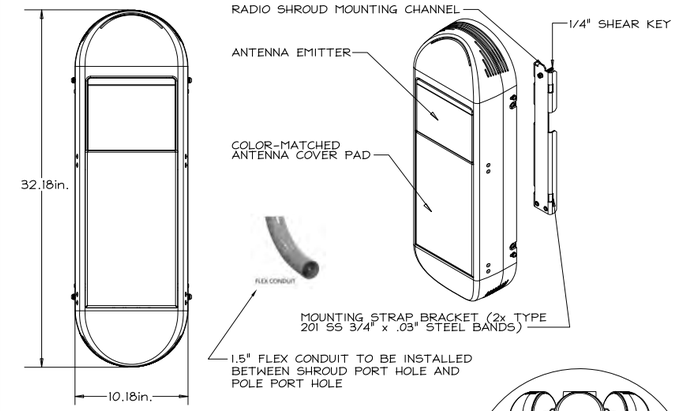
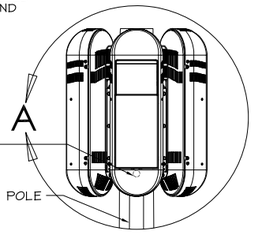
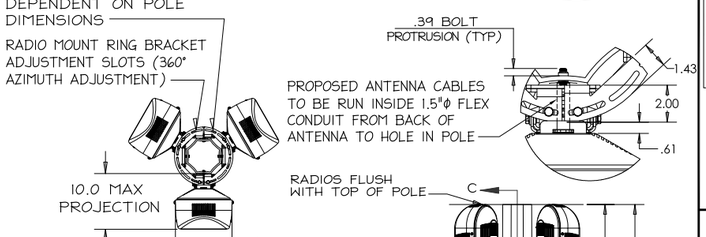
ERICSSON 6701 POLE ATTACHMENT SHROUD
PART NO. 30311
(OR APPROVED EQUAL)

NOTES:
1. FULL SHROUD PAINTABLE TO MATCH COLOR OF EXISTING STRUCTURE.
2. COLOR-MATCHED 3M FILM TO BE APPLIED TO ANTENNA EMITTER FACE.
3. SHROUD DRY WEIGHT = 18 LBS.
4. TOTAL WEIGHT INCLUDING ANTENNA = 49LBS.
5. ANTENNA/SHROUD VOLUME = 1.1 CU.FT. (EACH)



DETAIL A (SECTOR 1 RADIO HIDDEN FOR CLARITY)



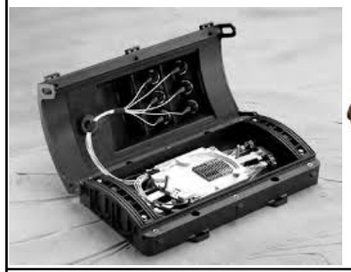


SM6701 SHROUD & MOUNTING DETAILS
24"x36" SCALE: NTS
11"x17" SCALE: NTS
7

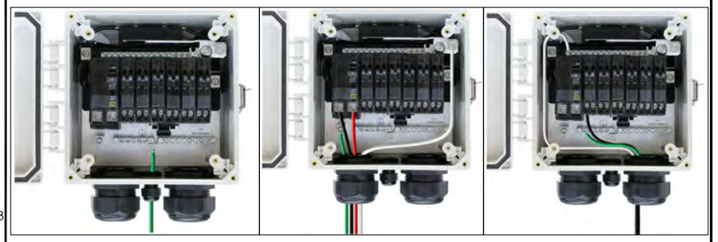
PREFORMED LINE PRODUCTS
COYOTE TERMINAL CLOSURE (FIBER DEMARCATION UNIT)

- DIMENSIONS: 18.76"L x 9.70"W x 5.13"D
- WEIGHT: N/A

OR VERIZON APPROVED EQUAL



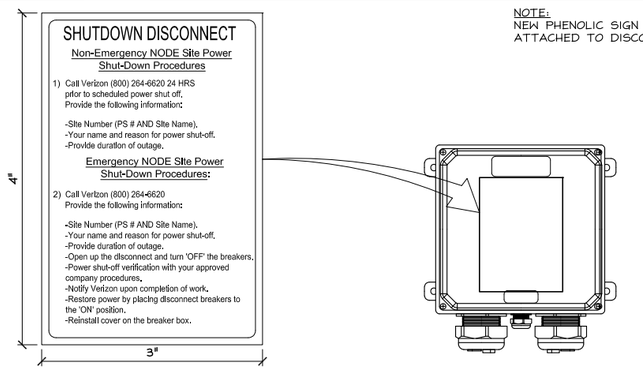
FIBER DEMARCATION UNIT
24"x36" SCALE: NTS
11"x17" SCALE: NTS
6



GROUND | AC POWER "IN" | AC POWER "OUT"

AC POWER DISCONNECT WIRE DIAGRAM
5

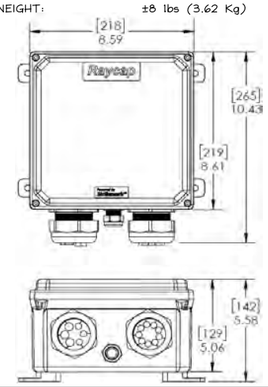
NOTE:
NEW PHENOLIC SIGN TO BE ATTACHED TO DISCONNECT



SHUTDOWN SIGN ON DISCONNECT
24"x36" SCALE: NTS
11"x17" SCALE: NTS
4

Raycap
RSCAC-1333-PH-240 AC POWER DISCONNECT
(OR APPROVED EQUAL)

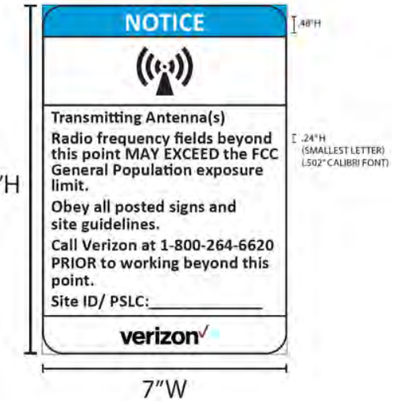
- DIMENSIONS: 10.43"L x 8.59"W x 5.06"D
- WEIGHT: ±8 lbs (3.62 Kg)



RSCAC-1333-PH-240

NEMA 6P AC POWER DISCONNECT
24"x36" SCALE: NTS
11"x17" SCALE: NTS
3

CONTRACTOR NOTE:
- SITE ID WILL BE SWITCH #, SITE # AND SITE NAME.
- NODE NUMBER WILL BE MARKET#-NODE.B#-SMALL CELL NAME.



NOTE:
INSTALL EME NOTICE SIGN 3' BELOW STREET MACRO UNITS.

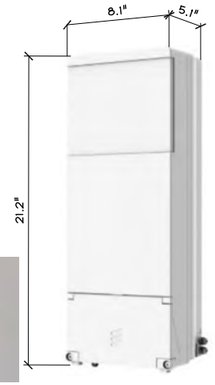
GO95 RF SIGNAGE
24"x36" SCALE: NTS
11"x17" SCALE: NTS
2

ERICSSON
STREET MACRO 6701

- DIMENSION W/ PROTRUDING ITEMS INCL GPS ANT: 21.2"H x 8.1"W x 5.1"D
- TOTAL RADIO AREA (CU. IN.): 875.77 CU. IN.
- WEIGHT: ±31 lbs

RADIO AREA (CU. FT.)			
RADIO MODEL	TOTAL RADIO(S)	TOTAL RADIO AREA (CU. IN.)	TOTAL RADIO AREA (CU. FT.)
MACRO 6701	1	875.77 CU. IN.	0.51 CU. FT.

NEW GPS ATTACHED ON TOP OF SM 6701 (PRE INSTALLED BY MANUFACTURER) (1) TOTAL (MAX. MEASUREMENTS WILL NOT EXCEED)



STREET MACRO 6701
24"x36" SCALE: NTS
11"x17" SCALE: NTS
1

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

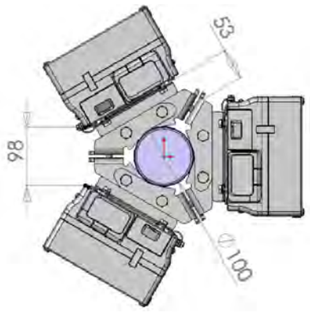
REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

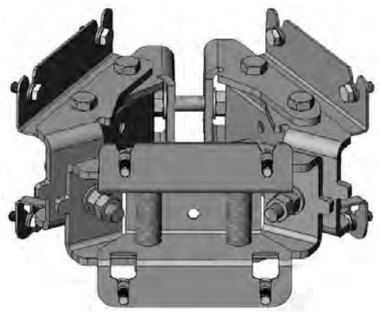
SHEET TITLE
DETAILS W/ SHROUD

SHEET NUMBER
D-1

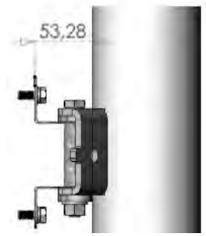
TRIPLE BRACKET PHOTOS - WITH AZIMUTH/TILT BRACKET (OPTIONAL / AS NEEDED)



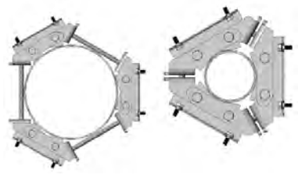
TRIPLE BRACKET - PLAN VIEW



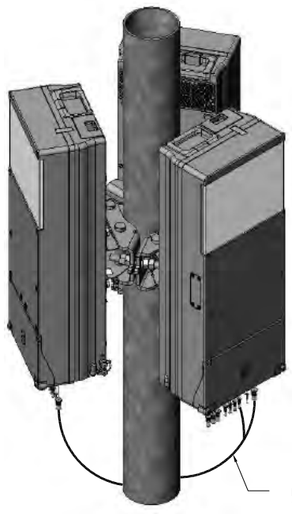
TRIPLE BRACKET - (ISO) VIEW WITHOUT RADIOS



SINGLE BRACKET - SIDE VIEW



TRIPLE BRACKET - SXK 109 2157/5



TRIPLE BRACKET - (ISO) VIEW RADIOS

1/4" CABLING TO BE RUN INSIDE 1.5"ø FLEX CONDUIT FROM BACK OF ANTENNA TO HOLE IN POLE

SM 6701 TRIPLE- BRACKET

24"x36" SCALE: NTS
11"x17" SCALE: NTS

7

PREFORMED LINE PRODUCTS

COYOTE TERMINAL CLOSURE (FIBER DEMARCATION UNIT)

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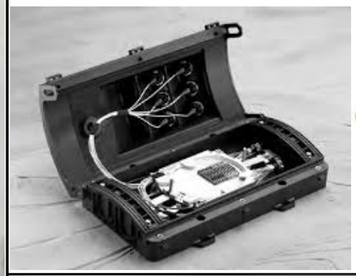
- WEIGHT: N/A

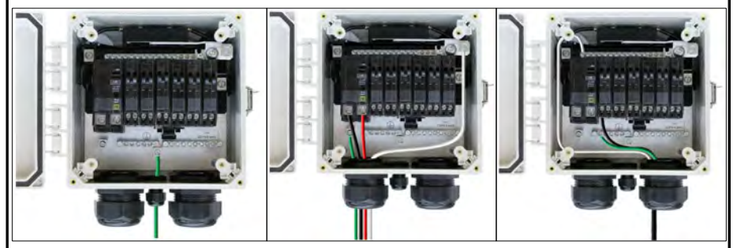
OR VERIZON APPROVED EQUAL



FIBER DEMARCATION UNIT

24"x36" SCALE: NTS
11"x17" SCALE: NTS

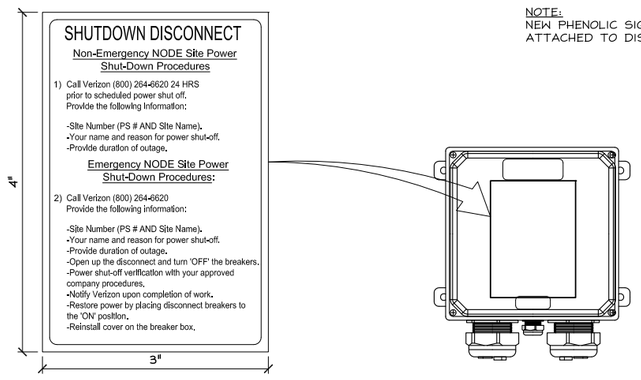
6



GROUND | AC POWER "IN" | AC POWER "OUT"

AC POWER DISCONNECT WIRE DIAGRAM

5



NOTE:
NEW PHENOLIC SIGN TO BE ATTACHED TO DISCONNECT

SHUTDOWN SIGN ON DISCONNECT

24"x36" SCALE: NTS
11"x17" SCALE: NTS

4

Raycap RSCAC-1333-PH-240 AC POWER DISCONNECT
(OR APPROVED EQUAL)

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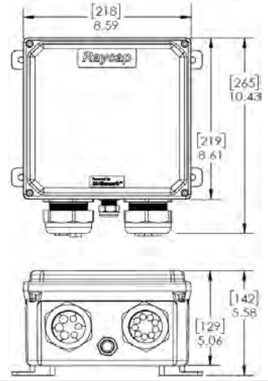


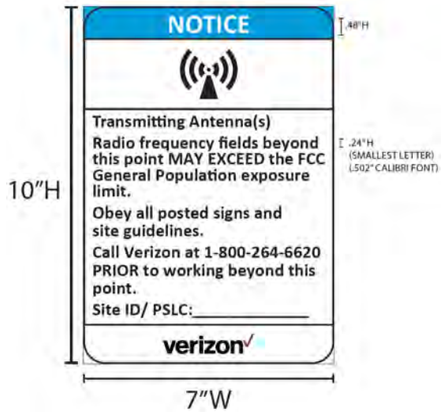
RSCAC-1333-PH-240

NEMA 6P AC POWER DISCONNECT

24"x36" SCALE: NTS
11"x17" SCALE: NTS

3

CONTRACTOR NOTE:
- SITE ID WILL BE SWITCH #, SITE # AND SITE NAME.
- NODE NUMBER WILL BE MARKET#-NODE.B#-SMALL CELL NAME.



NOTE:
INSTALL EME NOTICE SIGN 3' BELOW STREET MACRO UNITS.

GO95 RF SIGNAGE

24"x36" SCALE: NTS
11"x17" SCALE: NTS

2

STREET MACRO 6701

ERICSSON

- DIMENSION W/ PROTRUDING ITEMS INCL GPS ANT: 21.2"H x 8.1"W x 5.1"D
- TOTAL RADIO AREA (CU. IN.): 875.77 CU. IN.
- WEIGHT: ±31 lbs

RADIO AREA (CU. FT.)			
RADIO MODEL	TOTAL RADIO(S)	TOTAL RADIO AREA (CU. IN.)	TOTAL RADIO AREA (CU. FT.)
MACRO 6701	1	875.77 CU. IN.	0.51 CU. FT.

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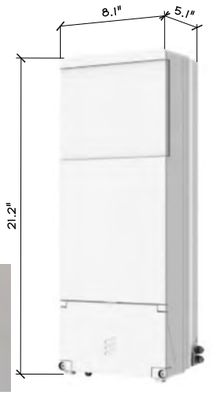


STREET MACRO 6701

24"x36" SCALE: NTS
11"x17" SCALE: NTS

1

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

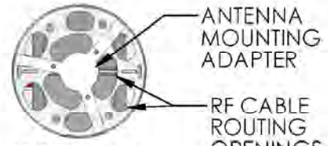
SF PALO ALTO 162

LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

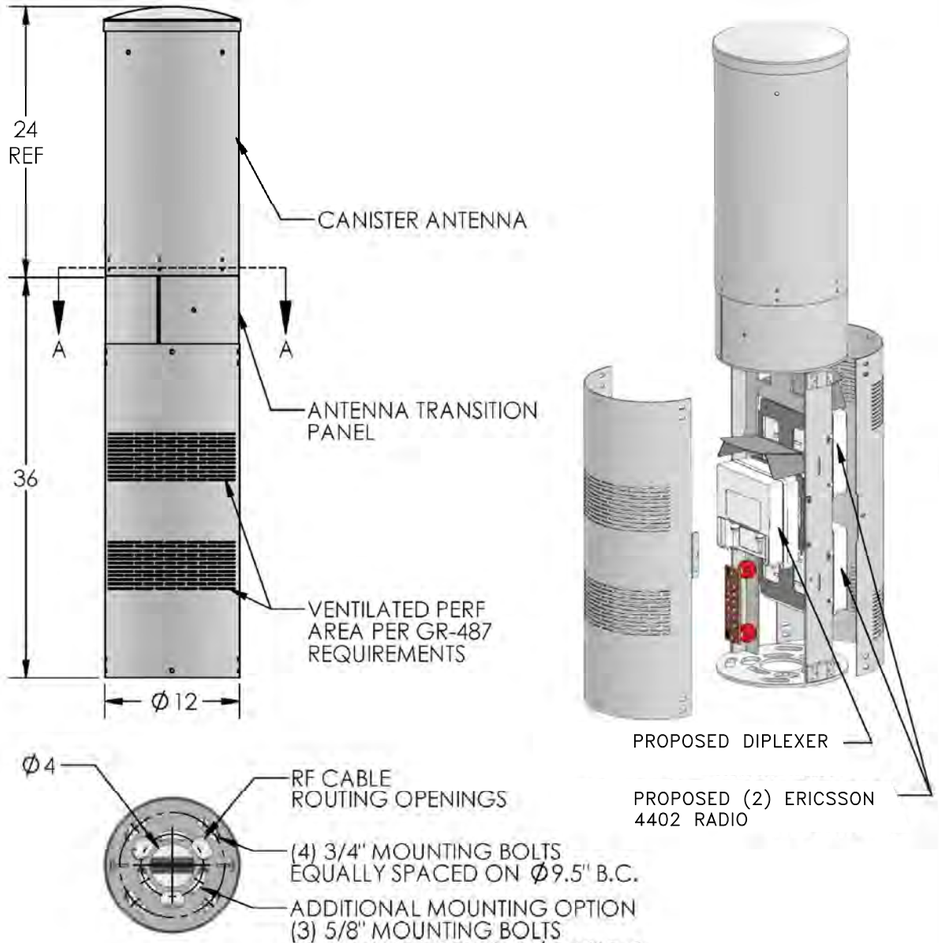
SHEET TITLE
DETAILS WITHOUT SHROUD

SHEET NUMBER
D-1.1

REVISIONS			
REV.	DESCRIPTION	BY	DATE
A	INITIAL RELEASE	MJP	02/12/2019



SECTION A-A

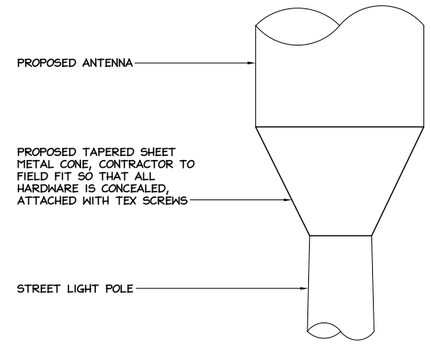


ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
X = ± .12 ANGLES ±2°
XX = ± .06 FRACTIONS ±1/32
XXX = ± .031
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

DRAWN BY: MJP	SHT: 1 of 1	PART/BASE: SSC760236966E21x	
CHECKED BY:	SCALE:	DESCRIPTION: METRO CELL, SOLN - PT 12 IN, ERC	
DATE:	MATERIAL:	DRAWING TYPE:	
REVISION: A	FINISH:		
	WEIGHT:	COMMSCOPE®	

CONE DETAIL — 24"x36" SCALE: NTS, 11"x17" SCALE: NTS — 3

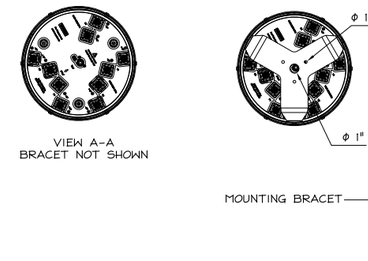
NOTE:
PAINT CONE TO MATCH AS REQUIRED BY JURISDICTION

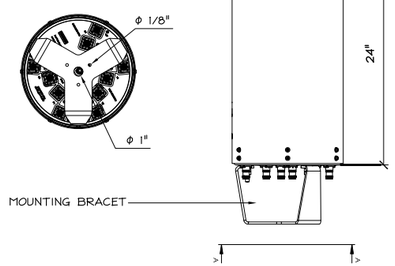


COMMSCOPE ANTENNA — 24"x36" SCALE: NTS, 11"x17" SCALE: NTS — 2

COMMSCOPE® COMMSCOPE VVSSP-360S-M CANISTER ANTENNA

- DIMENSIONS: 24"H x 12"Φ
- WEIGHT: ±38.6 lbs (17.5 Kg)



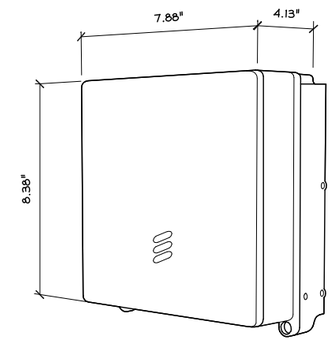


ERICSSON 4402 AWS/PCS RADIO — 24"x36" SCALE: NTS, 11"x17" SCALE: NTS — 1

ERICSSON

ERICSSON 4402 AWS/PCS RADIO

- DIMENSIONS: 8.38"H x 7.88"W x 4.13"D
- WEIGHT: ±10.15 lbs (4.6 Kg)



verizon
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PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER — NISSAM ZALZALI — 71655 — CIVIL — STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
DETAILS

SHEET NUMBER
D-2

NOISE STUDY

Verizon Wireless • Proposed Small Cells
Three Pole Locations • Palo Alto, 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 wireless telecommunications carrier, to evaluate three small cells proposed to be sited in Palo Alto, California, for compliance with municipal limits on sound levels from the installations.

