:
25 MCDONELL STREET
SONOMA, CA 95476

County:
SONOMA COUNTY

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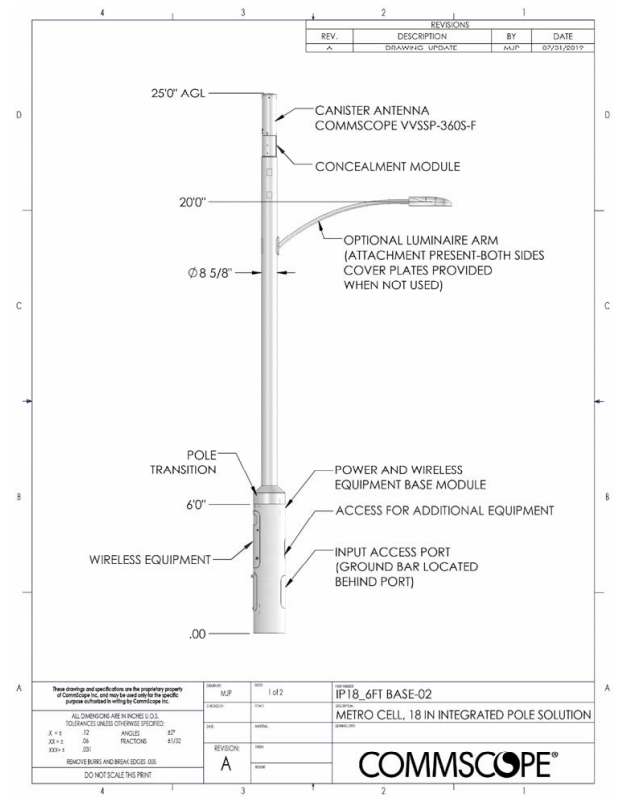
REV.	DATE	DESCRIPTION	BY
C	08/28/2019	DESIGN CHANGE	JG
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

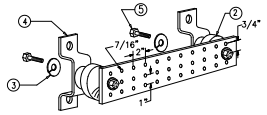
Licensor:

Sheet Title:
PROPOSED NORTH AND WEST ELEVATIONS

Sheet Number:
A-3



INTEGRATED POLE DETAIL (SIMILAR) — SCALE: N.T.S — 8



NOTES:

1. GALVANIZED STEEL GROUND BAR, "x 1/4"x 20", NEWTON INSTRUMENT CO. CAT. NO. 8-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION. (ACTUAL GROUND BAR SIZE WILL VARY BASED ON NUMBER OF GROUND CONNECTIONS)
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4 OR EQUAL
3. 5/8" LOCKWASHER, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUAL
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
5. 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1 OR EQUAL
6. INSULATORS SHALL BE ELIMINATED WHEN BONDING DIRECTLY TO TOWER/MONOPOLE STRUCTURE. CONNECTION TO TOWER/MONOPOLE STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

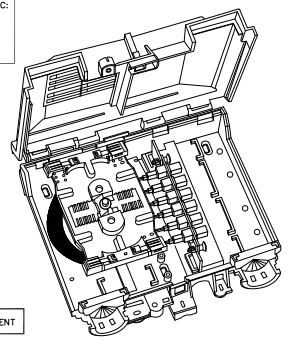
NOTE: ALL HARDWARE SHALL BE STAINLESS STEEL

BUSS BAR — SCALE: N.T.S — 6

DIMENSIONS:
8.54"x10"x2.88" (HxWxD)

CAPACITY:
6-PACK DUPLEX SC OR LC:
12 FIBERS

SPECIAL FEATURES:
AVAILABLE AS SINGLE OR
DUAL DOOR ENCLOSURE



OR APPROVED EQUIVALENT

FIBER DEMARCATION BOX DETAIL — SCALE: N.T.S — 3

NOTE:
CONTRACTOR TO INPUT SITE ID / SITE NAME / MARKET ID / PS LOCATION CODE

CAUTION

Transmitting Antenna(s)

Radio frequency fields beyond this point MAY EXCEED the FCC Occupational exposure limit. Obey all posted signs and site guidelines.
Call Verizon Wireless at 1-800-264-6620 prior working beyond this point.