Executive Summary

Verizon proposes to install antennas and equipment on three light poles sited in the public right-of-way in Palo Alto. Noise from the proposed operations will comply with the City's pertinent noise limits.

Prevailing Standard

Palo Alto adopted Resolution No. 9825 (April 15, 2019) "Resolution of the Council of the City of Palo Alto Adopting Objective Aesthetic, Noise, and Related Standards for Wireless Communication Facilities in the Public Rights of Way," which sets limits on noise at residential areas for wireless facilities installed in public rights-of-way. Noise at the nearest residential property line is limited to an increase of 5 dB over existing ambient levels, if the ambient noise level would remain below 60 dBA L_{dn}, or to an increase of 3 dB, otherwise. The composite "day-night" average L_{dn} incorporates a 10 dB penalty during nighttime hours (10 pm to 7 am), to reflect typical residential conditions, where noise is more readily heard at night. By definition, sound from a continuous noise source will be 6.4 dB higher when expressed in L_{dn}.

It is noted that the amended language also references Chapter 9.10 of the Code, which had set a more relaxed increase of 15 dB increase for such WCF sitings, assessed at 25 feet from the pole. It is assumed for this study that the minimum reference ambient level is 40 dBA, as defined in Chapter 9.10.

A summary of noise assessment and calculation methodologies is shown in Figure 1.

General Facility Requirements

Small cells typically consist of two distinct parts: the electronic transceivers (also called "radios"), that are connected to traditional wired telephone lines, and the antennas that send 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 the base of the pole, and are connected to the antennas by cables. Some radios require fans to cool the electronics inside. Some radios are integrated with the antennas as a single unit.

Verizon Wireless • Proposed Small Cells
Three Pole Locations • Palo Alto, California

Site & Facility Description

According to information provided by Verizon, that carrier proposes to install a cylindrical antenna and two Ericsson Model 4402 radio units within a shroud on top of the light pole in the public right-of-way at each of the three locations listed in Table 1, and three Ericsson Model 6701 antennas, with integrated radios, within shrouds below the light arm on the pole.

Study Results

Ericsson reports that the maximum noise level from any one Model 4402 radio is 40.9 dBA,* and that the maximum noise level from three Model 6701 units is 39.6 dBA,* both at a reference distance of 5 feet. The cylindrical antenna is passively cooled, generating no noise.

At a distance of 6¼ feet, the calculated noise level from the simultaneous operation of this combined equipment would result in an increase not exceeding 5 dB above the minimum allowed ambient level of 40 dBA; the increase above the ambient would be less than 5 dB for any siting of the equipment beyond this distance. If the existing ambient were determined to be above 40 dBA statutory minimum, then the calculated increase due to the Verizon operation would, by definition, decrease. **All of the proposed small cells in Table 1 meet this distance requirement.**

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of these Verizon Wireless small cells proposed in Palo Alto will, under the conditions noted above, comply with the municipal standards limiting acoustic noise emission levels.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2021. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

REGISTERED PROFESSIONAL ENGINEER · WILLIAM F. HAMMETT · E-13026 · M-20676 · Exp. 6-30-2021 · ELECTRICAL MECHANICAL · STATE OF CALIFORNIA

December 16, 2020

William F. Hammett, P.E.
707/996-5200

* Adjusted value based on manufacturer data, to reflect record high temperature of 107°F in Palo Alto.

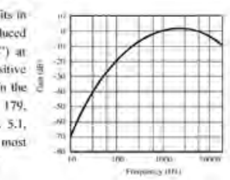
Verizon Wireless • Proposed Small Cells
Three Pole Locations • Palo Alto, California

Small Cell No.	Approximate Address	Nearest Residential Property
425225 "SF Palo Alto 121"	1600 El Camino Real (CA-82)	120 feet
425266 "SF Palo Alto 162"	158-164 Quarry Road	1,130 feet
425268 "SF Palo Alto 164"	Arboretum Road	200 feet

Table 1. Proposed Verizon small cells

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("L_P") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 µPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20\log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

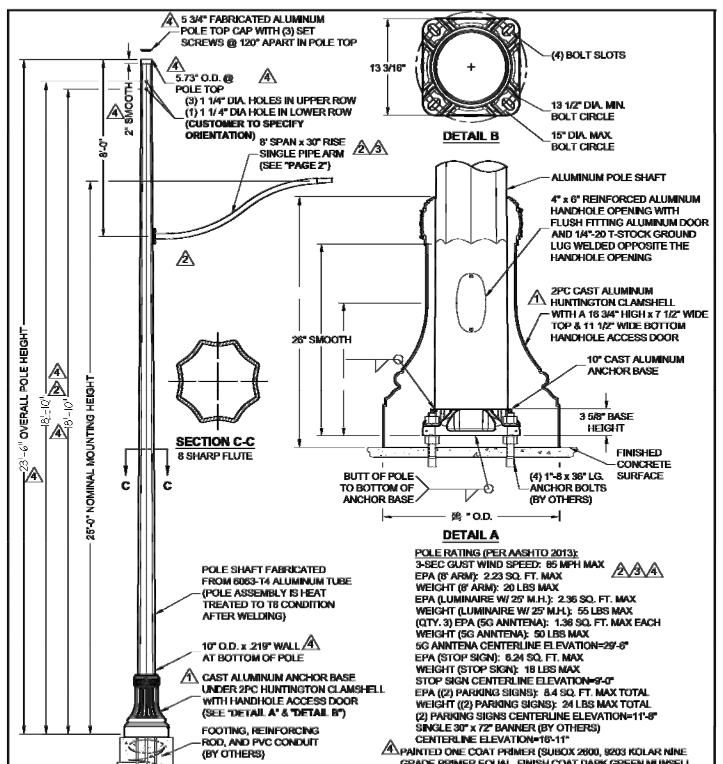
Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

$$L_T = 10\log\left(10^{L_1/10} + 10^{L_2/10} + \ldots\right),$$

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.

NOISE STUDY — 24"x36" SCALE: NTS / 11"x17" SCALE: NTS — 2



POLE RATING (PER AASHTO 2013):
3-SEC GUST WIND SPEED: 85 MPH MAX
EPA (8' ARM): 2.23 SQ. FT. MAX
WEIGHT (8' ARM): 20 LBS MAX
EPA (LUMINAIRE W/ 25' M.H.): 2.36 SQ. FT. MAX
WEIGHT (LUMINAIRE W/ 25' M.H.): 55 LBS MAX
(QTY. 3) EPA (5G ANNTENA): 1.36 SQ. FT. MAX EACH
WEIGHT (5G ANNTENA): 50 LBS MAX
5G ANNTENA CENTERLINE ELEVATION=29'-6"
EPA (STOP SIGN): 6.24 SQ. FT. MAX
WEIGHT (STOP SIGN): 18 LBS MAX
STOP SIGN CENTERLINE ELEVATION=9'-0"
EPA ((2) PARKING SIGNS): 8.4 SQ. FT. MAX TOTAL
WEIGHT ((2) PARKING SIGNS): 24 LBS MAX TOTAL
(2) PARKING SIGNS CENTERLINE ELEVATION=11'-8"
SINGLE 30" x 72" BANNER (BY OTHERS)
CENTERLINE ELEVATION=16'-11"

PAINTED ONE COAT PRIMER (SUBOX 2600, 9203 KOLAR NINE GRADE PRIMER EQUAL. FINISH COAT DARK GREEN MUNSELL NO. 5.5 G4 2.78/2.1, KEELER & LONG P29750 EQUAL)

DO NOT SCALE

valmont
Valmont Industries, Inc. Structures Division
20805 Eaton Ave Farmington, Minnesota 55024-7932
Phone: (651) 463-8990 (800) 869-7577
Fax: (651) 463-3349

CONFIDENTIAL
The information contained in this drawing is privileged and confidential, and may be protected from disclosure. Please be aware that any use or dissemination of this drawing may be subject to legal restriction or sanction.

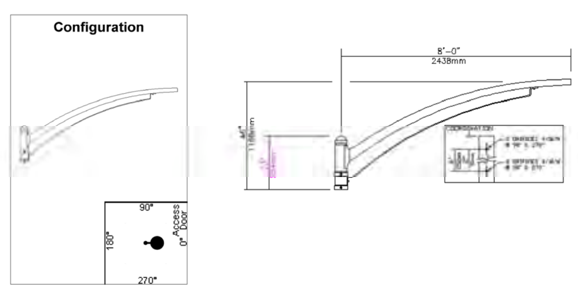
TITLE:	S ANCHOR BASE POLE
QTY:	TBD
MODEL NO.:	
MATERIAL:	ALUMINUM ALLOY
FINISH:	SEE ABOVE
PROJECT:	PALO ALTO
SOLD TO:	
SHIP TO:	
P.O. NO:	
REP:	GREAT BASIN LIGHTING INC.
DWN BY:	PTP
CHKD BY:	
APPR BY:	MPS
DATE:	05-23-19
DWG NO:	DR6729
PAGE:	1/2

REV	DATE	REVISION DESCRIPTION	BY
4	08-28-20	REV EPA;REV DIMS;ADD CAP;RMV CPLGS,ADD FIN	HJT
3	06-15-20	ADD ARM;ADD PG;REV POLE RATING	HJT
2	06-09-20	REV POLE RATING; REMOVED ARM; MOVED PORTS	KGB

#3142 / 1600.06

Palo Alto – El Camino Real

Configuration



Qty	3	Bracket	AC8-1A-R5-CAP1-SCRAL7022TX

Description of Components:

Arm: Shall be made from spun and tapered aluminum 6063-T4, tempered to T6 after welding. The tapered arm is formed into a vertically oriented ellipse of 4" (102mm) by 2 7/8" (73mm) welded onto a plate and mechanically assembled to central adaptor. The bracket end is of 2 3/8" (60mm) O.D.

Decorative Element: Flat made of bent aluminum, 2" (51mm) wide, 0.375" (10mm) thick, mechanically assembled.

Central Adaptor: Made of cast 356 aluminum, complete with a top decorative cap. Slip-fits 9" (229mm) over a 4" (102mm) outside diameter pole or tenon. Mechanically fastened to the pole or tenon.

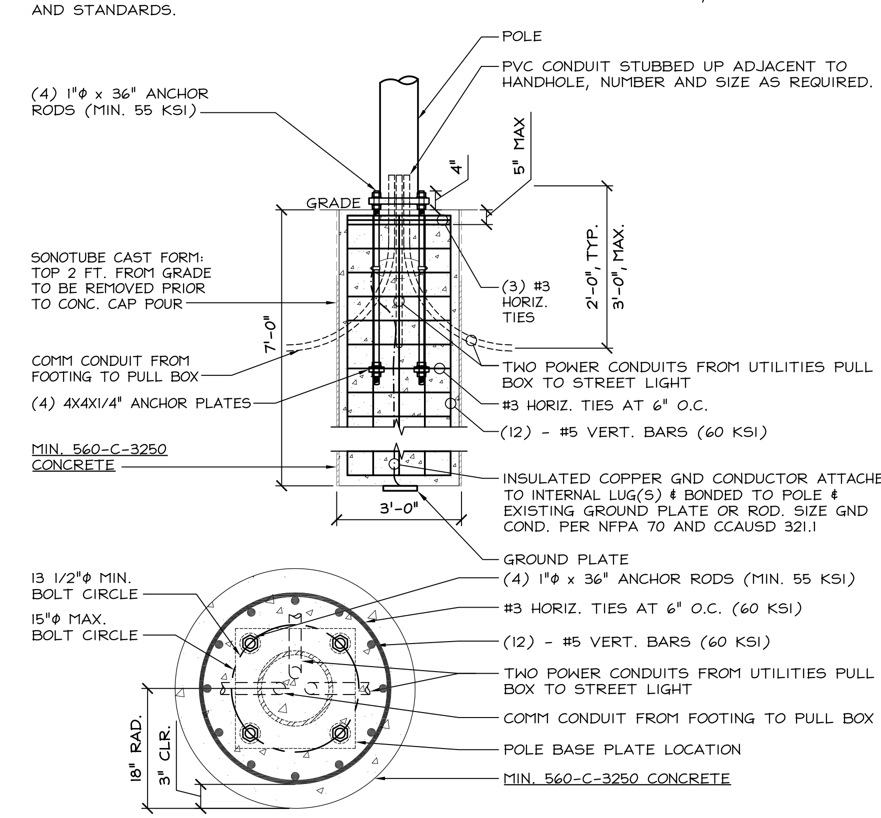
Bracket Options: (CAP1),Optional Pole Cap

Note: The AC8 bracket meets the AASHTO 2001 standard specifications for structural support for luminaires.

Bracket Properties (Weight and EPA): 32 lbs (14.5 kg), 3.87 ft²

POLE SPECS — 24"x36" SCALE: NTS / 11"x17" SCALE: NTS — 3

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



FOUNDATION DETAIL — 24"x36" SCALE: NTS / 11"x17" SCALE: NTS — 1

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER · WISSAM ZALZALI · 71655 · CIVIL · STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
NOISE STUDY, FOUNDATION DETAILS, POLE DRAWINGS

SHEET NUMBER
D-3

JAM SERVICES, INC.

Submittal Cover Letter

Date: June 12, 2018

Contractor name: Phoenix Electric

Project name: City of Palo- Downtown Improvements

Customer PO# 767-02

JAM SO# 54798

Please see the enclosed set of submittals for the materials to be supplied on the above-mentioned project; these are for APPROVAL. The material will remain ON HOLD pending the receipt of signed approved submittals. Please note standard factory lead times will apply upon release.

Submittal page#	Item Description	Spec Section	Check if Deviation	Request for information
2-5	LED Luminaires	N/A		

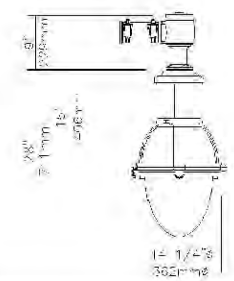
*Per the factory, there is a smaller scale version. However, this version maxes out at 55 watts, and the specified version is 135w. Please advise.

If you have any questions please let me know.

Thank you,
Samantha Douglas
Project Administration
JAM Services, Inc.

958 E. AIRWAY BLVD • LIVERMORE, CALIFORNIA • 94551
PHONE: (925) 455-5267 • FAX: (925) 455-5271

RNS20 (Reference=L23638-3)



EPA: 2.03 sqft / weight: 43 lb (19.5 kg)
Note: 3D image may not represent color or option selected.
Logos above include link, click to access.

Qty	1	Luminaire	RNS20-55W32LED4K-T-ACDR-LE3-120-DMG-SMB-RC-BKTX

Description of Components:

Hood: Cast 356.1 aluminum dome, mechanically assembled on the housing, c/w a watertight grommet, mechanically assembled to the bracket with four bolts 3/8-16 UNC. This suspension system permits for a full rotation of the luminaire in 90 degree increments.

Housing: In a round shape, this housing is made of 356.1 aluminum, complete with a weatherproof door giving a tool-free access to the ballast, mechanically assembled. This suspension system permits for a full rotation of the luminaire in 90 degree increments.

Access-Mechanism: A gravity die cast 356 aluminum frame with latch and hinge. The mechanism shall offer tool-free access to the inside of the luminaire. An embedded memory-retentive gasket shall ensure weatherproofing.

Light Engine: LEDgine composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**
Electrical components are RoHS compliant.

Heat Sink: Made of cast aluminum optimising the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device).

Globe: (ACDR), Made of one-piece seamless injection-molded impact-resistant (DR) acrylic having an inner prismatic surface. Complete with a semi-prismatic house side shield and external glare softening prisms. The globe is mechanically assembled and sealed onto the lower part of the heat sink.

LED Module: LED type Philips Lumileds LUXEON T. Composed of 32 high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 4000 Kelvin nominal (3985K +/- 275K or 3710K to 4260K), CRI 70 Min. 75 Typical.

RNS20 (Reference=L23638-3)

Optical System: (LE3), IES type III (asymmetrical). Composed of high-performance optical grade PMMA acrylic refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. Optical system is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Street side indicated.

Driver: High power factor of 90% minimum. Electronic driver, operating range 50/60 Hz. **Auto-adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class I,** THD of 20% max. Maximum ambient operating temperature from -40F(-40C) to 130F(55C) degrees. **Driver comes with dimming compatible 0-10 volts.**

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

Driver Options: (DMG), Dimming compatible 0-10 volts. For applicable warranty, certification and operation guide see *"Philips Lumec dimmable luminaire specification document for unapproved device installed by other"*. To get document, click on this link: Specification document or go on web site on this address: http://www.lumec.com/Lumec3DV2/PdfWebLink/Philips Lumec dimmable luminaire specification document for unapproved device installed by other.pdf

Surge Protector: Surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid-State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA.

Adaptor: (SMB), Made of cast 356 aluminum, complete with a block connector, mechanically assembled to the bracket. Can be mounted on a 1.66"(42mm) to 2.38"(60mm) outside diameter bracket arm tubing that slip fits 6.5" (165mm) long inside the adaptor, permits an adjustment of ± 5°.

Luminaire Options: (RC), Receptacle for a twist-lock photoelectric cell or a shorting cap. Use of photocell or shorting cap is required to ensure proper illumination.

RNS20 (Reference=L23638-3)

Miscellaneous

Description of Components:

Wiring: Gauge (#14) TEW/AWM 1015 or 1230 wires, 6" (152mm) minimum exceeding from luminaire.

Hardware: All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish: Color to be **black textured RAL9005TX (BKTX)** and in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard: The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Quality Control: The manufacturer must provide a written confirmation of its ISO 9001-2008 and ISO 14001-2004 International Quality Standards Certification.

Certification: The manufacturer will have to supply a copy of approval products certificate, CSA or UL.

Vibration Resistance: The RNS20 meets the **ANSI C136.31-2001,** American National Standard for Roadway Luminaire Vibration specifications for normal applications. (Tested for 1.5G over 100 000 cycles)

Web site information details: Click on any specific information details you need:

Paint finish / Warranties / ISO 9001-2008 Certification / ISO 14001-2004 Certification

RNS20 (Reference=L23638-3)

LED light engine technical information for RNS20-30
LED = Philips Lumileds Luxeon T, CRI = 70, CCT = 4000K (3985K +/- 275K or 3710K to 4260K)
System (LED + driver) rated life = 100,000 hrs [1]

LED Module	Typical delivered lumens	Typical system wattage [2] (W)	Typical current @ 120 V (A)	Typical current @ 208 V (A)	Typical current @ 240 V (A)	Typical current @ 277 V (A)	LED current (mA)	HID Replacement [3]	Luminaire Efficacy Rating (Lm/W)	BUG rating
24W16LED4K-T-LE2	3040	28	0.25	0.15	0.13	0.12	530	70-100	107	B1-U2-G1
24W16LED4K-T-LE3	3017	28	0.25	0.15	0.13	0.12	530	70-100	106	B1-U2-G1
24W16LED4K-T-LE4	3032	28	0.25	0.15	0.13	0.12	530	70-100	107	B1-U2-G1
24W16LED4K-T-LE5	3000	28	0.25	0.15	0.13	0.12	530	70-100	107	B2-U2-G2
30W16LED4K-T-LE2	3825	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE3	3796	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE4	3815	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE5	3837	37	0.32	0.19	0.17	0.15	700	70-100	104	B3-U3-G3
35W32LED4K-T-LE2	4236	36	0.31	0.19	0.17	0.15	350	70-100	118	B1-U3-G1
35W32LED4K-T-LE3	4175	36	0.31	0.19	0.17	0.15	350	70-100	116	B1-U2-G1
35W32LED4K-T-LE4	4225	36	0.31	0.19	0.17	0.15	350	70-100	117	B1-U2-G1
35W32LED4K-T-LE5	4249	36	0.31	0.19	0.17	0.15	350	70-100	118	B3-U3-G3
55W32LED4K-T-LE2	5945	53	0.47	0.27	0.24	0.22	530	100-150	111	B1-U3-G1
55W32LED4K-T-LE3	5900	53	0.47	0.27	0.24	0.22	530	100-150	110	B1-U3-G2
55W32LED4K-T-LE4	5900	53	0.47	0.27	0.24	0.22	530	100-150	111	B1-U3-G2
55W32LED4K-T-LE5	5994	53	0.47	0.27	0.24	0.22	530	100-150	113	B3-U3-G3

1 L70 = 100,000 hrs (at ambient temperature = 25°C)
2 System wattage or total luminaire wattage includes the LED module and the LED driver.
3 Note: These guidelines show typical replacements for the HID wattage ranges shown. Replacements should always be confirmed with a photometric layout.
Note: Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Philips.

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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.

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
LUMINAIRE DETAILS

SHEET NUMBER
D-4

- CARLON HAL-FREE RISER-GARD, HJ4X4C-2000:

Technical Info:

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	3'6"
Maximum Air Temperature	UL 2024	387°F

- Storage and Handling -4°F to 150°F
- No UV protection (not suitable for outdoor use)
- Do NOT store outside

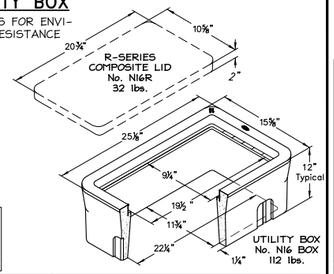
	Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Reel Size	Reel Type	Reel Length (feet)	Reel Weight (lbs.)	Wt. per 100 ft. (lbs.)
2"	White	HJ4X4C-2000	2.000	2.425	900 lb.	82" x 41"	W	2000	375	20.8

W = Wood

OLDCASTLE N16 UTILITY BOX

- EXCEEDS ASTM-D1693 STANDARDS FOR ENVIRONMENTAL STRESS CRACKING RESISTANCE
- ETCHED POLYPROPYLENE FACE
- FACE ANCHORED IN CONCRETE
- ULTRA-VIOLET INHIBITOR

A HIGH DENSITY REINFORCED CONCRETE BOX WITH NON-SETTING SHOULDERS POSITIONED TO MAINTAIN GRADE AND FACILITATE BACK FILLING. APPROXIMATE DIMENSIONS AND WEIGHT SHOWN.



NOTE:
SPECIFICATION OF THIS VAULT MANUFACTURER AND MODEL ARE SUBJECT TO REPLACEMENT WITH APPROVED EQUIVALENT VAULT/LID

OLDCASTLE ORDER CODE	ITEM	APPROXIMATE SHIP'G. WEIGHT	DESCRIPTION
N16BOX	BOX	112 lbs.	N16 ELECTRICAL BOX (11-3/4"x22-1/4") - 20 PER PALLET
N16R	LID	32 lbs.	R-SERIES COMPOSITE LID WITH POLYPROPYLENE RING (ORDER N90 BOLT DOWN KIT SEPARATELY)
FLI6T	LID	13 lbs.	FIBRELYTE LID, NON-CONCRETE BOLT DOWN (ORDER N90 BOLT-DOWN KIT SEPARATELY)
N16J	LID	36 lbs.	CAST IRON LID BOLT DOWN (ORDER N90 BOLT-DOWN KIT SEPARATELY)
BI6-6ID	COVER	28 lbs.	STEEL CHECKER PLATE COVER
N16-6IJ	COVER	28 lbs.	STEEL CHECKER PLATE COVER (ORDER N90 BOLT-DOWN KIT SEPARATELY)
BI6XI2	EXTENSION	113 lbs.	12" REINFORCED CONCRETE BOX EXTENSION - 20 PER PALLET
B305L	SLAB	52 lbs.	REINFORCED CONCRETE SLAB (16"x28")

PANEL 'A'

SITE NAME: P-64 - SF **PALO ALTO 162**

PANEL DESIGNATION: AC PANEL 'A'

VOLTAGE: 120/240 V
PHASE: 1
WIRE: 3
MAIN BREAKER: 60 AMP
BUSS RATING: 60 AMP
LOCATION: UG VAULT

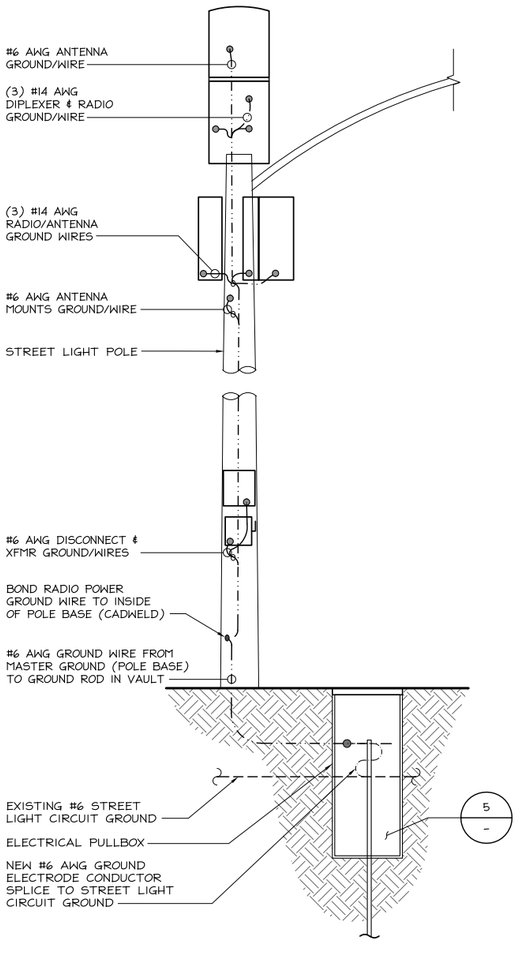
CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	MAIN	60	2	ON			0		250		1.25	200	ON	2	15	ERICSSON SM-6701 #3	2
3								0		250	1.25	200					4
5	ERICSSON SM-6701 #1	15	2	ON	200	1.25	250		313		1.25	250	ON	2	15	ERICSSON 4402 #1	6
7					200	1.25		250		313	1.25	250					8
9	**ERICSSON SM-6701 #2**	15	2	ON	200	1.25	250		313		1.25	250	ON	2	15	ERICSSON 4402 #2	10
11					200	1.25		250		313	1.25	250					12

CONTRACTOR SHALL LABEL PANEL WITH CARRIER I.D., SERVICE RATING, AND FEED SOURCE

PHASE A TOTAL VA	1375
PHASE B TOTAL VA	1375
TOTAL KVA	2.75
TOTAL AMPS	11.46

NOTES:
1. ALL LOADS CALCED AS LCL/MCL LOADS (OK TO DESIGN TO 100% CAPACITY)
2. UNUSED BREAKER POSITIONS SHALL REMAIN COVERED W/ MFR. COVER
3. ALL EQUIPMENT/BREAKERS SHALL BEAR A LABEL FOR I.D. & RATING

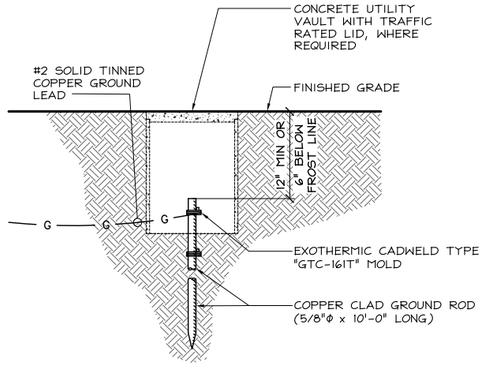
CARLON RISER-GARD | 7



GROUND RISER DIAGRAM | 7

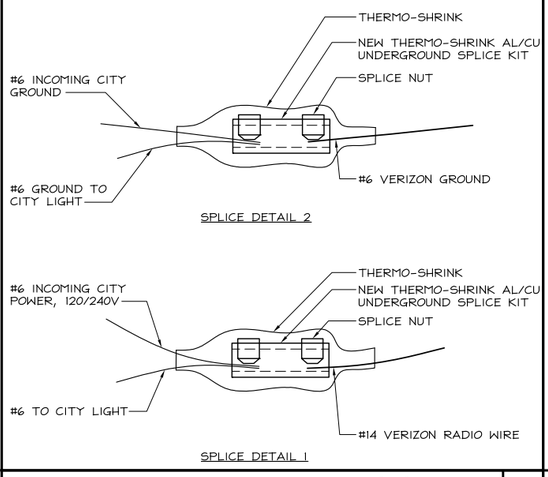
N16 U.G. UTILITY BOX | 6

24"x36" SCALE: NTS
11"x17" SCALE: NTS



GROUND WELL/ROD | 5

24"x36" SCALE: NTS
11"x17" SCALE: NTS



SPLICE DETAIL | 4

24"x36" SCALE: NTS
11"x17" SCALE: NTS

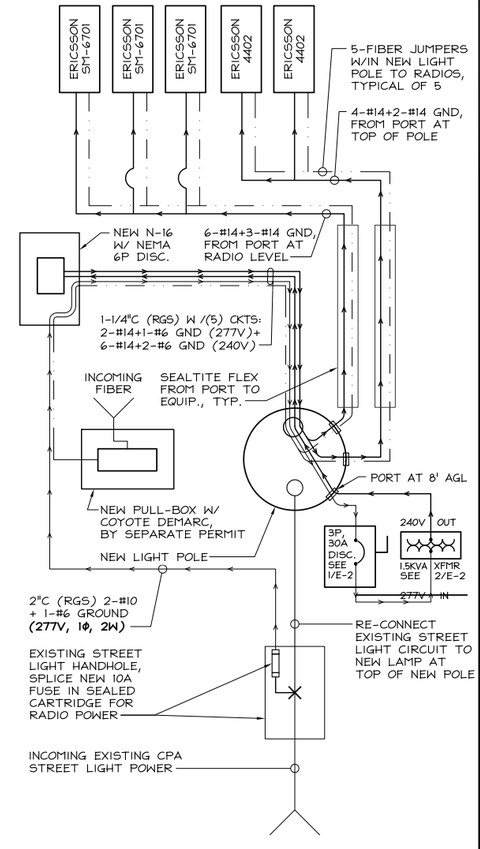
PANEL SCHEDULE | 2

ELECTRICAL NOTE:

1. ALL WORK SHALL COMP;Y TO THE CURRENT EDITION OF THE CALIFORNIA ELECTRICAL CODE, CALIFORNIA BUILDING CODE, NATIONAL ELECTRICAL CODE, ALL APPLICABLE REGULATIONS GOVERNING NON-JPA UTILITY POLES (G.O. 95), AND ALL APPLICABLE LOCAL CODES.
2. ALL WORK SHALL COMPLY WITH VERIZON CARRIER CONSTRUCTION STANDARDS FOR SMALL CELL INSTALLATION.
3. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND ALL APPLICABLE LOCAL CODES.
4. AC PANEL SHALL HAVE A 'MAIN' BREAKER AFFIXED TO BOTH POLES OF THE MAIN LUG BUSS AND FED THROUGH LOAD SIDE TO PROVIDE SINGLE SHUT-OFF SWITCH FOR ALL SMALL CELL POWER ON AC PANEL.
5. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT. SHALL BE SINGLE CONDUCTOR (#14 AWG AND LARGER), 600V, OIL RESISTANT. THWN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED.
6. REFER TO PANEL SCHEDULE (2/-) AND ONE-LINE DIAGRAM (1/-) FOR CIRCUIT ARRANGEMENT & WIRING CONNECTION.
7. SUBCONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY BEFORE THE START OF CONSTRUCTION. POWER AND TELEPHONE CONDUIT SHALL BE PROVIDED AND INSTALLED PER UTILITY REQUIREMENTS.
8. SUBCONTRACTOR SHALL PROVIDE 20 AMP, SINGLE PHASE, 120/240 (OR 120/208) VAC, 60HZ SERVICE FOR VERIZON SITE.

ELECTRICAL NOTES | 3

ONE-LINE DIAGRAM | 1



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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
HASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
ELECTRICAL/GROUNDING DIAGRAMS, NOTES, & PANEL SCHEDULE

SHEET NUMBER
E-1

STEP-DOWN TRANSFORMER - SQUARE D 1.5S8F (OR APPROVED EQUIVALENT)

DESCRIPTION: 1.5KVA, 277V-120/240 VOLT, 1-PHASE, 3-WIRE - NEMA 3R POLE-MTD. STEP-DOWN TRANSFORMER (SEE 8/- FOR FUSED OCPD)

DIMENSIONS: (MFR. BOX 8A) - 8.25"H. x 8.68"W. x 6.56"D.

NET WEIGHT: 31.0 lbs

Single Phase

POLE-MOUNTED TRANSFORMER | 2

SQUARE D H361RB OR APPROVED EQUAL

DESCRIPTION: 3-POLE, 30 AMP, 600 VOLT, NEMA 3R
SINGLE-THROW, 3-POLE FUSIBLE DISCONNECT SWITCH
LOCAKBLE FUSE BAY / LOCKABLE HANDLE

DIMENSIONS: 14.88"H. x 7.55"W. x 4.86"D.

NET WEIGHT: 8.5 lbs

Heavy Duty

NOTES:

1. INSTALL VZW PADLOCK ON THROW/HANDLE; INSTALL CPAU PADLOCK ON FUSE BAY DOOR. CPAU TO PULL FUSES FOR SHUT-DOWN.

2. INSTALL NON-EMERGENCY AND EMERGENCY SHUT-DOWN PROCEDURE SIGNAGE ON FRONT OF DISCONNECT SWITCH DOOR (SEE 4/D-1).

3. GROUND DISCONNECT TO GROUND ROD.

DISCONNECT SWITCH | 24"x36" SCALE: NTS 11"x17" SCALE: NTS | 1

NOT USED | 24"x36" SCALE: NTS 11"x17" SCALE: NTS | 3

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

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23675 BIRTCHER DRIVE
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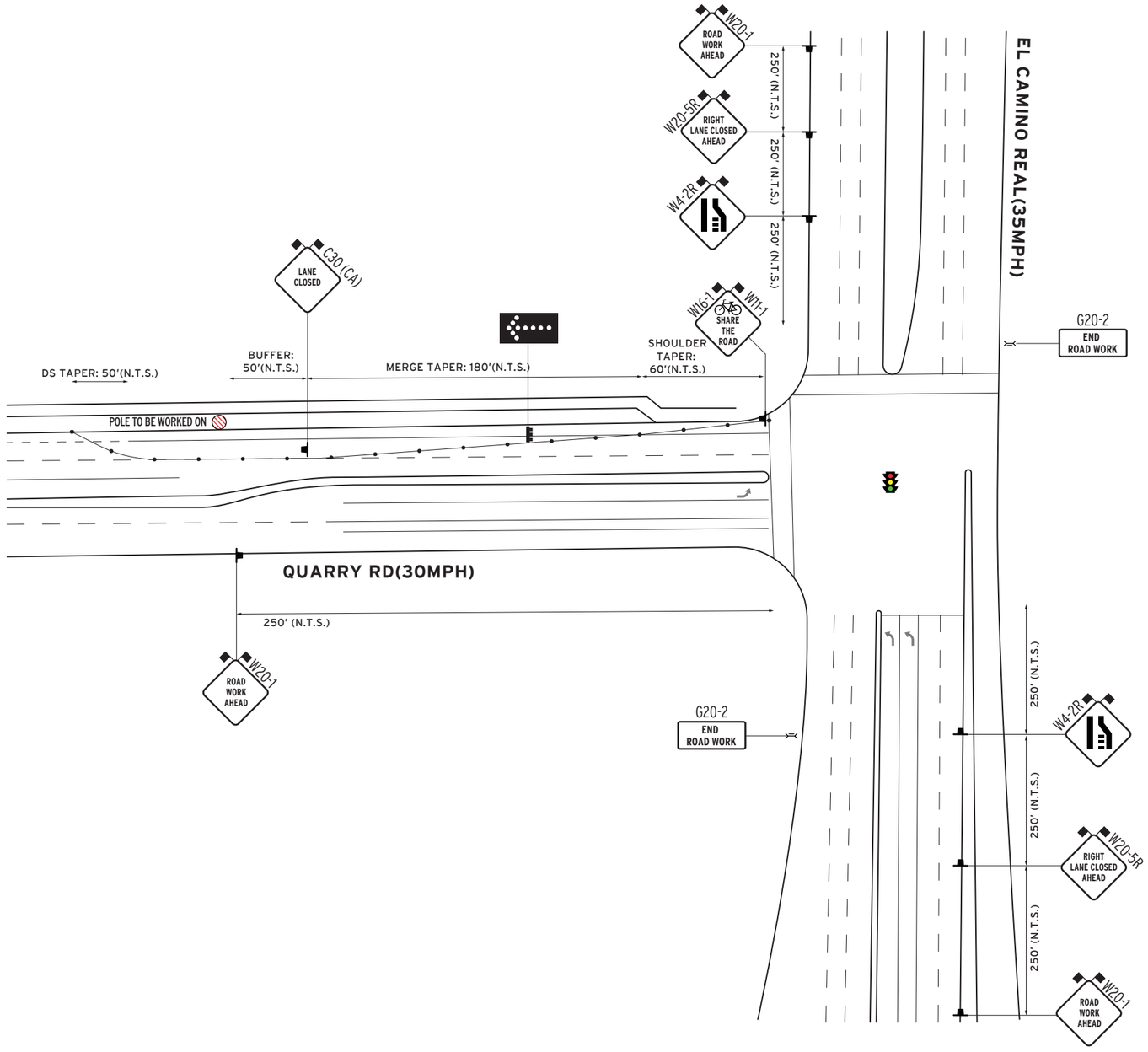
REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-2



LEGEND:

- CHANNELIZING DEVICE
- TRAFFIC CONE W/CLIP ON SIGN
- SIGN
- WORK ZONE
- DIRECTION OF TRAFFIC
- TYPE 1 BARRICADE
- TYPE 1 BARRICADE W/SIGN
- TYPE 3 BARRICADE
- TYPE 3 BARRICADE W/SIGN
- CERTIFIED FLAGGER
- TEMPORARY ADA RAMP
- TEMPORARY RAISED PAVEMENT MARKERS
- MESSAGE BOARD (PCMS)
- FLASHING ARROWBOARD
- TEMP NO PARKING SIGNS
- FLASHING BEACON/BARRICADE LIGHT
- K-RAIL/WATER FILLED BARRIER
- PEDESTRIAN BARRICADE

PLAN 1
TEMP TRAFFIC CONTROL PLAN

NOTES

- Traffic control shall conform with the most current CAMUTCD part 6 and/or Caltrans Standards
- One lane of traffic in each direction and all high volume turning lanes shall be maintained at all times on all streets at a minimum lane width of 10 feet.
- Contractor shall notify local authorities once signs are posted.
- All advanced warning signs shall be equipped with 2 (18" orange flags)
- Certified Traffic Control Workers shall have Type II vests, work shoes, and hard hats.
- Temporary no parking signs shall be placed a min of 72 hrs prior of work.
- Driveways shall be monitored and maintained at all times during work hours.
- Distance between sign and work area will be determined on speed limit.
- Roadway shall not be opened until safe for public use. All open trenches must be plated or - backfilled prior to public usage.
- All Devices shall be removed when no longer required.