STATE: CA SWITCH: (SWITCH NAME)
SITE ID: (BS NUMBER)
SECTOR/NODE: (SWITCH NUMBER-CELL NUMBER-SITE NAME)

RSI 6404.5D

CAUTION SIGN (FCC SIGNAGE) — SCALE: N.T.S — 5

Radio 4455 Medium Power B2/25 & B66A for Street Macro applications

- **4 antenna ports, 4TX/4RX for 2 bands with common RF ports**
- **Up to 160W RF Power shared between 2 bands**
  - Examples:
    - 4x20W on each band or
    - 4x10W and 4x30W
- **Carrier Capacity:**
  - Up to (6DL/12UL) carrier and up to 60/65+70 MHZ OBW for LTE (B2 60M & B25 65M)
- 2x 10.1 Gbps CPRI, with max 3 Radios in cascading
- **Size and Weight:**

Radio 4455 - B2 & B66A	Height	Width	Depth	Weight
wo protruding items	30 in (760 mm)	10.4 in (262 mm)	6.9 in (169 mm)	59.5 lbs (27 Kg)
w protruding items	32.3 in (820 mm)	11.9 in (300 mm)	9.3/6.5 in (Round/Sq. mm 165mm)	

- AC power (Nominal voltage 100 - 250 V)
- Power 840 W (PSU max output)
- AISG RET,(1 ALD port, max 25W)
- Type 4.3-10 RF connectors
- IP 65, -40 to +55 C
- Support additional sun-shield, included in the protruding dimensions above

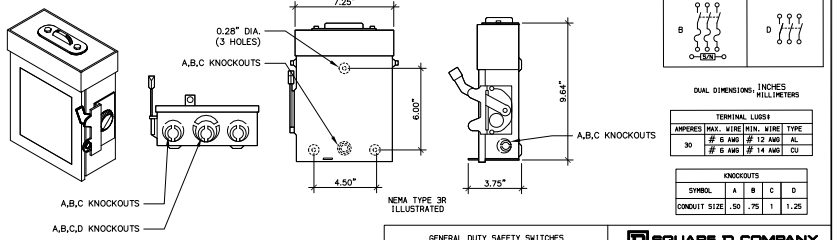
RRUS-4455 DETAIL — SCALE: N.T.S — 2

NOTES: FINISH - GRAY BAKED ENAMEL ELECTRODEPOSITED OVER CLEANED PHOSPHATIZED STEEL.
UL LISTED - FILE E-2875
ALL NEUTRALS - INSULATED GROUNDABLE
SUITABLE FOR USE AS SERVICE EQUIPMENT
TOP OF NEMA TYPE 3R SWITCHES HAVE PROVISIONS FOR MAXIMUM 2 1/2" BOLT-ON HUB.
SHORT CIRCUIT CURRENT RATINGS:
● 10,000 AMPERES.
10,000 AMPERES WHEN USED WITH OR PROTECTED BY CLASS H OR K FUSES.
100,000 AMPERES WITH CLASS R FUSES.
※ FOR CORNER GROUNDED DELTA SYSTEM.
■ PLUG FUSES
◆ LUGS SUITABLE FOR 60°C OR 75°C CONDUCTORS.

CATALOG NUMBER	VOLTAGE RATINGS	WIRING DIAG.	HORSEPOWER RATINGS 120VAC STD. 1ø	120VAC MAX. 1ø	240VAC STD. 1ø	240VAC STD. 3ø	240VAC MAX. 1ø	240VAC MAX. 3ø
D211NRB◆■	240VAC	A	1/2	2	1 1/2	-	3	-
D221NRB	240VAC	A	-	-	1 1/2	3※	3	7 1/2※
D321NRB	240VAC	B	-	-	1 1/2	3	3	7 1/2
DU221RB	240VAC	C	-	-	-	-	3	-
DU321RB	240VAC	D	-	-	-	-	3	7 1/2

WIRING DIAGRAMS

FUSIBLE	NOT FUSIBLE
A (S/N)	C
B (S/N)	D



DUAL DIMENSIONS: INCHES
MILLIMETERS

TERMINAL LUGS# AMPERES	MAX. WIRE	MIN. WIRE	TYPE
30	# 6 AWG	# 12 AWG	AL
	# 6 AWG	# 14 AWG	CU

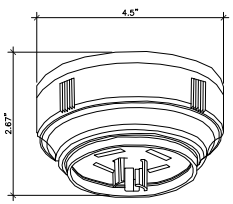
KNOCKOUTS SYMBOL	A	B	C	D
CONDUIT SIZE	.50	.75	1	1.25

GENERAL DUTY SAFETY SWITCHES
VISIBLE BLADE TYPE
30 AMPERE
ENCLOSURE - NEMA TYPE 3R RAINPROOF

SQUARE D COMPANY
DWG.NO. 1852

SHUTDOWN DISCONNECT SWITCH — SCALE: N.T.S — 7

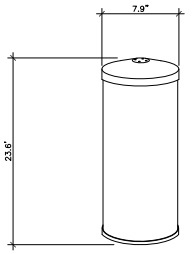
- UNIVERSAL AC INPUT 90V~305V, 50/60HZ
- AMPERE RATING: 15A MAX CONTINUOUS
- ADVANCED METERING INFRASTRUCTURE (AMI) NETWORK COMMUNICATION CARD REMOTELY SEND ENERGY USAGE BACK TO THE HEAD-END SYSTEM:
- DATE RATE: 50 TO 300 KBPS
- FREQUENCY RANGE: 902-928 MHZ
- SPREAD SPECTRUM: FREQUENCY HOPPING
- TRANSMITTER OUTPUT: -98DBM FOR 10% PER
- PROTOCOL: IEEE 802.15.4G



PG&E SMART METER DETAIL — SCALE: N.T.S — 4

MANUFACTURER: COMMSCOPE
DIMENSIONS: 23.6" x 7.9"ø
WEIGHT: 15.4 LBS

OR APPROVED EQUIVALENT



ANTENNA DETAIL — SCALE: N.T.S — 1

Prepared For:
verizon
2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Engineer:
THE CBR GROUP
2840 HOWE ROAD, SUITE E
MARTINEZ, CA 94553
www. TheCBRGroup.com

Vendor:

Site Number: 425102
Site Name: SONOMA 012
Site Address: 25 MCDONELL STREET SONOMA, CA 95476
County: SONOMA COUNTY

Issued For: ZONING

REV	DATE	DESCRIPTION	BY
C	08/28/2019	DESIGN CHANGE	JG
B	08/06/2019	100% ZD'S FOR REVIEW	ALR
A	07/30/2019	90% ZD'S FOR REVIEW	ALR

Licensor:

Sheet Title: EQUIPMENT AND CONSTRUCTION DETAILS

Sheet Number: A-4

Verizon Wireless • Proposed Small Cell (No. 425102 "Sonoma 012")
25 McDonell Street • Sonoma, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate its small cell (No. 425102 "Sonoma 012") proposed to be sited in Sonoma, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install a cylindrical antenna on a light pole to be sited in the public right-of-way near 25 McDonell Street in Sonoma. The proposed operation will comply with the FCC guidelines limiting public exposure to RF energy.

Prevailing Exposure Standards

The U.S. Congress requires that the Federal Communications Commission ("FCC") evaluate its actions for possible significant impact on the environment. A summary of the FCC's exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health. The most restrictive limit for exposures of unlimited duration at several wireless service bands are as follows:

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

General Facility Requirements

Small cells typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are typically mounted on the support pole or placed in a cabinet at ground level, and they are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies

assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

The FCC provides direction for determining compliance in its Office of Engineering and Technology Bulletin No. 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation," dated August 1997. Figure 2 describes the calculation methodologies, reflecting the facts that a directional antenna's radiation pattern is not fully formed at locations very close by (the "near-field" effect) and that at greater distances the power level from an energy source decreases with the square of the distance from it (the "inverse square law"). The conservative nature of this method for evaluating exposure conditions has been verified by numerous field tests.