MUTCD TABLE 6C-1 — MEANING OF LETTER CODES ON TYPICAL APPLICATION DIAGRAMS

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
Urban (Low Speed) - 25 mph or less	100 ft	100 ft	100 ft
Urban (Low Speed) + 25 to 40 mph	250 ft	250 ft	250 ft
Urban (High Speed) + 40 mph	350 ft	350 ft	350 ft
Rural	500 ft	500 ft	500 ft
Expressway / Freeway	1,000 ft	1,500 ft	2,640 ft

COMPASS:

SCALE: NOT TO SCALE

DATE REQSTD: 4-13-20

DATE COMPLTD: 1-18-21 REV 1

PROJECT LOCATION: 158-164 QUARRY RD PALO ALTO

JOB# SF PALO ALTO 162

PAGE# 1/1

REQUEST BY:
YVONNE WASHINGTON
VINCULUMS SERVICES/QUALTEK WIRELESS
510-677-1963
YWASHINGTON@VINCULUMS.COM

B.A.T.S.
AFTER HOURS EMERGENCY
510-299-5666
Drawn By: Andie Tonnu
CSLB# 917034
Office: 510-657-2543
Fax: 510-657-2544
44800 Industrial Drive Fremont, CA 94538
WWW.BATSTRAFFICSOLUTIONS.COM
B.A.T.S. TRAFFIC SOLUTIONS

Vinculums

575 Lannon Lane #125
Walnut Creek, CA 94598
(925) 482-8500

ALLSTATES

23675 Birtcher Dr.
Lake Forest, CA
(949) 273-0996

VERIZON
PALO ALTO_162

All States Engineering & Surveying
Project No: 64 – CLUSTER-6 \ PALO ALTO_162

Structural Analysis Report

ROW Adjacent to 158-164 Quarry Rd., Palo Alto, 94304
Proposed 23'- 6" AGL 'Downtown' Style Aluminum Light Pole & Foundation

REGISTERED PROFESSIONAL ENGINEER WISSAM ZALZALI C 71655 CIVIL STATE OF CALIFORNIA

Rev. #	Reason for Revision	Total # of Sheets	Prepared By	Checked By	Approved /Accepted	Date
0	Updated Pole Specs	20	LeT	LeT	WZ	12/23/2020

	Quantity/Type /Shape	Strength (min.)	Dimensions	Thickness /Depth	Capacity Utilization	
Pole Shaft	Aluminum / 8-sided tapered	25 ksi*	6.71"Φ at top 10.0"Φ at bottom	0.219"	40.4 %	PASS
Anchor Bolts	4	36 ksi	1" Φ	-	40.0 %	PASS
Base Plate	1	36 ksi	13.6" Cast Base	-	ADEQUATE	
Foundation	*Circular Caisson*	*3.25 ksi*	*36"Dia.*	*7'-0"***	ADEQUATE	

* Pole grade is 6063-T6 per provided specs.

** Required depth of caisson (**Unrestrained** at G/L) - This analysis was performed without a soil report, and minimum soil properties from IBC 18 were used. Required pole foundation embedment depth may change with a soil report from the proposed pole location.

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www.allstatesengineering.com

Steel Decorated Pole
Palo Alto
PALO ALTO_162

ALLSTATES

Project Description:
All States Engineering & Surveying (ASES) is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the metal pole.
The purpose of the analysis is to determine acceptability of the pole stress level. Based on our analysis we have determined the metal pole stress level for the structure and anchorage, under the following load case:

LC: Proposed Pole + Proposed Equipment with Shroud
(Please see page 5 for details)

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

Structural Analysis Parameters:
This analysis has been performed in accordance with AASHTO 2013 guidelines.

- Wind Speed: ***85 mph per AASHTO 2013***
- Exposure Category: ***C***
- Risk Category: ***II***
- Topographical: ***1***
- Crest Height = ***0***
- Ice Thickness = ***0 in***
- Min. Soil Lateral Bearing = ***100 psf/ft*2 = 200 psf/ft per CBC & IBC 1806.3.4***
- Min. Soil Bearing = ***1500 psf***

We at *All States Engineering & Surveying* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

ATC Hazards by Location

Search Information

Address:	Arboretum Rd, Palo Alto, CA 94304, USA
Coordinates:	37.438972, -122.1694949
Elevation:	77 ft
Timestamp:	2020-12-07T22:27:38.781Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default

Basic Parameters

Name	Value	Description
S_S	1.791	MCE_R ground motion (period=0.2s)
S_1	0.663	MCE_R ground motion (period=1.0s)
S_{MS}	2.15	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.433	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.91	Coefficient of risk (0.2s)
CR_1	0.896	Coefficient of risk (1.0s)
PGA	0.737	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.885	Site modified peak ground acceleration

T_L	12	Long-period transition period (s)
SsRT	2.104	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.312	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.791	Factored deterministic acceleration value (0.2s)
S1RT	0.844	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.942	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.663	Factored deterministic acceleration value (1.0s)
PGAd	0.737	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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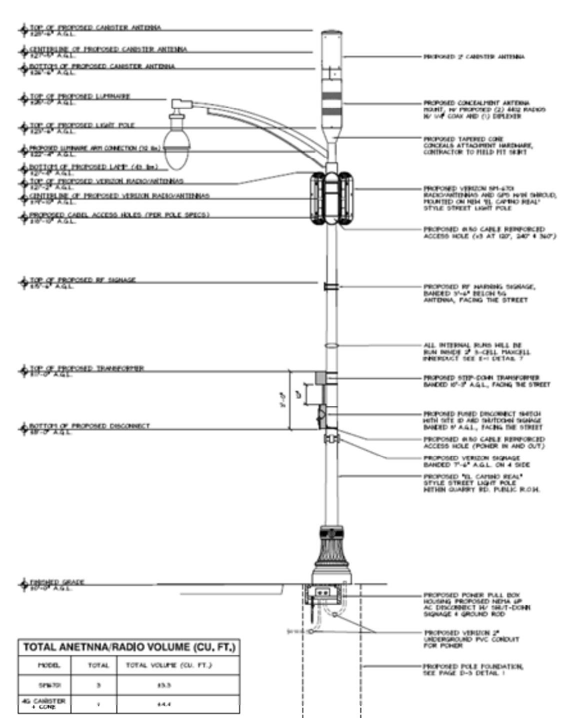
ALLSTATES

PROJECT: PALO ALTO_162
CLIENT: 102 - Sequoia VZW Bakersfield
DESIGN BY:
REVIEW BY: LeT
DATE: 12/23/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 — **Proposed Elevation**



TOTAL ANETNNA/RADIO VOLUME (CU. FT.)		
MODEL	TOTAL	TOTAL VOLUME (CU. FT.)
SM6701	3	15.3
4G CANISTER + CONE	1	4.4

ALLSTATES

PROJECT: PALO ALTO_162
CLIENT: 102 - Sequoia VZW Bakersfield
DESIGN BY:
REVIEW BY: LeT
DATE: 12/23/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 — **Loading**

PROPOSED COMPONENTS

Rad Center	Component Type	QUANTITY	MOUNT TYPE
23'-0"	(N) Canister Antenna w/ Shroud	1	Top Mounted Pole
19'-10"	(N) Ericsson SM6701 Antennas	3	Pole Mounted
9'-0"	(N) Transformer & Disconnect	1	
-	(N) RF Signage	1	
-	(N) & (E) Conduit, Wire, & In-line Fuse	-	Inside Pole

WIND PRESSURE DERIVATION (AASHTO 2013)

Height of Pole	$h =$	23.5	ft	
Wind Speed	$V =$	85	mph	(AASHTO 2013)
Wind Exposure (B, C or D)		C		
Wind Directionality (Pole)	$K_d =$	0.95		(AASHTO 2013, Table 3.8.5-1)
Gust Effect Factor	$G =$	1.14		(AASHTO 2013, Sec. 3.8.8)
3-sec Gust Exponent	$\alpha =$	9.50		(ASCE 7-16, Table 26.11-1)
Atmospheric Height	$Z_g =$	900	ft	(ASCE 7-16, Table 26.11-1)
Vel. Pressure Coeff. (Min)	$K_{z\,min} =$	0.84		(ASCE 7-16, Table 29.10-1)
Velocity Pressure Coeff	$K_z = 2.0(z/Z_g)^{2/\alpha} =$	0.93		(AASHTO 2013, Equation 3.8.4-1)
Wind Force @ Pole top	$F_h = 0.00256 K_z K_d G V^2 (C_d A) =$	19.6	psf *C_dA	(Wind Pressure Input For O-Calc Analysis)
Total Applied Shear	$V_u =$	1025	lbs	(From TNX Report)
Total Applied Moment	$M_u =$	15389	lb-ft	(From TNX Report)

CALCULATION OF WIND DRAG COEFFICIENTS (Cd) FROM AASTHO 2013, TABLE 3.8.7-1 $C_v =$ 1.00 For V≤105 mph

Appurtenance	Height (in)	Width (in)	Depth (in)	d (ft)	C_vVd	C_d
(N) Canister Antenna w/ Shroud	65.0	12.0	-	1.00	85	0.45
(N) Ericsson SM6701 Antennas	32.2	10.2	7.3	1.05	-	1.70
(E) Round Luminaire	2.9	88.0	-	0.24	20	0.50
(E) Round Pole	282	7.85	-	0.65	56	0.69

SEISMIC LOAD ANALYSIS (ASCE 7-16)

Total Pole Weight	$W = P_u =$	715	lbs	(Approximate Wt. Including Pole With (N) Components)
Spectral Response (Short)	$S_{DS} =$	1.739		(ATC Hazards Design Maps Summary)
Spectral Response (1 sec.)	$S_1 =$	0.650		(ATC Hazards Design Maps Summary)
Importance Factor	$I_e =$	1.0		(ASCE 7-16, Section 15.4.1.1)
Response Factor	$R =$	1.5		(ASCE 7-16, Table 15.4-2)
Seismic Response Coeff	$C_s = 0.044 S_{DS} I =$	0.077		(ASCE 7-16, Section 15.4-1)
Seismic Response Coeff	$C_s = 0.8 S_1/(R/I_e) =$	0.347		(ASCE 7-16, Section 15.4-2)
Seismic Response Coeff	$C_s = S_{DS}/(R/I_e) =$	1.159		(ASCE 7-16, Section 12.8-2)
Lateral Seismic Force	$V_u = MAX(C_s)W =$	1.159	*W	
Total Applied Shear	$V_u =$	829	lbs	
Total Applied Moment	$M_u = V_u(2/3h) =$	12986	lb-ft	

(Wind Loads Governing For Pole Shaft Capacity Check)

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Vinculums

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OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY

23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

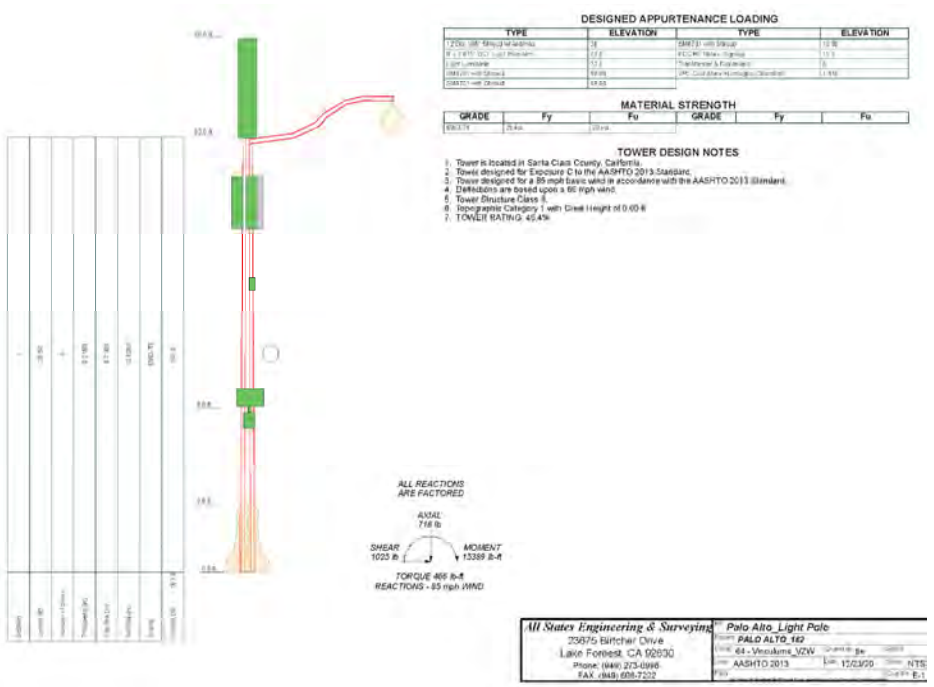
REGISTERED PROFESSIONAL ENGINEER WISSAM ZALZALI 71655 CIVIL STATE OF CALIFORNIA

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.

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
CALCS W/ SHROUD

SHEET NUMBER
C-1



Steel Decorated Pole
Palo Alto
PALO ALTO_162

ALLSTATES ENGINEERING & SURVEYING

Tower Input Data

The tower is a monopole.
This tower is designed using the AASHTO 2013 standard.
The following design criteria apply:

- Tower is located in Santa Clara County, California.
- Basic wind speed of 85 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Deflections calculated using a wind speed of 60 mph.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	23.50-0.00	23.50		8	6.7100	10.0000	0.2190	0.8760	6063-T6 (25 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	7.0824	4.7195	26.2333	2.3627	3.6301	7.2266	53.7352	2.3002	1.8713	8.545
	10.6435	7.1116	89.7569	3.5603	5.4100	16.5909	183.8543	3.4661	3.2333	14.764

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 23.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Existing Cable Inside Pole	C	No	Yes	CaAa (Out Of Face)	23.50 - 0.00	1	No Ice	0.06	0.15

Steel Decorated Pole
Palo Alto
PALO ALTO_162

ALLSTATES ENGINEERING & SURVEYING

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	23.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.032	0.07
		D	0.000	0.000	0.000	0.000	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Light Luminarie	A	From Leg	6.50 0.00 0.00	0.0000	23.50	No Ice	2.36	2.36	55.00
8' x 2.875" O.D. Light Pole Arm	A	From Leg	4.00 0.00 1.75	0.0000	23.50	No Ice	1.92	0.06	65.00
FCC RF Notice Signage	C	From Leg	0.00 0.00 0.00	0.0000	15.50	No Ice	0.33	0.01	0.20
*									
SM6701 with Shroud	C	From Leg	0.25 0.25 0.00	0.0000	19.88	No Ice	2.80	2.08	49.00
SM6701 with Shroud	B	From Leg	0.25 0.25 0.00	0.0000	19.88	No Ice	2.80	2.08	49.00
SM6701 with Shroud	D	From Leg	0.25 0.25 0.00	0.0000	19.88	No Ice	2.80	2.08	49.00
*									
Transformer & Disconnect	C	From Leg	0.00 0.00 0.00	0.0000	9.00	No Ice	7.50	0.05	25.00
*									
2PC Cast Alum. Huntington Clamshell	C	None		0.0000	1.42	No Ice	2.01	2.01	50.00
*									
12"Dia. x65" Shroud w/ Antenna	C	None		0.0000	26.00	No Ice	3.06	3.06	107.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice

Steel Decorated Pole
Palo Alto
PALO ALTO_162

ALLSTATES ENGINEERING & SURVEYING

Comb. No.	Description
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	Dead+Wind 0 deg - Service
9	Dead+Wind 45 deg - Service
10	Dead+Wind 90 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	23.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-714.50	-8983.36	10070.50
			Max. Mx	7	-535.38	-14278.88	-860.42
			Max. My	2	-714.19	1815.63	15281.99
			Max. Vy	6	1021.52	-14195.17	-728.58
			Max. Vx	2	-1021.58	1815.63	15281.99
			Max. Torque	4			490.84

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	6	715.66	-1020.57	-98.11
	Max. H_x	3	536.75	98.11	1020.57
	Max. H_z	3	536.75	98.11	1020.57
	Max. M_x	2	15282.00	98.11	1020.57
	Max. M_z	7	14278.87	-1020.57	-98.11
	Max. Torsion	4	465.71	-652.28	652.28
	Min. Vert	3	536.75	98.11	1020.57
	Min. H_x	7	536.75	-1020.57	-98.11
	Min. H_z	6	715.66	-1020.57	-98.11
	Min. M_x	7	-860.56	-1020.57	-98.11
	Min. M_z	2	-1815.46	98.11	1020.57
	Min. Torsion	1	-0.02	-0.08	-0.07

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	596.38	0.08	0.07	-440.69	458.38	0.02
1.2 Dead+1.6 Wind 0 deg - No Ice	715.66	-98.11	-1020.57	-15282.00	1815.46	-340.47
0.9 Dead+1.6 Wind 0 deg - No Ice	536.75	-98.11	-1020.57	-15087.95	1669.58	-336.59
1.2 Dead+1.6 Wind 45 deg - No Ice	715.66	652.28	-652.28	-10070.37	-8983.51	-465.71
0.9 Dead+1.6 Wind 45 deg - No Ice	536.75	652.28	-652.28	-9896.31	-9087.20	-460.28
1.2 Dead+1.6 Wind 90 deg - No Ice	715.66	1020.57	98.11	728.72	-14195.16	-318.01
0.9 Dead+1.6 Wind 90 deg - No Ice	536.75	1020.57	98.11	860.56	-14278.87	-314.21

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Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead+Wind 0 deg - Service	596.39	-27.32	-284.32	-4540.75	810.29	-94.09
Dead+Wind 45 deg - Service	596.39	181.73	-181.71	-3092.28	-2190.77	-128.87
Dead+Wind 90 deg - Service	596.39	284.27	27.35	-91.00	-3638.06	-88.14

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	23.5 - 0 (1)	TP10x6.71x0.219	23.50	23.50	79.2	7.1116	-714.19	149298.00	0.005

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	23.5 - 0 (1)	TP10x6.71x0.219	15389.50	38573.92	0.399	0.00	38573.92	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	23.5 - 0 (1)	TP10x6.71x0.219	1026.30	99206.40	0.010	340.45	80323.58	0.004

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	23.5 - 0 (1)	0.005	0.399	0.000	0.010	0.004	0.404 ✔	1.000	4.8.2 ✔

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Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	23.5 - 0	Pole	TP10x6.71x0.219	1	-714.19	149298.00	40.4	Pass
							Summary	
						Pole (L1)	40.4	Pass
						RATING =	**40.4**	**Pass**

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A ZALZALI & ASSOCIATES COMPANY
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LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
CALCS W/ SHROUD

SHEET NUMBER
C-2

Hilti PROFIS Engineering 3.0.65

www.hilti.com

Company:	All State Eng. & Surveying	Page:	1
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020	Date:	12/23/2020
Fastening point:			

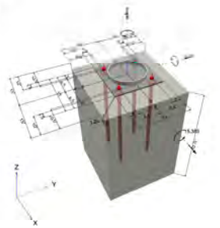
Specifier's comments:

1 Input data

Anchor type and diameter:	Heavy Hex Head ASTM F 1554 GR. 36 1
Item number:	not available
Effective embedment depth:	h_{ef} = 25.000 in.
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-08 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 1.00; e_b = 1.250 in.; t = 0.500 in.
Anchor plate[1]:	l, x l, x t = 13.000 in. x 13.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Round HSS (AISC); HSS10X.188; (L x W x T) = 10.000 in. x 10.000 in. x 0.188 in.
Base material:	cracked concrete, , f'_c = 3,250 psi; h = 78.000 in.
Reinforcement:	tension: condition A, shear: condition B; anchor reinforcement: tension
	edge reinforcement: > No. 4 bar with stirrups
Seismic loads (cat. C, D, E, or F)	no

[1] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, ft-lb]



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Company:	All State Eng. & Surveying	Page:	2
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Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020	Date:	12/23/2020
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [ft-lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -716; V_x = 0; V_y = -1,025; M_x = 15,389.000; M_y = 0.000; M_z = 0.000;	no	40

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Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	Proof	Load	Capacity	β_N / β_V [%]	Status
Tension	Pullout Strength	10,080	27,318	37 / -	OK
Shear	Steel failure (with lever arm)	256	867	- / 30	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.396	0.295	5/3	35	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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Fastening point:			

4 Remarks; Your Cooperation Duties

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Zalzali & Associates, Inc
23675 Birtcher Drive
Lake Forest
CA
92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

File: Caisson Depth.ecd
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27
Lic. # : KW-06009156
Zalzali & Associates Inc.