Site and Facility Description

Based upon information provided by Verizon, including drawings by The CBR Group, dated August 6, 2019, it is proposed to install one CommScope Model VVSSP-360S-F, 2-foot tall, omnidirectional* cylindrical antenna on top of the new light pole to be sited in the public right-of-way in front of the two-story office building at 25 McDonell Street in Sonoma. The antenna would employ 7° downtilt and would be mounted at an effective height of about 24 feet above ground. The maximum effective radiated power proposed in any direction is 460 watts, representing simultaneous operation at 230 watts each for AWS and PCS service. There are reported no other wireless telecommunications base stations at the site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.023 mW/cm^2, which is 2.3% of the applicable public exposure limit. The maximum calculated level at the second-story elevation of any nearby building† is 7.4% of the public exposure limit. It should be noted that these results include several "worst-case" assumptions and therefore are expected to overstate actual power density levels from the proposed operation.

* Assumed to be omnidirectional, although manufacturer's patterns show reduced power in certain directions.

† Located at least 30 feet away, based on the drawings.

No Recommended Compliance Measures

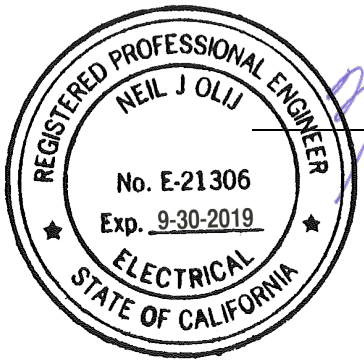
Due to its mounting location and height, the antenna would not be accessible to unauthorized persons, and so no measures are necessary to comply with the FCC public exposure guidelines. It is presumed that Verizon will, as an FCC licensee, take adequate steps to ensure that its employees or contractors receive appropriate training and comply with FCC occupational exposure guidelines whenever work is required near the antennas themselves.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the small cell proposed by Verizon Wireless near 25 McDonell Street in Sonoma, California, will comply with the prevailing standards for limiting public exposure to radio frequency energy and, therefore, will not for this reason cause a significant impact on the environment. The highest calculated level in publicly accessible areas is much less than the prevailing standards allow for exposures of unlimited duration. This finding is consistent with measurements of actual exposure conditions taken at other operating small cells.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2019. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.



Neil J. Olij, P.E.
707/996-5200

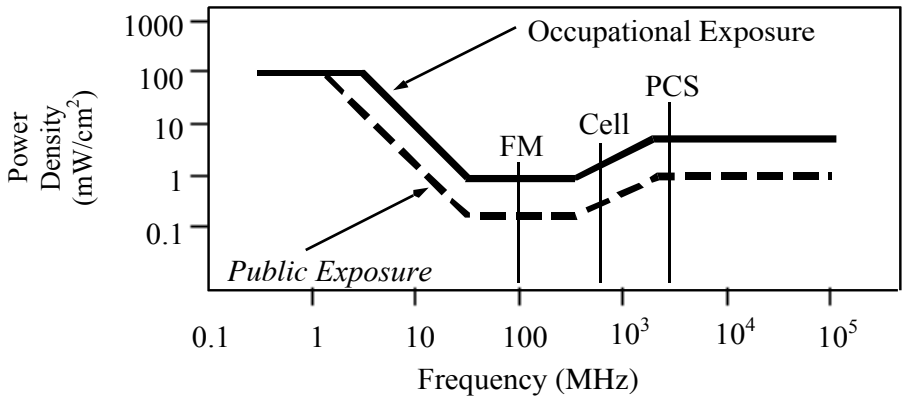
August 8, 2019

FCC Radio Frequency Protection Guide

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

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

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



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

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

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

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

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

where θ_{BW} = half-power beamwidth of antenna, in degrees,
P_{net} = net power input to antenna, in watts,
D = distance from antenna, in meters,
h = aperture height of antenna, in meters, and
η = aperture efficiency (unitless, typically 0.5-0.8).