Pole Footing Embedded in Soil

DESCRIPTION: Proposed Caisson embedment (soil values From IBC Table 1806.2 with lateral bearing load increase from IBC 1806.3.4)

Code References

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Pole Footing Shape: Circular
Pole Footing Diameter: 36.0 in
Calculate Min. Depth for Allowable Pressures
No Lateral Restraint at Ground Surface
Allow Passive: 200.0 pcf
Max Passive: 1,500.0 psf

Controlling Values

Governing Load Combination : +D+W
Lateral Load: 1.0025 k
Moment: 15.385 k-ft
NO Ground Surface Restraint
Pressures at 1/3 Depth
Actual: 432.191 psf
Allowable: 433.572 psf

Minimum Required Depth: 6.625 ft

Footing Base Area: 7.069 ft^2
Maximum Soil Pressure: 0.1012 ksf

Point Load
Soil Surface
No lateral restraint
15'-0 5/8"
6'-7 1/2"

Provide 36" Dia. x 7' Embed. Circular Caisson

Applied Loads

Lateral Concentrated Load (k)		Lateral Distributed Loads (k/ft)		Vertical Load (k)
D : Dead Load	k		k/ft	0.7160 k
Lr : Roof Live	k		k/ft	k
L : Live	k		k/ft	k
S : Snow	k		k/ft	k
W : Wind	1.025 k		k/ft	k
E : Earthquake	k		k/ft	k
H : Lateral Earth	k		k/ft	k
Load Distance Above ground surface	15.010 ft	TOP of Load above ground surface	ft	
		BOTTOM of Load above ground surface	ft	

Load Combination Results

	Forces @ Ground Surface		Required	Pressure at 1/3 Depth		Soil Increase
Load Combination	Loads - (k)	Moments - (ft-k)	Depth - (ft)	Actual - (psf)	Allow - (psf)	Factor
+D+W	1.025	15.385	6.63	432.2	433.6	1.000

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CA
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Project ID: Palo Alto Light Pole
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File: Caisson Depth.ecd
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Concrete Caisson

DESCRIPTION: Design Concrete Caisson

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

f'c : Concrete 28 day strength = 3.250 ksi
Fy = 3,122.0 ksi
Density = 150.0 pcf
ν = 0.850
fy - Main Rebar = 60.0 ksi
E - Main Rebar = 29,000.0 ksi
Allow. Reinforcing Limits (ASTM A615 Bars Used)
Min. Reinf. = 0.250 %
Max. Reinf. = 8.0 %

Overall Caisson Height: 7.0 ft
End Fixity: Top Free, Bottom Fixed
Brace condition for deflection (buckling) along Caisson :
X-X (width) axis :
Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis
Fully braced against buckling ABOUT X-X Axis

Caisson Cross Section

Caisson Dimensions: 36.0in Diameter, Caisson Edge to Rebar Edge Cover = 3.0in
Column Reinforcing : 12 - #5 bars

Entered loads are factored per load combinations specified by user.

Applied Loads

Caisson self weight included: 7,422.01 lbs * Dead Load Factor
AXIAL LOADS...
Reaction from Pole: Axial Load at 7.0 ft above base, D = 0.7160 k
BENDING LOADS...
Reaction from Pole: Lat. Point Load at 7.0 ft creating Mx-x, W = 1.708 k
Reaction from Pole: Moment acting about X-X axis at 7.0 ft, W = 25.648 k-ft

DESIGN SUMMARY

Load Combination: +0.90D+W+1.60H
Location of max above base: 6.953 ft
Maximum Stress Ratio: 0.668 : 1
Ratio = (Pu^2+Mu^2)^0.5 / (PhiPn*2+PhiMn*2)^0.5
Pu = 7.324 k, ϕ * Pn = 110.281 k
Mu-x = 25.568 k-ft, ϕ * Mn x = -380.590 k-ft
Mu-y = 0.0 k-ft, ϕ * Mn-y = 0.0 k-ft
Mu Angle = 0.0 deg
Mu at Angle = 25.568 k-ft, ϕMn at Angle = 374.913 k-ft
Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Caisson Capacities . . .

Pmax : Nominal Max. Compressive Axial Capacity: 3,024.81 k
Pmin : Nominal Min. Tension Axial Capacity: x
ϕ Pn, max : Usable Compressive Axial Capacity: 1,799.76 k
ϕ Pn, min : Usable Tension Axial Capacity: k

Maximum SERVICE Load Reactions . .

Top along Y-Y: 0.0 k, Bottom along Y-Y: 0.0 k
Top along X-X: 0.0 k, Bottom along X-X: 1.025 k

Maximum SERVICE Load Deflections . . .

Along Y-Y: 0.002886 in at 7.0 ft above base for load combination : W Only
Along X-X: 0.0 in at 0.0 ft above base for load combination :

General Section Information . φ = 0.76, β = 0.650, ϕ = 0.865
ρ % Reinforcing: 0.3655 %, Rebar % Ok
Reinforcing Area: 3.720 in^2
Concrete Area: 1,017.88 in^2

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Zalzali & Associates, Inc
23675 Birtcher Drive
Lake Forest
CA
92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

File: Caisson Depth.ecd
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Concrete Caisson

DESCRIPTION: Design Concrete Caisson

Governing Load Combination Results

Governing Factored Load Combination	Moment	Dist. from	Axial Load	Bending Analysis k-ft						Utilization
	X-X	Y-Y base ft	Pu	ϕ * Pn	SX * Mux	SY * Muy	Alpha (deg)	ϕ Mu	ϕ Mn	Ratio
+1.40D+1.60H		6.65	11.55	1,799.76			0.000			0.006
+1.20D+0.50Lr+L+W+1.60H	Absolut	6.95	9.77	150.99	1.000	25.57	0.000	25.57	429.10	0.060
+0.90D+W+1.60H	Actual	6.95	7.32	110.28	1.000	25.57	0.000	25.57	374.91	0.068

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k		Y-Y Axis Reaction		Axial Reaction		Mx - End Moments k-ft		My - End Moments k-ft	
	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top	@ Base	@ Top
+D+H					4.158					
+D+0.60W+H			1.025		5.138		8.214			
+0.60D+0.60W+0.60H			1.025		4.691		8.214			

Maximum Moment Reactions

Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis		Moment About Y-Y Axis	
	@ Base	@ Top	@ Base	@ Top
+D+H				k-ft
+D+0.60W+H	8.213 k-ft			k-ft
+0.60D+0.60W+0.60H	8.214 k-ft			k-ft

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23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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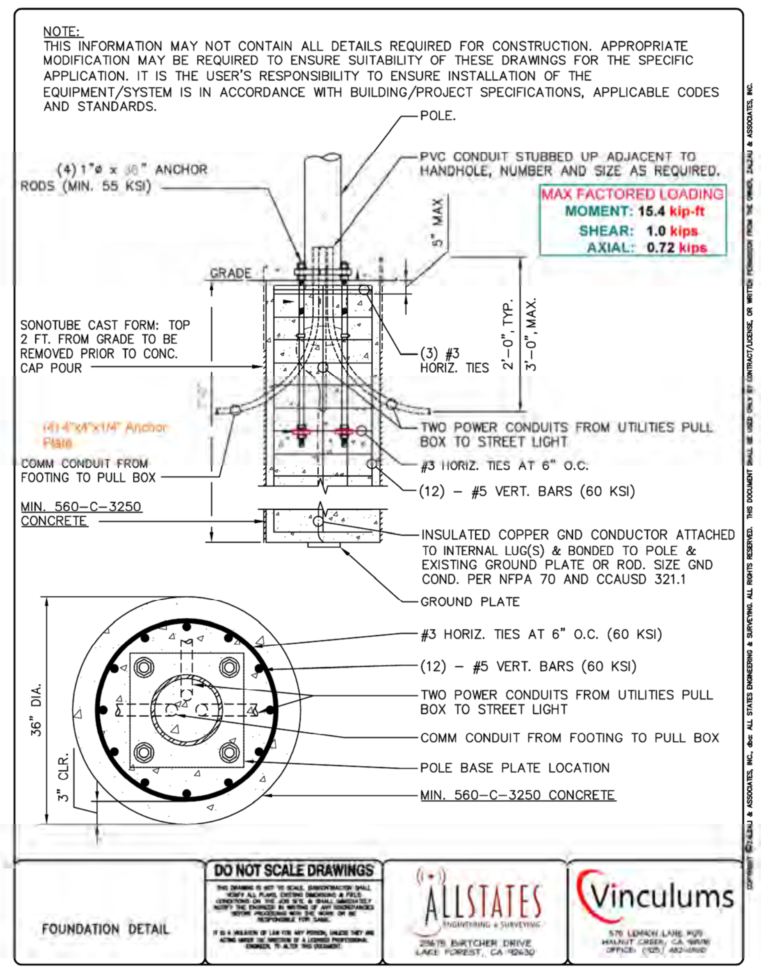
SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
CALCS W/ SHROUD

SHEET NUMBER
C-3

20


NOTE:
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POLE.
PVC CONDUIT STUBBED UP ADJACENT TO HANDHOLE, NUMBER AND SIZE AS REQUIRED.
ANCHOR RODS (MIN. 55 KSI)
MAX FACTORED LOADING
MOMENT: 15.4 kip-ft
SHEAR: 1.0 kips
AXIAL: 0.72 kips
5" MAX
GRADE
SONOTUBE CAST FORM: TOP 2 FT. FROM GRADE TO BE REMOVED PRIOR TO CONC. CAP POUR
(3) #3 HORIZ. TIES
2'-0", TYP.
3'-0", MAX.
TWO POWER CONDUITS FROM UTILITIES PULL BOX TO STREET LIGHT
#3 HORIZ. TIES AT 6" O.C.
COMM CONDUIT FROM FOOTING TO PULL BOX
(12) - #5 VERT. BARS (60 KSI)
MIN. 560-C-3250 CONCRETE
INSULATED COPPER GND CONDUCTOR ATTACHED TO INTERNAL LUG(S) & BONDED TO POLE & EXISTING GROUND PLATE OR ROD. SIZE GND COND. PER NFPA 70 AND CCAUSD 321.1
GROUND PLATE
#3 HORIZ. TIES AT 6" O.C. (60 KSI)
(12) - #5 VERT. BARS (60 KSI)
TWO POWER CONDUITS FROM UTILITIES PULL BOX TO STREET LIGHT
COMM CONDUIT FROM FOOTING TO PULL BOX
POLE BASE PLATE LOCATION
MIN. 560-C-3250 CONCRETE
36" DIA.
3" CLR.
FOUNDATION DETAIL
DO NOT SCALE DRAWINGS
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PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
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LOCATION CODE: 425266

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SHEET NUMBER
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VERIZON
PALO ALTO_162

All States Engineering & Surveying
Project No: 64 – CLUSTER-6 \ PALO ALTO_162

Structural Analysis Report

ROW Adjacent to 158-164 Quarry Rd., Palo Alto, 94304
Proposed 23'- 6" AGL 'Downtown' Style Aluminum Light Pole & Foundation

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
C 71655
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STATE OF CALIFORNIA

Rev. #	Reason for Revision	Total # of Sheets	Prepared By	Checked By	Approved /Accepted	Date
0	Updated Pole Specs	19	LeT	LeT	WZ	12/23/2020

	Quantity/Type /Shape	Strength (min.)	Dimensions	Thickness /Depth	Capacity Utilization	
Pole Shaft	Aluminum / 8-sided tapered	25 ksi*	6.71"Φ at top 10.0"Φ at bottom	0.219"	37.4 %	PASS
Anchor Bolts	4	36 ksi	1" Φ	-	37.0 %	PASS
Base Plate	1	36 ksi	13.6" Cast Base	-	ADEQUATE	
Foundation	*Circular Caisson*	*3.25 ksi*	*36"Dia.*	*7'-0"***	ADEQUATE	

* Pole grade is 6063-T6 per provided specs.
** Required depth of caisson (**Unrestrained** at G/L) - This analysis was performed without a soil report, and minimum soil properties from IBC 18 were used. Required pole foundation embedment depth may change with a soil report from the proposed pole location.

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ALLSTATES ENGINEERING & SURVEYING

Project Description:
All States Engineering & Surveying (ASES) is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the metal pole.
The purpose of the analysis is to determine acceptability of the pole stress level. Based on our analysis we have determined the metal pole stress level for the structure and anchorage, under the following load case:

LC: Proposed Pole + Proposed Equipment without Shroud
(Please see page 5 for details)

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

Structural Analysis Parameters:
This analysis has been performed in accordance with AASHTO 2013 guidelines.

- Wind Speed: ***85 mph per AASHTO 2013***
- Exposure Category: ***C***
- Risk Category: ***II***
- Topographical: ***1***
- Crest Height = ***0***
- Ice Thickness = ***0 in***
- Min. Soil Lateral Bearing = ***100 psf/ft*2 = 200 psf/ft per CBC & IBC 1806.3.4***
- Min. Soil Bearing = ***1500 psf***

We at *All States Engineering & Surveying* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

ATC Hazards by Location

Search Information

Address:	Arboretum Rd, Palo Alto, CA 94304, USA
Coordinates:	37.438972, -122.1694949
Elevation:	77 ft
Timestamp:	2020-12-07T22:27:38.781Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default

Basic Parameters

Name	Value	Description
S_S	1.791	MCE_R ground motion (period=0.2s)
S_1	0.663	MCE_R ground motion (period=1.0s)
S_{MS}	2.15	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.433	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.91	Coefficient of risk (0.2s)
CR_1	0.896	Coefficient of risk (1.0s)
PGA	0.737	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.885	Site modified peak ground acceleration

T_L	12	Long-period transition period (s)
SsRT	2.104	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.312	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.791	Factored deterministic acceleration value (0.2s)
S1RT	0.844	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.942	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.663	Factored deterministic acceleration value (1.0s)
PGAd	0.737	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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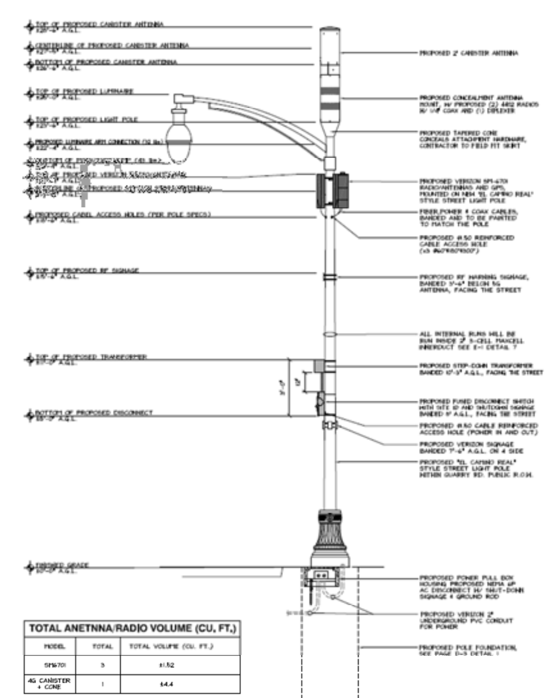
ALLSTATES | PROJECT: PALO ALTO_162 | CLIENT: 102 - Sequoia VZW Bakersfield | DESIGN BY: | REVIEW BY: LeT | DATE: 12/23/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 — **Proposed Elevation**

NOTES:
1. NEW GALVANIZED LIGHT POLE TO BE PAINTED WITH MUNSELL RAL5.5GY2.76/2.1 PAINT.
2. NEW RADIOS AND HARDWARE TO BE PAINTED MUNSELL RAL5.5GY2.76/2.1 OR WRAPPED AS ALLOWED BY THE MANUFACTURER.
3. ALL CABLE/WIRE BETWEEN THE POLE ACCESS HOLE AND THE ANTENNA PAINTED/COLORED TO MATCH POLE COLOR.



ALLSTATES | PROJECT: PALO ALTO_162 | CLIENT: 102 - Sequoia VZW Bakersfield | DESIGN BY: | REVIEW BY: LeT | DATE: 12/23/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 — **Loading**

PROPOSED COMPONENTS

Rad Center	Component Type	QUANTITY	MOUNT TYPE
23'-0"	(N) Canister Antenna w/ Shroud	1	Top Mounted Pole
19'-10"	(N) Ericsson SM6701 Antennas	3	Pole Mounted
9'-0"	(N) Transformer & Disconnect	1	
-	(N) RF Signage	1	
-	(N) & (E) Conduit, Wire, & In-line Fuse	-	Inside Pole

WIND PRESSURE DERIVATION (AASHTO 2013)

		Value	Unit	Reference
Height of Pole	$h =$	23.5	ft	
Wind Speed	$V =$	85	mph	(AASHTO 2013)
Wind Exposure (B, C or D)		C		
Wind Directionality (Pole)	$K_d =$	0.95		(AASHTO 2013, Table 3.8.5-1)
Gust Effect Factor	$G =$	1.14		(AASHTO 2013, Sec. 3.8.6)
3-sec Gust Exponent	$\alpha =$	9.50		(ASCE 7-16, Table 26.11-1)
Atmospheric Height	$Z_g =$	900	ft	(ASCE 7-16, Table 26.11-1)
Vel. Pressure Coeff. (Min)	$K_{z\,min} =$	0.84		(ASCE 7-16, Table 29.10-1)
Velocity Pressure Coeff	$K_z = 2.0(z/Z_g)^{2/\alpha} =$	0.93		(AASHTO 2013, Equation 3.8.4-1)
Wind Force @ Pole top	$F_h = 0.00256K_zK_dGV^2(C_dA) =$	18.6	psf *C_dA	(Wind Pressure Input For O-Calc Analysis)
Total Applied Shear	$V_u =$	986	lbs	(From TNX Report)
Total Applied Moment	$M_u =$	14241	lb-ft	(From TNX Report)

CALCULATION OF WIND DRAG COEFFICIENTS (Cd) FROM AASTHO 2013, TABLE 3.8.7-1 — $C_v =$ 1.00 For V<105 mph

Appurtenance	Height (in)	Width (in)	Depth (in)	d (ft)	C_vVd	C_d
(N) Canister Antenna w/ Shroud	65.0	12.0	-	1.00	85	0.45
(N) Ericsson SM6701 Antennas	32.2	10.2	7.3	1.05	-	1.70
(E) Round Luminaire	2.9	88.0	-	0.24	20	0.50
(E) Round Pole	282	7.85	-	0.65	56	0.69

SEISMIC LOAD ANALYSIS (ASCE 7-16)

		Value	Unit	Reference
Total Pole Weight	$W = P_u =$	709	lbs	(Approximate Wt. Including Pole With (N) Components)
Spectral Response (Short)	$S_{DS} =$	1.739		(ATC Hazards Design Maps Summary)
Spectral Response (1 sec.)	$S_1 =$	0.650		(ATC Hazards Design Maps Summary)
Importance Factor	$I_e =$	1.0		(ASCE 7-16, Section 15.4.1.1)
Response Factor	$R =$	1.5		(ASCE 7-16, Table 15.4-2)
Seismic Response Coeff	$C_s = 0.044S_{DS}I =$	0.077		(ASCE 7-16, Section 15.4-1)
Seismic Response Coeff	$C_s = 0.8S_1/(R/I_e) =$	0.347		(ASCE 7-16, Section 15.4-2)
Seismic Response Coeff	$C_s = S_{DS}/(R/I_e) =$	1.159		(ASCE 7-16, Section 12.8-2)
Lateral Seismic Force	$V_s = MAX(C_s)W =$	1.159	*W	
Total Applied Shear	$V_s =$	822	lbs	
Total Applied Moment	$M_s = V_s(2/3h) =$	12877	lb-ft	

(Wind Loads Governing For Pole Shaft Capacity Check)

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

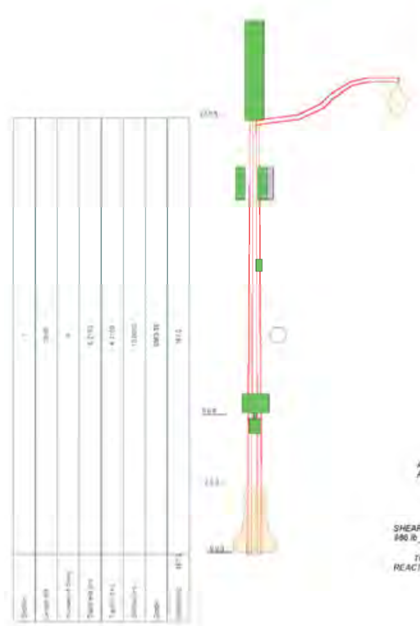
REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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.