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

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

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

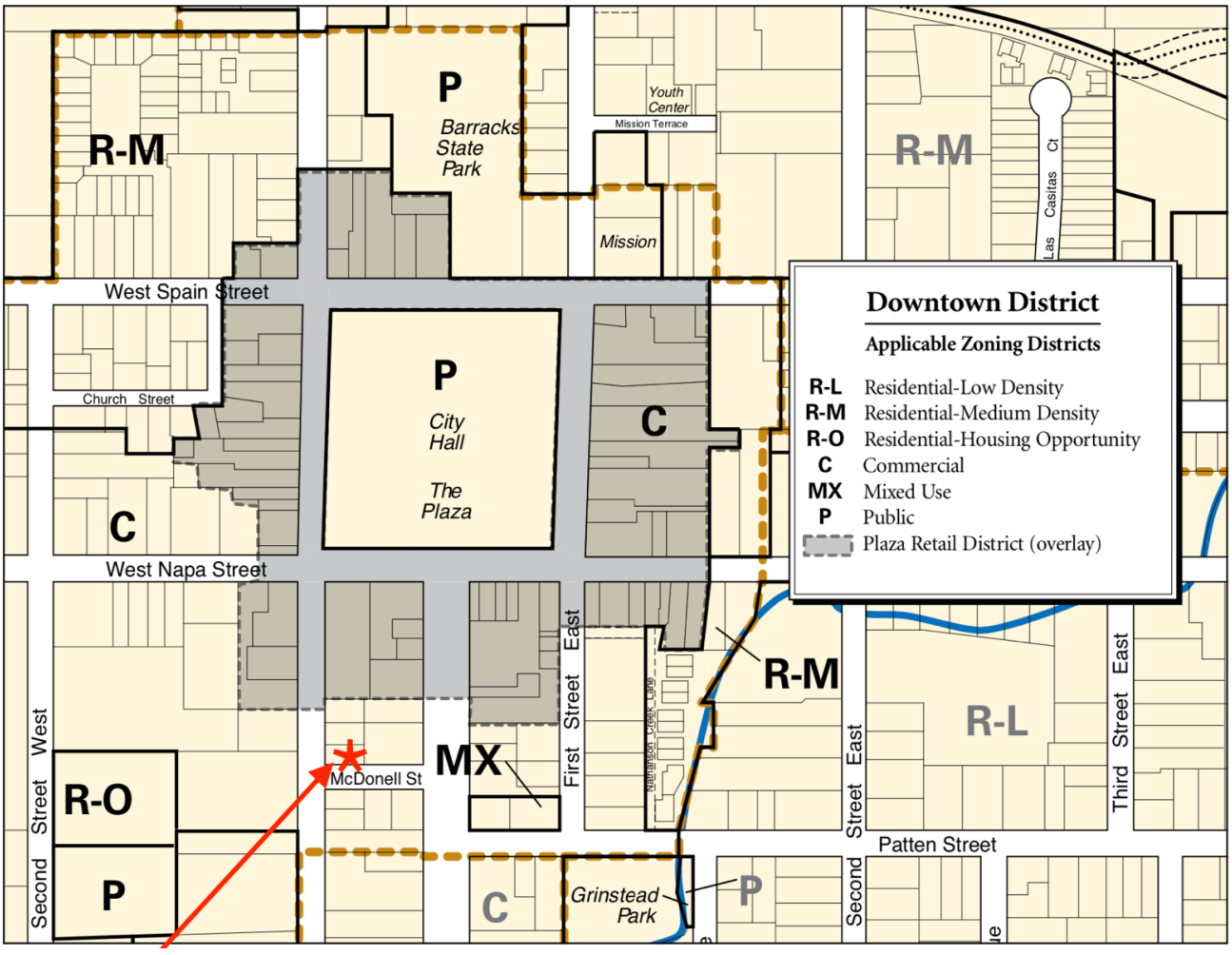
where ERP = total ERP (all polarizations), in kilowatts,
RFF = three-dimensional relative field factor toward point of calculation, and
D = distance from antenna effective height to point of calculation, in meters.

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

SONOMA 012
25 McDonell Street
Location Code: 425102

PROPOSED SITE (PROD) MAP

verizon



SITE COORDINATES
LATITUDE: 38.290539
LONGITUDE: -122.458803

The proposed street light pole location for Sonoma 012 is located in the Commercial District and will not impact the Plaza Retail Overlay District. An added street light pole in this location would be an asset to the community and surrounding businesses by creating more safety and visibility, lighting the sidewalks and driveways for residents to use nearby facilities. Particularly there are large trees that shadow the parking lot, sidewalk and business entrances, such as the dance studio that has children and adults coming and going.

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