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
CALCS WITHOUT SHROUD

SHEET NUMBER
C-6



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	FCC RF Notice Signage	[illegible]
Light Luminarie	[illegible]	Transformer & Disconnect	[illegible]
[illegible]	[illegible]	Decorative Base	[illegible]
[illegible]	[illegible]		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
[illegible]	[illegible]	[illegible]			

TOWER DESIGN NOTES

1. Tower is located in Santa Clara County, California.
2. Tower designed for Exposure C to the AASHTO 2013 Standard.
3. Tower designed for a 85 mph basic wind in accordance with the AASHTO 2013 Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 37.4%

All States Engineering & Surveying	Palo Alto_Light Pole
23675 Birtcher Drive	PALO ALTO_162
Lake Forest, CA 92630	64 - Vinculums_VZW
Phone: (949) 273-0996	AASHTO 2013 · 12/23/20 · NTS
FAX: (949) 606-7222	E-1

Steel Decorated Pole
Palo Alto
PALO ALTO_162

ALLSTATES ENGINEERING & SURVEYING

Tower Input Data

The tower is a monopole.
This tower is designed using the AASHTO 2013 standard.
The following design criteria apply:
- Tower is located in Santa Clara County, California.
- Basic wind speed of 85 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Deflections calculated using a wind speed of 60 mph.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	23.50-0.00	23.50		8	6.7100	10.0000	0.2190	0.8760	6063-T6 (25 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	7.0824	4.7195	26.2333	2.3627	3.6301	7.2266	53.7352	2.3002	1.8713	8.545
	10.6435	7.1116	89.7569	3.5603	5.4100	16.5909	183.8543	3.4661	3.2333	14.764

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 23.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Existing Cable Inside Pole	C	No	Yes	CaAa (Out Of Face)	23.50 - 0.00	1	No Ice	0.06	0.15

Steel Decorated Pole
Palo Alto
PALO ALTO_162

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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	23.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.480	3.52
		D	0.000	0.000	0.000	0.000	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Light Luminarie	A	From Leg	6.50 0.00 0.00	0.0000	23.50	No Ice	2.36	2.36	55.00
8' x 2.875" O.D. Light Pole Arm	A	From Leg	4.00 0.00 1.75	0.0000	23.50	No Ice	1.92	0.06	65.00
FCC RF Notice Signage	C	From Leg	0.00 0.00 0.00	0.0000	15.50	No Ice	0.33	0.01	0.20
*									
SM6701 w/ Mount	C	From Leg	0.50 0.25 0.00	0.0000	19.88	No Ice	1.44	0.96	46.00
SM6701 w/ Mount	B	From Leg	0.50 0.25 0.00	0.0000	19.88	No Ice	1.44	0.96	46.00
SM6701 w/ Mount	D	From Leg	0.50 0.25 0.00	0.0000	19.88	No Ice	1.44	0.96	46.00
*									
Transformer & Disconnect	C	From Leg	0.00 0.00 0.00	0.0000	9.00	No Ice	7.50	0.05	25.00
*									
Decorative Base	C	None		0.0000	1.42	No Ice	2.01	2.01	50.00
*									
12"Dia. x65" Shroud w/ Antenna	C	None		0.0000	26.00	No Ice	3.06	3.06	107.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	Dead+Wind 0 deg - Service
9	Dead+Wind 45 deg - Service
10	Dead+Wind 90 deg - Service

Steel Decorated Pole
Palo Alto
PALO ALTO_162

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Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	23.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	4	-708.00	-8142.13	9211.71
			Max. Mx	7	-530.55	-13137.64	-915.06
			Max. My	2	-707.70	1854.96	14119.72
			Max. Vy	6	981.58	-13050.37	-785.48
			Max. Vx	2	-981.64	1854.96	14119.72
			Max. Torque	4			488.60

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	6	709.00	-980.72	-100.53
	Max. H_x	3	531.75	100.53	980.72
	Max. H_z	3	531.75	100.53	980.72
	Max. M_x	2	14119.74	100.53	980.72
	Max. M_z	7	13137.63	-980.72	-100.53
	Max. Torsion	4	471.37	-622.39	622.39
	Min. Vert	3	531.75	100.53	980.72
	Min. H_x	7	531.75	-980.72	-100.53
	Min. H_z	6	709.00	-980.72	-100.53
	Min. M_x	7	-915.20	-980.72	-100.53
	Min. M_z	2	-1854.81	100.53	980.72
	Min. Torsion	1	-0.02	-0.08	-0.07

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	590.83	0.08	0.07	-433.99	450.60	0.02
1.2 Dead+1.6 Wind 0 deg - No Ice	709.00	-100.53	-980.72	-14119.74	1854.81	-339.27
0.9 Dead+1.6 Wind 0 deg - No Ice	531.75	-100.53	-980.72	-13933.79	1711.23	-335.83
1.2 Dead+1.6 Wind 45 deg - No Ice	709.00	622.39	-622.39	-9211.59	-8142.27	-471.37
0.9 Dead+1.6 Wind 45 deg - No Ice	531.75	622.39	-622.39	-9043.99	-8247.87	-466.55
1.2 Dead+1.6 Wind 90 deg - No Ice	709.00	980.72	100.53	785.61	-13050.36	-327.22
0.9 Dead+1.6 Wind 90 deg - No Ice	531.75	980.72	100.53	915.20	-13137.63	-323.85
Dead+Wind 0 deg - Service	590.84	-28.00	-273.22	-4213.44	816.03	-93.85
Dead+Wind 45 deg - Service	590.84	173.41	-173.39	-2849.27	-1962.31	-130.54
Dead+Wind 90 deg - Service	590.84	273.18	28.03	-70.73	-3325.45	-90.74

Steel Decorated Pole
Palo Alto
PALO ALTO_162

ALLSTATES ENGINEERING & SURVEYING

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	23.5 - 0 (1)	TP10x6.71x0.219	23.50	23.50	79.2	7.1116	-707.70	149298.00	0.005

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	23.5 - 0 (1)	TP10x6.71x0.219	14241.08	38573.92	0.369	0.00	38573.92	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	23.5 - 0 (1)	TP10x6.71x0.219	986.80	99206.40	0.010	339.25	80323.58	0.004

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	23.5 - 0 (1)	0.005	0.369	0.000	0.010	0.004	0.374 ✓	1.000	H2.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	23.5 - 0	Pole	TP10x6.71x0.219	1	-707.70	149298.00	37.4	Pass
							Summary	
						Pole (L1)	37.4	Pass
						RATING =	37.4	Pass

HILTI
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Company:	All State Eng. & Surveying	Page:	1
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020	Date:	12/23/2020
Fastening point:			

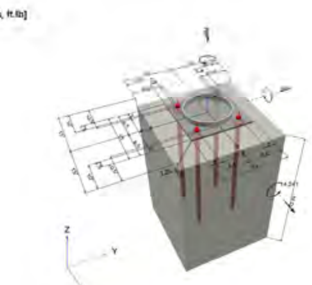
Specifier's comments:

1 Input data

Anchor type and diameter:	Heavy Hex Head ASTM F 1554 GR. 36 1
Item number:	not available
Effective embedment depth:	h_{ef} = 25.000 in.
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-08 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 1.00; e_b = 1.250 in.; t = 0.500 in.
Anchor plate[R]:	l_x x l_y x t = 13.000 in. x 13.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Round HSS (AISC), HSS10X.188; (L x W x T) = 10.000 in. x 10.000 in. x 0.188 in.
Base material:	cracked concrete, , f_c' = 3,250 psi; h = 84.000 in.
Reinforcement:	tension: condition A, shear: condition B; anchor reinforcement: tension edge reinforcement: > No. 4 bar with stirrups
Seismic loads (cat. C, D, E, or F)	no

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, ft.lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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1

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
CALCS WITHOUT SHROUD

SHEET NUMBER
C-5

13

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Company:	All State Eng. & Surveying	Page:	2
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020	Date:	12/23/2020
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [ft.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	$N = -709; V_x = 0; V_y = -986; M_x = 14,241.000; M_y = 0.000; M_z = 0.000;$	no	37

14

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Company:	All State Eng. & Surveying	Page:	3
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020	Date:	12/23/2020
Fastening point:			

2 Proof I Utilization (Governing Cases)

Loading	Proof	Load (Design values [lb])	Capacity (Design values [lb])	Utilization β_N / β_V [%]	Status
Tension	Pullout Strength	9,317	27,318	35 / -	OK
Shear	Steel failure (with lever arm)	247	909	- / 28	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.367	0.271	5/3	31	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

15

Hilti PROFIS Engineering 3.0.66

www.hilti.com

Company:	All State Eng. & Surveying	Page:	4
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020	Date:	12/23/2020
Fastening point:			

4 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

Input data and results must be checked for conformity with the existing conditions and for plausibility!

4

16

ALLSTATES ENGINEERING & SURVEYING — All States Engineering & Surveying, Zalzali & Associates, Inc., 23675 Birtcher Drive, Lake Forest, CA 92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

Pole Footing Embedded in Soil

File: Caisson Depth.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27
Zalzali & Associates Inc.

DESCRIPTION: Poposed Caisson embedment (soil values From IBC Table 1806.2 with lateral bearing load increase from IBC 1806.3.4)

Code References

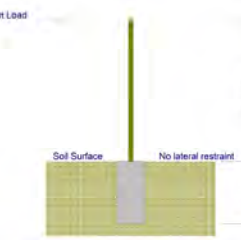
Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Pole Footing Shape	Circular
Pole Footing Diameter	36.0 in
Calculate Min. Depth for Allowable Pressures	
No Lateral Restraint at Ground Surface	
Allow Passive	200.0 pcf
Max Passive	1,500.0 psf

Controlling Values

Governing Load Combination :	+D+W
Lateral Load	1.025 k
Moment	15.385 k-ft
NO Ground Surface Restraint	
Pressures at 1/3 Depth — Actual	432.191 psf
Allowable	433.572 psf
Minimum Required Depth	**6.625 ft**
Footing Base Area	7.069 ft^2
Maximum Soil Pressure	0.1013 ksf



Provide 36" Dia. x 7' Embed. Circular Caisson

Applied Loads

Lateral Concentrated Load (k)		Lateral Distributed Loads (klf)	Vertical Load (k)
D : Dead Load	k	k/ft	0.7160 k
Lr : Roof Live	k	k/ft	k
L : Live	k	k/ft	k
S : Snow	k	k/ft	k
W : Wind	1.020 k	k/ft	k
E : Earthquake	k	k/ft	k
H : Lateral Earth	k	k/ft	k
Load distance above ground surface	15.010 ft	TOP of Load above ground surface ft; BOTTOM of Load above ground surface ft	

Load Combination Results

Load Combination	Forces @ Ground Surface Loads - (k)	Moments - (ft-k)	Required Depth - (ft)	Pressure at 1/3 Depth Actual - (psf)	Allow - (psf)	Soil Increase Factor
+D+W	1.025	15.385	6.63	432.2	433.6	1.000

17

ALLSTATES ENGINEERING & SURVEYING — All States Engineering & Surveying, Zalzali & Associates, Inc., 23675 Birtcher Drive, Lake Forest, CA 92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

Concrete Caisson

File: Caisson Depth.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27
Zalzali & Associates Inc.

DESCRIPTION: Design Concrete Caisson

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

f'c : Concrete 28 day strength	=	3.250 ksi
E =	=	3,122.0 ksi
Density	=	150.0 pcf
β	=	0.850
fy - Main Rebar	=	60.0 ksi
E - Main Rebar	=	29,000.0 ksi
Allow. Reinforcing Limits		ASTM A615 Bars Used
Min. Reinf.	=	0.250 %
Max. Reinf.	=	8.0 %

Overall Caisson Height = 7.0 ft
End Fixity: Top Free, Bottom Fixed
Brace condition for deflection (buckling) along Caisson :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Fully braced against buckling ABOUT X-X Axis

Caisson Cross Section

Caisson Dimensions : 36.0in Diameter, Caisson Edge to Rebar Edge Cover = 3.0in

Column Reinforcing : 12 - #5 bars

Applied Loads

Entered loads are factored per load combinations specified by user.

Caisson self weight included : 7,422.01 lbs * Dead Load Factor
AXIAL LOADS . . .
Reaction from Pole: Axial Load at 7.0 ft above base, D = 0.7160 k
BENDING LOADS . . .
Reaction from Pole: Lat. Point Load at 7.0 ft creating Mx-x, W = 1.708 k
Reaction from Pole: Moment acting about X-X axis at 7.0 ft, W = 25.648 k-ft

DESIGN SUMMARY

Load Combination	+0.90D+W+1.60H
Location of max.above base	6.953 ft
Maximum Stress Ratio	0.068 : 1

Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5

Pu =	7.324 k	φ * Pn =	110.281 k
Mu-x =	25.568 k-ft	φ * Mn-x =	-380.590 k-ft
Mu-y =	0.0 k-ft	φ * Mn-y =	0.0 k-ft
Mu Angle =	0.0 deg		
Mu at Angle =	25.568 k-ft	φMn at Angle =	374.913 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Caisson Capacities . . .

Pnmax : Nominal Max. Compressive Axial Capacity	3,024.81 k
Pnmin : Nominal Min. Tension Axial Capacity	k
φ Pn, max : Usable Compressive Axial Capacity	1,799.76 k
φ Pn, min : Usable Tension Axial Capacity	k

Maximum SERVICE Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	1.025 k

Maximum SERVICE Load Deflections . . .

Along Y-Y: -0.002886 in at 7.0 ft above base, for load combination : W Only
Along X-X: 0.0 in at 0.0 ft above base, for load combination :

General Section Information . φ = 0.70, β = 0.850, θ = 0.850

ρ : % Reinforcing	0.3655 % Rebar % Ok
Reinforcing Area	3.720 in^2
Concrete Area	1,017.88 in^2

18

ALLSTATES ENGINEERING & SURVEYING — All States Engineering & Surveying, Zalzali & Associates, Inc., 23675 Birtcher Drive, Lake Forest, CA 92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

Concrete Caisson

File: Caisson Depth.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27
Zalzali & Associates Inc.

DESCRIPTION: Design Concrete Caisson

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	φ * Pn	δx	δx * Mux	δY	δY * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.40D+1.60H			5.95	11.39	1,799.76					0.000			0.006
+1.20D+0.50Lr+L+W+1.60H	Actual		6.95	9.77	156.99	1.000	25.57			0.000	25.57	470.10	0.061
+0.90D+W+1.60H	Actual		6.95	7.32	110.28	1.000	25.57			0.000	25.57	374.91	0.068

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+D+H					8.138				
+D+0.60W+H			1.025		8.138	8.214			
+0.60D+0.60W+0.60H			1.025		4.687	8.214			

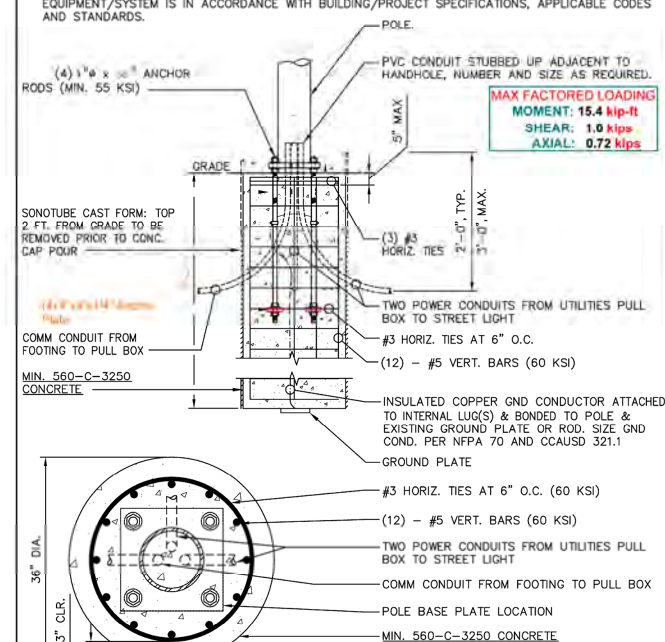
Maximum Moment Reactions

Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis @ Base	@ Top		Moment About Y-Y Axis @ Base	@ Top	
+D+H			k-ft			k-ft
+D+0.60W+H	8.214		k-ft			k-ft
+0.60D+0.60W+0.60H	8.214		k-ft			k-ft

19

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



FOUNDATION DETAIL

DO NOT SCALE DRAWINGS

ALLSTATES ENGINEERING & SURVEYING — LAKE FOREST, CA 92630

Vinculums — OFFICE: (925) 482-8500

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER — WISSAM ZALZALI — 71655 — CIVIL — STATE OF CALIFORNIA

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.

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158–164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
CALCS WITHOUT SHROUD

SHEET NUMBER
C-7

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST EDITION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.

2. CONTRACTOR SHALL CONSTRUCT SITE IN ACCORDANCE WITH THESE DRAWINGS AND CONSTRUCTION SPECIFICATIONS 80-T1196-1 REV H. THE SPECIFICATION IS THE RULING DOCUMENT AND ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THESE DRAWINGS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION

3. CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK (ROOF FRAMING, ELECTRICAL SERVICE, LOCAL PLANNING CODES, ETC.) AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OF FIELD CONDITIONS

4. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS. OWNER PROVIDED MATERIALS WILL INCLUDE THE FOLLOWING, UNLESS NOTED OTHERWISE:
   A) TRANSMITTER
   B) RF FILTER
   C) MFTS RACK
   D) AUXILIARY EQUIPMENT IN MFTS RACK
   E) PUMP ASSEMBLY
   F) HEAT EXCHANGER
   G) HOSE AND HOSE MANIFOLDS (ANY COPPER OR STEEL SECTIONS PROVIDE BY CONTRACTOR)
   H) UHF ANTENNA AND MOUNTING BRACKETS, GPS ANTENNAS AND KU ANTENNAS
   I) UHF COAX AND HANGERS
   K) 480-208 & 208-400 ELECTRICAL TRANSFORMERS (RE: E-2 FOR SPECIALIZED TRANSFORMERS PROVIDED BY CONTRACTOR)
   L) AUTOMATIC TRANSFER SWITCH AND GENERATOR
   M) EQUIPMENT SHELTER (SHELTERS FURNISHED IN FACTORY W/ HVAC EQUIPMENT AND ELECTRICAL DISTRIBUTION PANEL)
   N) INTEGRATED LOAD CENTER

5. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE WORK.

6. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

7. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.

8. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.

9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.

10. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE SUPERINTENDENT OF BUILDINGS & GROUNDS AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.

12. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

13. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING ETC. AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.

14. IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC., MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES (UNLESS NOTED OTHERWISE). LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT.

15. REPAIR ALL EXISTING WALL SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACES.

16. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS.

17. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.

18. MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS.

19. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO APPLICABLE REGULATORY AUTHORITIES

20. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION SHALL BE IN CONFORMANCE WITH JURISDICTIONAL OR STATE AND LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL AND COORDINATED WITH LOCAL REGULATORY AUTHORITIES.

21. ALL CONSTRUCTION IS TO ADHERE TO VERIZON'S INTEGRATED CONSTRUCTION STANDARDS UNLESS CALIFORNIA CODE IS MORE STRINGENT.

22. THE INTENT OF THE PLANS AND SPECIFICATIONS IS TO PERFORM THE CONSTRUCTION IN ACCORDANCE WITH THE CALIFORNIA BUILDING STANDARDS CODE, TITLES 19 AND 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE APPROVED PLANS AND SPECIFICATIONS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE JURISDICTION BEFORE PROCEEDING WITH THE WORK.

SITE WORK NOTES

1. DO NOT EXCAVATE OR DISTURB BEYOND THE PROPERTY LINES OR LEASE LINES, UNLESS OTHERWISE NOTED.

2. DO NOT SCALE BUILDING DIMENSIONS FROM DRAWING.

3. SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILT DRAWINGS BY GENERAL CONTRACTOR AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.

4. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS AND THEIR DIMENSIONS SHOWN ON PLANS HAVE. BEEN PLOTTED FROM AVAILABLE RECORDS. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.

5. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS/HER OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL LOCAL DIGGER HOT LINE FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF CONSTRUCTION.

6. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK.

7. GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.

8. ALL TEMPORARY EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.

9. STRUCTURAL FILLS SUPPORTING PAVEMENTS SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY.

10. NEW GRADES NOT IN BUILDING AND DRIVEWAY IMPROVEMENT AREA TO BE ACHIEVED BY FILLING WITH APPROVED CLEAN FILL AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.

11. ALL FILL SHALL BE PLACED IN UNIFORM LIFTS. THE LIFTS THICKNESS SHOULD NOT EXCEED THAT WHICH CAN BE PROPERLY COMPACTED THROUGHOUT ITS ENTIRE DEPTH WITH THE EQUIPMENT AVAILABLE.

12. ANY FILLS PLACED ON EXISTING SLOPES THAT ARE STEEPER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE AS DIRECTED BY A GEOTECHNICAL ENGINEER.

13. CONTRACTOR SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO PAPERS, TRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE GENERAL CONTRACTOR.

14. ALL TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH THE IMPROVEMENTS SHALL BE PROTECTED BY THE GENERAL CONTRACTOR.

15. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

ENVIRONMENTAL NOTES

1. ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH ISSUED PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF FINES AND PROPER CLEAN UP FOR AREAS IN VIOLATION.

2. CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS AND SHALL BE MAINTAINED IN PLACE THROUGH FINAL JURISDICTIONAL INSPECTION & RELEASE OF SITE.

3. CONTRACTOR SHALL INSTALL/CONSTRUCT ALL NECESSARY SEDIMENT/SILT CONTROL FENCING AND PROTECTIVE MEASURES WITHIN THE LIMITS OF SITE DISTURBANCE PRIOR TO CONSTRUCTION.

4. NO SEDIMENT SHALL BE ALLOWED TO EXIT THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ADEQUATE MEASURES FOR CONTROLLING EROSION. ADDITIONAL SEDIMENT CONTROL FENCING MAY BE REQUIRED IN ANY AREAS SUBJECT TO EROSION.

5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES WITH SILT AND EROSION CONTROL MEASURES MAINTAINED ON THE DOWNSTREAM SIDE OF SITE DRAINAGE. ANY DAMAGE TO ADJACENT PROPERTY AS A RESULT OF EROSION WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS AND ANY REPAIRS OF ALL SEDIMENT CONTROL MEASURES INCLUDING SEDIMENT REMOVAL AS NECESSARY.

7. CLEARING OF VEGETATION AND TREE REMOVAL SHALL BE ONLY AS PERMITTED AND BE HELD TO A MINIMUM. ONLY TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED.

8. SEEDING AND MULCHING AND/OR SODDING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE PROJECT FACILITIES AFFECTING LAND DISTURBANCE.

9. CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS, AND CHECK DAMS.

10. RIP RAP OF SIZES INDICATED SHALL CONSIST OF CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY STONE FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI, OR OTHER DELETERIOUS SUBSTANCES

GENERAL NOTES

1. THESE NOTES SHALL BE CONSIDERED A PART OF THE WRITTEN SPECIFICATIONS, CONTRACT AND CONSTRUCTION DOCUMENTS.

2. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THESE PLANS AND IN THE CONTRACT DOCUMENTS.

3. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR(S) SHALL VISIT THE JOB SITE(S) AND BE RESPONSIBLE FOR ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS, AND CONFIRM THAT THE WORK MAY BE ACCOMPLISHED PER THE CONTRACT DOCUMENTS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE IMPLEMENTATION ENGINEER AND ARCHITECT/ENGINEER PRIOR TO BID SUBMITTAL

4. THE CONTRACTOR SHALL RECEIVE WRITTEN AUTHORIZATION TO PROCEED ON ANY WORK NOT CLEARLY DEFINED OR IDENTIFIED IN THE CONTRACT AND CONSTRUCTION DOCUMENTS BEFORE STARTING ANY WORK.

5. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES, INCLUDING APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS.

6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. IF THESE RECOMMENDATIONS ARE IN CONFLICT WITH THE CONTRACT AND CONSTRUCTION DOCUMENTS AND/OR APPLICABLE CODES OR REGULATIONS, REVIEW AND RESOLVE THE CONFLICT WITH DIRECTION FROM THE IMPLEMENTATION ENGINEER AND ARCHITECT/ENGINEER PRIOR TO PROCEEDING.

7. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATION OF ALL PORTIONS OF THE WORK UNDER THE CONTRACT INCLUDING CONTACT AND COORDINATION WITH THE IMPLEMENTATION ENGINEER AND WITH THE AUTHORIZED REPRESENTATIVE OF ANY OUTSIDE POLE OR PROPERTY OWNER.

8. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO PAVING, CURBS, VEGETATION, GALVANIZED SURFACE OR OTHER EXISTING ELEMENTS AND UPON COMPLETION OF THE WORK, REPAIR ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION TO THE SATISFACTION OF VERIZON.

9. CONTRACTOR IS TO KEEP THE GENERAL AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH, AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION DAILY.

10. PLANS ARE INTENDED TO BE DIAGRAMMATIC ONLY AND SHOULD NOT BE SCALED UNLESS OTHERWISE NOTED. RELY ONLY ON ANNOTATED DIMENSIONS AND REQUEST INFORMATION IF ADDITIONAL DIMENSIONS ARE REQUIRED.

11. THE EXISTENCE AND LOCATION OF UTILITIES AND OTHER AGENCY'S FACILITIES WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. OTHER FACILITIES MAY EXIST. CONTRACTOR SHALL VERIFY LOCATIONS PRIOR TO START OF CONSTRUCTION AND USE EXTREME CARE AND PROTECTIVE MEASURES TO PREVENT DAMAGE TO THESE FACILITIES. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF UTILITIES OR OTHER AGENCY'S FACILITIES WITHIN THE LIMITS OF THE WORK, WHETHER THEY ARE INDENTIFIED IN THE CONTRACT DOCUMENTS OR NOT.

12. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (800) 227-2600, AT LEAST TWO WORKING DAYS PRIOR TO THE START OF ANY EXCAVATION.

DEFINITIONS

1. "TYPICAL" OR "TYP" MEANS THAT THIS ITEM IS SUBSTANTIALLY THE SAME ACROSS SIMILAR CONDITIONS. "TYP." SHALL BE UNDERSTOOD TO MEAN "TYPICAL WHERE OCCURS" AND SHALL NOT BE CONSIDERED AS WITHOUT EXCEPTION OR CONSIDERATION OF SPECIFIC CONDITIONS.

2. "SIMILAR" MEANS COMPARABLE TO CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATION ON PLAN.

3. "AS REQUIRED" MEANS AS REQUIRED BY REGULATORY REQUIREMENTS, BY REFERENCED STANDARDS, BY EXISTING CONDITIONS, BY GENERALLY ACCEPTED CONSTRUCTION PRACTICE, OR BY THE CONTRACT DOCUMENTS.

4. "ALIGN" MEANS ACCURATELY LOCATE FINISH FACES OF MATERIALS IN THE SAME PLANE.

5. THE TERM "VERIFY" OR "V.I.F." SHALL BE UNDERSTOOD TO MEAN "VERIFY IN FIELD WITH ENGINEER" AND REQUIRES THAT THE CONTRACTOR CONFIRM INTENTION REGARDING NOTED CONDITION AND PROCEED ONLY AFTER RECEIVING DIRECTION.

6. WHERE THE WORDS "OR EQUAL" OR WORDS OF SIMILAR INTENT FOLLOW A MATERIAL SPECIFICATION, THEY SHALL BE UNDERSTOOD TO REQUIRE SIGNED APPROVAL OF ANY DEVIATION TO SAID SPECIFICATION PRIOR TO CONTRACTOR'S ORDERING OR INSTALLATION OF SUCH PROPOSED EQUAL PRODUCT.

7. FURNISH: SUPPLY ONLY, OTHERS TO INSTALL.
   INSTALL: INSTALL ITEMS FURNISHED BY OTHERS.
   PROVIDE: FURNISH AND INSTALL.

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California and Nevada
Call Two Working Days Before You Dig!
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ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
STATE OF CALIFORNIA
C.WIL

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

ELECTRICAL NOTES

1. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ANY/ALL ELECTRICAL WORK INDICATED. ANY/ALL CONSTRUCTION SHALL BE IN ACCORDANCE W/DRAWINGS AND ANY/ALL APPLICABLE SPECIFICATIONS. IF ANY PROBLEMS ARE ENCOUNTERED BY COMPLYING WITH THESE REQUIREMENTS, CONTRACTOR SHALL NOTIFY 'CONSTRUCTION MANAGER' AS SOON AS POSSIBLE, AFTER THE DISCOVERY OF THE PROBLEMS, AND SHALL NOT PROCEED WITH THAT PORTION OF WORK, UNTIL THE 'CONSTRUCTION MANAGER' HAS DIRECTED THE CORRECTIVE ACTIONS TO BE TAKEN.

2. ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ANY/ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATION INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. ALL EXISTING CONDITIONS OF ELECTRICAL EQUIP., LIGHT FIXTURES, ETC., THAT ARE PART OF THE FINAL SYSTEM, SHALL BE VERIFIED BY THE CONTRACTOR, PRIOR TO THE SUBMITTING OF HIS BID. FAILURE TO COMPLY WITH THIS PARAGRAPH WILL IN NO WAY RELIEVE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM.

3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND ALL CODES AND LOCAL ORDINANCES OF THE LOCAL POWER & TELEPHONE COMPANIES HAVING JURISDICTION AND SHALL INCLUDE BUT NOT BE LIMITED TO:
   C - NATIONAL FIRE CODES
   A. UL - UNDERWRITERS LABORATORIES
   B. NEC - NATIONAL ELECTRICAL CODE
   C. NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
   D. OSHA - OCCUPATIONAL SAFETY AND HEALTH ACT
   E. SBC - STANDARD BUILDING CODE

4. DO NOT SCALE ELECTRICAL DRAWINGS, REFER TO SITE PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, AND CONFIRM WITH 'CONSTRUCTION MANAGER' ANY SIZES AND LOCATIONS WHEN NEEDED.

5. EXISTING SERVICES: CONTRACTOR SHALL NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE OWNER.

6. CONTRACTOR SHALL PAY FOR ANY/ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR IS TO OBTAIN PERMITS AND APPROVED SUBMITTALS PRIOR TO THE WORK BEGINNING OR ORDERING EQUIPMENT.

7. THE TERM "PROVIDE" USED IN CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, INDICATES THAT THE CONTRACTOR SHALL FURNISH AND INSTALL.

8. CONTRACTOR SHALL CONFIRM WITH LOCAL UTILITY COMPANY ANY/ALL REQUIREMENTS SUCH AS THE: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, SIZE OF TRANSFORMERS, SCHEDULED DOWNTIME FOR THE OWNERS' CONFIRMATION, ETC... ANY/ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER, PRIOR TO BEGINNING ANY WORK.

9. MINIMUM WIRE SIZE SHALL BE #12 AWG, NOT INCLUDING CONTROL WIRING, UNLESS NOTED OTHERWISE. ALL CONDUCTORS SHALL BE COPPER WITH THWN INSULATION.

10. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET/DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.

11. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF THE CONSTRUCTION. CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.

12. ELECTRICAL SYSTEM SHALL BE AS COMPLETELY AND EFFECTIVELY GROUNDED, AS REQUIRED BY SPECIFICATIONS, SET FORTH BY VERIZON.

13. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS, WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND SUBJECT TO REGULATORY INSPECTION AND APPROVAL BY CONSTRUCTION MANAGER.

14. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.

15. CONTRACTOR SHALL GUARANTEE ANY/ALL MATERIALS AND WORK FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.

16. THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OR THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN.

17. ADEQUATE AND REQUIRED LIABILITY INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LOSS AND ANY/ALL PROPERTY DAMAGE FOR THE DURATION OF WORK.

18. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES AND DEVICES FOR ALL OUTLETS AS INDICATED.

19. DITCHING AND BACK FILL: CONTRACTOR SHALL PROVIDE FOR ALL UNDERGROUND INSTALLED CONDUIT AND/OR CABLES INCLUDING EXCAVATION AND BACKFILLING AND COMPACTION. REFER TO NOTES AND REQUIREMENTS 'EXCAVATION, AND BACKFILLING.

20. MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SHALL APPEAR ON THE LIST OF U.L. APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NEC, NEMA AND IECE.

21. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR MANUFACTURES CATALOG INFORMATION OF ANY/ALL LIGHTING FIXTURES, SWITCHES AND ALL OTHER ELECTRICAL ITEMS FOR APPROVAL BY THE CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

22. ANY CUTTING OR PATCHING DEEMED NECESSARY FOR ELECTRICAL WORK IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY AND SHALL BE INCLUDED IN THE COST FOR WORK AND PERFORMED TO THE SATISFACTION OF THE 'CONSTRUCTION MANAGER' UPON FINAL ACCEPTANCE.

23. THE ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS WITH ONLY TYPEWRITTEN DIRECTORIES. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

24. DISCONNECT SWITCHES SHALL BE H.P. RATED HEAVY-DUTY, QUICK-MAKE AND QUICK-BREAK ENCLOSURES, AS REQUIRED BY EXPOSURE TYPE.

25. ALL CONNECTIONS SHALL BE MADE WITH A PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO-OXIDE A" BY DEARBORNE CHEMICAL CO. COAT ALL WIRE SURFACES BEFORE CONNECTING. EXPOSED COPPER SURFACES, INCLUDING GROUND BARS, SHALL BE TREATED - NO SUBSTITUTIONS.

26. RACEWAYS: CONDUIT SHALL BE SCHEDULE 40 PVC MEETING OR EXCEEDING NEMA TC2 - 1990. CONTRACTOR SHALL PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS - 200 LBS TEST POLYETHYLENE CORD. ALL CONDUIT BENDS SHALL BE A MINIMUM OF 2 FT. RADIUS. RGS CONDUITS WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIGID CONDUIT. COAT ALL THREADS WITH 'BRITE ZINC' OR 'GOLD GALV'.

27. SUPPORT OF ALL ELECTRICAL WORK SHALL BE AS REQUIRED BY NEC.

28. CONDUCTORS: CONTRACTOR SHALL USE 98% CONDUCTIVITY COPPER WITH TYPE THWN INSULATION, 800 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG. USE STRANDED CONDUCTORS FOR WIRE ABOVE NO. 8 AWG.

29. CONNECTORS FOR POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER.

30. SERVICE: 240/120V, SINGLE PHASE, 3 WIRE CONNECTION AVAILABLE FROM UTILITY COMPANY. OWNER OR OWNERS AGENT WILL APPLY FOR POWER.

31. TELEPHONE SERVICE: CONTRACTOR SHALL PROVIDE EMPTY CONDUITS WITH PULL STRINGS AS INDICATED ON DRAWINGS.

32. ELECTRICAL AND TELCO RACEWAYS TO BE BURIED A MINIMUM OF 2' DEPTH.

33. CONTRACTOR SHALL PLACE TWO LENGTHS OF WARNING TAPE AT A DEPTH OF 12" BELOW GROUND AND DIRECTLY ABOVE ELECTRICAL AND TELCO SERVICE CONDUITS. CAUTIONS TAPE TO READ "CAUTION BURIED ELECTRIC" OR "BURIED TELECOMM".

34. ALL BOLTS SHALL BE STAINLESS STEEL

GROUNDING NOTES

1. COMPRESSION CONNECTIONS (2), 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.

2. EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.

3. ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.

4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.

5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE.

6. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

7. WHEN THE SCOPE OF WORK REQUIRES THE ADDITION OF A GROUNDING BAR TO AN EXISTING TOWER,THE SUBCONTRACTOR SHALL OBTAIN APPROVAL FROM THE TOWER OWNER PRIOR TO MOUNTING THE GROUNDING BAR TO THE TOWER.

8. ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.

ADDITIONAL NOTES:

9. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.

10. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING #2 GROUND WIRES AND CONNECT TO SURFACE MOUNTED GROUND BUS BARS AS SHOWN. FOLLOW ANTENNA AND BTS MANUFACTURER'S PRACTICES FOR GROUNDING REQUIREMENTS. GROUND COAX SHIELD AT BOTH ENDS USING MANUFACTURERS PRACTICES. ALL UNDERGROUND WATER PIPES, METAL CONDUITS AND GROUNDS THAT ARE A PART OF THIS SYSTEM SHALL BE BONDED TOGETHER.

11. ALL GROUND CONNECTIONS SHALL BE #2 AWG U.N.O. ALL WIRES SHALL BE COPPER THHN/THWN. ALL GROUND WIRE SHALL BE SOLID TIN COATED OR STRANDED GREEN INSULATED WIRE.

12. CONTRACTOR TO VERIFY AND TEST GROUND TO SOURCE, 5 OHMS MAXIMUM. PROVIDE SUPPLEMENT GROUNDING RODS AS REQUIRED TO ACHIEVE SPECIFIED OHMS READING. GROUNDING AND OTHER OPTIONAL TESTING WILL BE WITNESSED BY THE VERIZON REPRESENTATIVE.

13. NOTIFY ARCHITECT/ENGINEER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.

14. BARE GROUNDING CONDUCTOR SHALL BE HARD DRAWN TINNED COPPER SIZES AS NOTED ON PLAN.

15. ALL HORIZONTALLY RUN GROUNDING CONDUCTORS SHALL BE INSTALLED MINIMUM 12" BELOW GRADE/FROST-LINE IN TRENCH, U.N.O., AND BACK FILL SHALL BE COMPACTED AS REQUIRED BY ARCHITECT.

16. ALL GROUND CONDUCTORS SHALL BE RUN AS STRAIGHT AND SHORT AS POSSIBLE, WITH A MINIMUM 12" BENDING RADIUS NOT LESS THAN 90 DEGREES.

17. ALL SUPPORT STRUCTURES, CABLE CHANNEL WAYS OR WIRE GUIDES SHALL BE BONDED TO GROUND SYSTEM AT A POINT NEAREST THE MAIN GROUNDING BUS "MGB" (OR DIRECTLY TO GROUND-RING).

18. ACCEPTABLE CONNECTIONS FOR GROUNDING SYSTEM SHALL BE:
   a. BURNDY, HY-GRADE U.L. LISTED CONNECTORS FOR INDOOR USE OR AS APPROVED BY VERIZON PROJECT MANAGER.
   b. CADWELD, EXOTHERMIC WELDS (WELDED CONNECTIONS).
   c. TWO -(2) HOLE TINNED COPPER COMPRESSION (LONG BARREL) FITTINGS (BUS BAR CONNECTIONS).

19. ALL CRIMPED CONNECTIONS SHALL HAVE EMBOSSED MANUFACTURER'S DIEMARK VISIBLE AT THE CRIMP (RESULTING FROM USE OF PROPER CRIMPING DEVICES).

20. PRIOR TO ANY LUG-BUSSBAR CONNECTIONS, THE BUSSBAR SHALL BE CLEANED BY USE OF "SCOTCH-BRITE' OR PLAIN STEEL WOOL AS TO REMOVE ALL SURFACE OXIDATION AND CONTAMINANTS. A COATING OF "NO-OX-ID" SHALL BE APPLIED TO THE CONNECTION SURFACES.

21. ALL CONNECTION HARDWARE SHALL BE TYPE 316 SS (NOT ATTRACTED TO MAGNETS).

22. THE GROUND RING SHALL BE INSTALLED 24" MINIMUM BEYOND ANY BUILDING DRIP LINE.

23. ELECTRICAL SERVICE EQUIPMENT GROUNDING SHALL COMPLY WITH NEC, ARTICLE 250-82 AND SHALL BOND ALL EXISTING AND NEW GROUNDING ELECTRODES. NEW GROUNDING ELECTRODE SHALL INCLUDE BUT NOT LIMITED TO GROUND RODS, GROUND RING IF SERVICE IS WITHIN THE RADIO EQUIPMENT LOCATION, BUILDING STEEL IF APPLICABLE, COLD WATER CONNECTIONS MUST BE MADE ON THE STREET SIDE OF MAIN SHUT-OFF VALVE.

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PHONE: (949) 273-0996

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REGISTERED PROFESSIONAL ENGINEER
HASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-2

12/18/2017

Cindy Holbrook
Vinculums Services, LLC
10 Pasteur, Suite 100
Irvine, CA 92618
(209) 627-8412
cholbrook@vinculums.com

Re: Tree Protection Measures at SF PALO ALTO 162 (158-164 Quarry Rd., pole #14)

Dear Cindy,

At your request, I have visited the property referenced above to evaluate the trees present with regard to the construction activity proposed in the right of way adjacent to this address.

No Street Protected, Heritage, or Designated Trees are immediately adjacent to this project.

Amenity Tree Planting

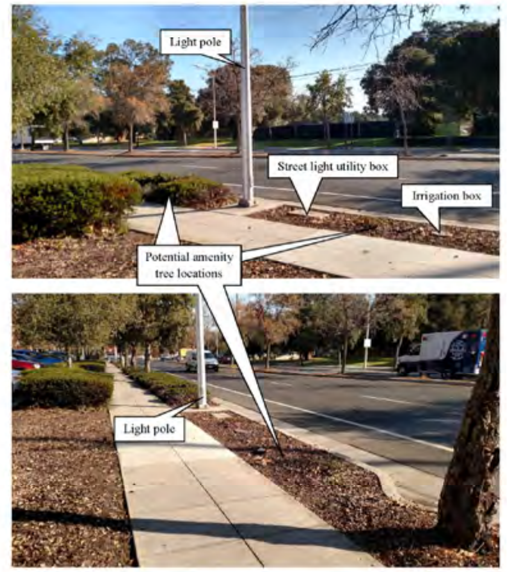
A large amenity tree could be planted on the northeast side of the light pole. I recommend cork oak (*Quercus suber*), to match the existing line of cork oaks.

A small amenity tree could be planted on the southwest side of the light pole, between the existing street lamp utility box and the irrigation box. Hopseed bush (*Dodonaea viscosa*) and western redbud (*Cercis occidentalis*) are two appropriate species.

Tree Protection Recommendations:

None needed.

Image 1: area around existing light pole



ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other government regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.
4. The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
5. Loss, alteration, or reproduction of any part of this report invalidates the entire report.
6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.
7. Neither all nor any part of this report, nor any copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant/appraiser particularly as to value conclusions, identity of the consultant/appraiser, or any reference to any professional society or initialed designation conferred upon the consultant/appraiser as stated in his qualification.
8. This report and the values expressed herein represent the opinion of the consult/appraiser, and the consult/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
10. Unless expressed otherwise: 1) information in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in future.

Respectfully submitted,

Kathi Nagle

Katherine Naegele
Consulting Arborist
Anderson's Tree Care Specialists, Inc.
A TCIA Accredited Company
Master of Forestry, UC Berkeley
ISA Certified Arborist #WE-9658A
ISA Tree Risk Assessment Qualified
American Society of Consulting Arborists, Member
Office: 408 226-8733
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TREE DISCLOSURE STATEMENT

CITY OF PALO ALTO
Planning Division, 250 Hamilton Avenue
Palo Alto, CA 94301
(650) 329-2441
http://www.cityofpaloalto.org

Palo Alto Municipal Code, Chapter 8.10.040, requires disclosure and protection of certain trees located on private and public property, and that they be shown on submitted and approved site plans. A completed *tree disclosure statement* must accompany all permit applications that include exterior work, all demolition or grading permit applications, or other development activity.

PROPERTY ADDRESS: 158-164 QuarryRd,Palo Alto,CA94304

Are there Regulated[1] trees on or adjacent to the property? YES (NO) (If no, proceed to Section 4)

[Sections 1- 4 MUST be completed by the applicant. Please circle and/or check where applicable.]

1. Where are the trees? Check those that apply. **(Plans must be submitted showing all trees over 4" diameter)**
   - ☐ On the property
   - ☐ On adjacent property overhanging the project site
   - ☐ In the City planter strip or right-of-way easement within 30' of property line (Street Trees)*

*Street trees[1] **require special protection by a fenced enclosure**, per the attached instructions. Prior to receiving any permit, you must provide an authorized Street Tree Protection Verification form. Contact Public Works Operations at (650) 496-5953 for inspection of type I, II or III fencing (see attached Detail #605) required for all street trees.

2. Are there any Protected[1] or Designated[1] Trees? **YES** (Check where applicable) (NO)
   - ☐ Protected Tree (s)
   - ☐ Designated Tree (s)
   - ☐ On or overhanging the property

3. Is there activity or grading within the dripline? (radius 10 times the trunk diameter) of these trees? YES (NO)

*If Yes, a **Tree Preservation Report** must be prepared by an ISA certified arborist and submitted for staff review (see TTM[2], Section 6.25). Attach this report to Sheet T-1,:Tree Protection, its Part of the Plan!", per Site Plan Requirements.*

4. Are the Site Plan Requirements** completed? (YES) NO

**Plans: Protection of Regulated trees during development require the following: (1) Plans must show the measured trunk diameter and canopy dripline; (2) Plans must denote, as a bold dashed line, a fenced enclosure area out to the dripline, per Sheet T-1 and Detail #605 - http://www.cityofpaloalto.org/... (See also TTM[2], Section 2.15 for area to be fenced)

I, the undersigned, agree to the conditions of this disclosure. I understand that knowingly or negligently providing false or misleading information in response to this disclosure requirement constitutes a violation of the Palo Alto Municipal Code Section 8.10.040, which can lead to criminal and/or civil legal action.

Signature: *Mary Diesch* (Prop. Owner or Agent) Print: Mary Diesch Date: ____________

FOR STAFF USE:

Protective Fencing
Sections 5-6 must be **completed by staff** for the issuance of any development permit (demolition, grading or building permit).

5. Protected Trees. The specified tree fencing is in place. A written statement is attached verifying that protective fencing is correctly in place around protected and/or designated trees. **YES NO**
(N/A if there are no protected trees, check here ☐)

6. Street Trees. A signed Public Works Street Tree Protection Verification form is attached. **YES NO**
(N/A if there are no street trees, check here ☐).

[1] Regulated Trees – a) Street trees – trees on public property; b) Protected trees – Coast Live Oaks or Valley Oaks which are 11.5" in diameter or larger, Coast Redwoods which are 18" in diameter or larger, when measured 54" above natural grade, and Heritage trees are trees designated by City Council; and c) Designated Trees – commercial or non-residential property trees, which are part of an approved Landscape plan.
[2] Palo Alto Tree Technical Manual (TTM) contains instructions for all requirements on this form, available at www.cityofpaloalto.org/...

S:\PLAN\PLADIV\Advance Planning\Arborist\Tree Program Information\Tree Disclosure Statement(TDS)\Tree Disclosure StatementFinal_3'07.doc Revised 03/04/07

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PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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.

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
TREE PROTECTION REPORT

SHEET NUMBER
TPR-1

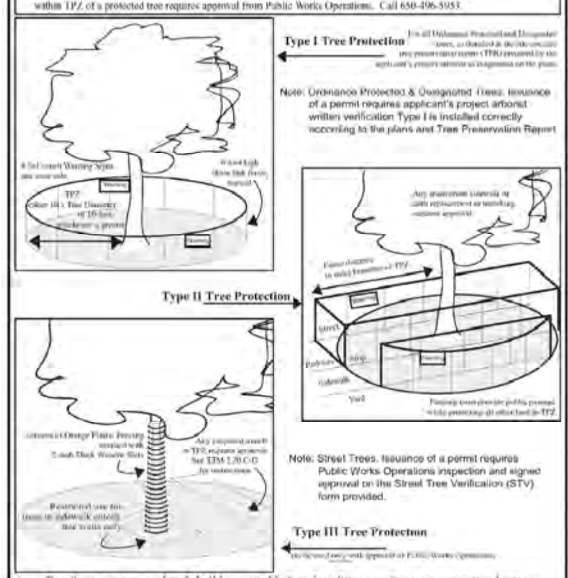
NOTE:
ANY CONSTRUCTION WITHIN THE CITY'S PUBLIC ROAD RIGHT-OF-WAY SHALL HAVE AN APPROVED PERMIT FOR CONSTRUCTION IN THE PUBLIC STREET PRIOR TO CEMMENCEMENT OF THIS WORK

City of Palo Alto

Tree Protection - It's Part of the Plan!

Make sure your crews and subs do the job right!

Fenced enclosures around trees are essential to protect them by keeping the foliage canopy and branching structure clear from contact by equipment, materials and activities, preserving roots and soil conditions in an intact and non-compacted state, and identifying the Tree Protection Zone (TPZ) in which no soil disturbance is permitted and activities are restricted, unless otherwise approved. **An approved tree protection report must be added to this sheet when project activity occurs within the TPZ of a regulated tree.** For detailed information on Palo Alto's regulated trees and protection during development, review the **City Tree Technical Manual** (TTM) found at www.cityofpaloalto.org/trees/.



Tree Protection During Construction

City of Palo Alto Standard

605

Table 2-2 Palo Alto Tree Technical Manual

CONTRACTOR & ARBORIST INSPECTION SCHEDULE

ADDENDUM 11

Monthly Tree Activity Report- Construction Site

APPENDIX J

PALO ALTO STREET TREE PROTECTION INSTRUCTIONS -SECTION 31-

City of Palo Alto Tree Department

Verification of Street Tree Protection

City of Palo Alto

Tree Technical Manual

To purchase the Tree Technical Manual

June, 2001 First Edition

---WARNING---
Tree Protection Zone

This fencing shall not be removed without City Arborist approval (650-496-5953)

Removal without permission is subject to a $500 fine per day*

****Palo Alto Municipal Code Section 8.10.110***

City of Palo Alto Tree Protection Instructions are located at http://www.city.palo-alto.ca.us/trees/technical/manual.html

SPECIAL INSPECTIONS — PLANNING DEPARTMENT

TREE PROTECTION INSPECTIONS MANDATORY

PAMC 8.10 PROTECTED TREES. CONTRACTOR SHALL ENSURE PROJECT SITE ARBORIST IS PERFORMING REQUIRED TREE INSPECTION AND SITE MONITORING. PROVIDE WRITTEN MONTHLY TREE ACTIVITY REPORTS TO THE PLANNING DEPARTMENT LANDSCAPE REVIEW STAFF BEGINNING 14 DAYS AFTER BUILDING PERMIT ISSUANCE.

BUILDING PERMIT DATE: ______

DATE OF 1ST TREE ACTIVITY REPORT: ______

CITY STAFF: ______

REPORTING DETAILS OF THE MONTHLY TREE ACTIVITY REPORT SHALL CONFORM TO SHEET T-1 FORMAT. VERIFY THAT ALL TREE PROTECTION MEASURES ARE IMPLIMENTED AND WILL INCLUDE ALL CONTRACTOR ACTIVITY, SCHEDULED OR UNSCHEDULED, WITHIN A TREE PROTECTION ROOT ZONE. NON-COMPLIANCE IS SUBJECT TO VIOLATION OF PAMC 8.10.080. REFERENCE: PALO ALTO TREE TECHNICAL MANUAL SECTION 2.00 AND ADDENDUM 11

Apply Tree Protection Report on sheet(s) T-2

Use addtional "T" sheets as needed

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

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REGISTERED PROFESSIONAL ENGINEER WISSAM ZALZALI 71655 CIVIL STATE OF CALIFORNIA

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SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
PALO ALTO TREE PROTECTION

SHEET NUMBER
L-1

POLLUTION PREVENTION — IT'S PART OF THE PLAN

Construction projects are required to implement year-round stormwater BMPs, as they apply to your project.

Runoff from streets and other paved areas is a major source of pollution to San Francisco Bay. Construction activities can directly affect the health of the Bay unless contractors and crews plan ahead to keep construction dirt, debris, and other pollutants out of storm drains and local creeks. Following these guidelines will ensure your compliance with City of Palo Alto Ordinance requirements.






MATERIALS & WASTE MANAGEMENT

Non-Hazardous Materials

- ☐ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or when they are not in use.
- ☐ Use (but don't overuse) reclaimed water for dust control.
- ☐ Ensure dust control water doesn't leave site or discharge to storm drains.

Hazardous Materials

- ☐ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ☐ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ☐ Follow manufacturer's application instructions for hazardous materials and do not use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ☐ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ☐ Cover and maintain dumpsters. Check frequently for leaks. Place dumpsters under roofs or cover with tarps or plastic sheeting secured around the outside of the dumpster. A plastic liner is recommended to prevent leaks. Never clean out a dumpster by hosing it down on the construction site.
- ☐ Place portable toilets away from storm drains. Make sure they are in good working order. Check frequently for leaks.
- ☐ Dispose of all wastes and demolition debris properly. Recycle materials and wastes that can be recycled, including solvents, water-based paints, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation.
- ☐ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.
- ☐ Keep site clear of litter (e.g. lunch items, cigarette butts).
- ☐ Prevent litter from uncovered loads by covering loads that are being transported to and from site.

Construction Entrances and Perimeter

- ☐ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ☐ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

EQUIPMENT MANAGEMENT & SPILL CONTROL

Maintenance and Parking

- ☐ Designate an area of the construction site, well away from streams or storm drain inlets and fitted with appropriate BMPs, for auto and equipment parking, and storage.
- ☐ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ☐ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ☐ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ☐ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment, and do not use diesel oil to lubricate equipment or parts onsite.

Spill Prevention and Control

- ☐ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ☐ Maintain all vehicles and heavy equipment. Inspect frequently for and repair leaks. Use drip pans to catch leaks until repairs are made.
- ☐ Clean up leaks, drips and other spills immediately and dispose of cleanup materials properly.
- ☐ Use dry cleanup methods whenever possible (absorbent materials, cat litter and/or rags).
- ☐ Sweep up spilled dry materials immediately. Never attempt to "wash them away" with water, or bury them.
- ☐ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ☐ Report any hazardous materials spills immediately! Call City of Palo Alto Communications, **(650) 329-2413**. If the spill poses a significant hazard to human health and safety, property or the environment, you must report it to the State Office of Emergency Services, **(800) 852-7550 (24 hours)**.

EARTHMOVING

Grading and Earthwork

- ☐ Schedule grading and excavation work during dry weather.
- ☐ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ☐ Remove existing vegetation only when absolutely necessary, plant temporary vegetation for erosion control on slopes or where construction is not immediately planned.
- ☐ Prevent sediment from migrating offsite and protect storm drain inlets, drainage courses and streams by installing and maintaining appropriate BMPs (e.g., silt fences, gravel bags, fiber rolls, temporary swales, etc.).
- ☐ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ☐ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells.
  - Buried barrels, debris, or trash.
- ☐ If the above conditions are observed, document any signs of potential contamination and clearly mark them so they are not disturbed by construction activities.

Landscaping

- ☐ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ☐ Stack bagged material on pallets and under cover.
- ☐ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

CONCRETE MANAGEMENT & DEWATERING

Concrete Management

- ☐ Store both dry and wet materials under cover, protected from rainfall and runoff and away from storm drains or waterways. Store materials off the ground, on pallets. Protect dry materials from wind.
- ☐ Wash down exposed aggregate concrete only when the wash water can (1) flow onto a dirt area; (2) drain onto a bermed surface from which it can be pumped and disposed of properly; or (3) block any storm drain inlets and vacuum washwater from the gutter. If possible, sweep first.
- ☐ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and make sure wash water does not leach into the underlying soil. (See CASQA Construction BMP Handbook for properly designed concrete washouts.)

Dewatering

- ☐ Reuse water for dust control, irrigation or another on-site purpose to the greatest extent possible.
- ☐ Be sure to obtain a Permit for Construction in the Public Street from Public Works Engineering before discharging water to a street, gutter, or storm drain. Call the Regional Water Quality Control Plant (RWQCP) at **(650) 329-2598** for an inspection prior to commencing discharge. Use filtration or diversion through a basin, tank, or sediment trap as required by the approved dewatering plan. Dewatering is not permitted from October to April.
- ☐ In areas of known contamination, testing is required prior to reuse or discharge of groundwater. Consult with the City inspector to determine what testing to do and to interpret results. Contaminated groundwater must be treated or hauled off-site for proper disposal.

PAVING/ASPHALT WORK

Paving

- ☐ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ☐ Cover storm drain inlets and manholes when applying seal coat, slurry seal, fog seal, or similar materials.
- ☐ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.

Sawcutting & Asphalt/Concrete Removal

- ☐ Protect storm drain inlets during saw cutting.
- ☐ If saw cut slurry enters a catch basin, clean it up immediately.
- ☐ Shovel or vacuum saw cut slurry deposits and remove from the site. When making saw cuts, use as little water as possible. Sweep up, and properly dispose of all residues.

PAINTING & PAINT REMOVAL

Painting Cleanup and Removal

- ☐ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ☐ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ☐ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ☐ Sweep up or collect paint chips and dust from non-hazardous dry stripping and sand blasting into plastic drop cloths and dispose of as trash.
- ☐ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state certified contractor.

STORM DRAIN POLLUTERS MAY BE LIABLE FOR FINES OF UP TO $10,000 PER DAY!

250 Hamilton Avenue
Palo Alto, CA 94301
650.329.2211
cityofpaloalto.org

CITY OF PALO ALTO

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
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LAKE FOREST, CA 92630
PHONE: (949) 273-0996

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REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158–164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
PALO ALTO POLLUTION PREVENTION CHECKLIST

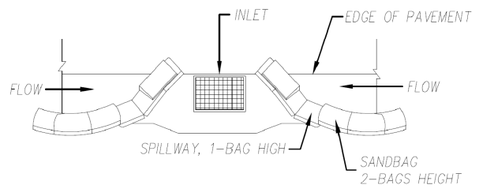
SHEET NUMBER
L-2

EROSION AND SEDIMENT CONTROL NOTES:

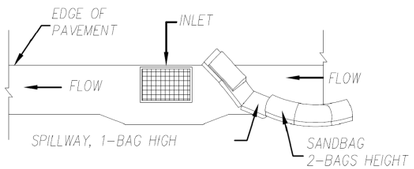
TEMPORARY EROSION/SEDIMENT CONTROL, PRIOR TO COMPLETION OF FINAL IMPROVEMENTS, SHALL BE PERFORMED BY THE CONTRACTOR OR QUALIFIED PERSON AS INDICATED BELOW:

1. ALL REQUIREMENTS OF THE CITY "LAND DEVELOPMENT MANUAL, STORM WATER STANDARDS" MUST BE INCORPORATED INTO THE DESIGN AND CONSTRUCTION OF THE PROPOSED PUBLIC IMPROVEMENTS CONSISTENT WITH THE EROSION CONTROL PLAN AND/OR WATER POLLUTION CONTROL PLAN (WPCP), IF APPLICABLE.
2. FOR STORM DRAIN INLETS, PROVIDE A GRAVEL BAG SILT BASIN IMMEDIATELY UPSTREAM OF INLET AS INDICATED ON DETAILS.
3. THE CONTRACTOR OR QUALIFIED PERSON SHALL BE RESPONSIBLE FOR CLEANUP OF SILT AND MUD ON ADJACENT STREET(S) AND STORM DRAIN SYSTEM DUE TO CONSTRUCTION ACTIVITY.
4. THE CONTRACTOR SHALL REMOVE SILT AND DEBRIS AFTER EACH MAJOR RAINFALL.
5. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON.
6. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER OR RESIDENT ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.
7. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION/SEDIMENT CONTROL MEASURES AS MAY THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION/SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED BY THE RESIDENT ENGINEER DUE TO UNFORESEEN CIRCUMSTANCES, WHICH MAY ARISE.
8. EROSION/SEDIMENT CONTROL MEASURES PROVIDED PER THE APPROVED IMPROVEMENT PLAN SHALL BE INCORPORATED HEREON. ALL EROSION/SEDIMENT CONTROL FOR INTERIM CONDITIONS SHALL BE DONE TO THE SATISFACTION OF THE RESIDENT ENGINEER.
9. ALL REMOVABLE PROTECTIVE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS IMMINENT.
10. THE CONTRACTOR SHALL ARRANGE FOR WEEKLY MEETINGS DURING OCTOBER 1ST TO APRIL 30TH FOR PROJECT TEAM (GENERAL CONTRACTOR, QUALIFIED PERSON, EROSION CONTROL SUBCONTRACTOR IF ANY, ENGINEER OF WORK, OWNER/DEVELOPER AND THE RESIDENT ENGINEER) TO EVALUATE THE ADEQUACY OF THE EROSION/SEDIMENT CONTROL MEASURES AND OTHER RELATED CONSTRUCTION ACTIVITIES.

STORM DRAIN INLET PROTECTION



TYPICAL PROTECTION FOR INLET WITH OPPOSING FLOW DIRECTIONS



TYPICAL PROTECTION FOR INLET WITH SINGLE FLOW DIRECTION

NOTES:

1. INTENDED FOR SHORT-TERM USE.
2. USE TO INHIBIT NON-STORM WATER FLOW.
3. ALLOW FOR PROPER MAINTENANCE AND CLEANUP.
4. BAGS MUST BE REMOVED AFTER ADJACENT OPERATION IS COMPLETED.
5. NOT APPLICABLE IN AREAS WITH HIGH SILTS AND CLAYS WITHOUT FILTER FABRIC.

NOTES:

1. CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS.
2. CONTRACTOR TO PLACE SANDBAGS AROUND ANY/ALL STORM DRAIN INLETS TO PREVENT CONTAMINATED WATER.
3. SPOILS PILE WILL BE COVERED AND CONTAINED AND STREET WILL BE SWEPT AND CLEANED AS NEEDED.
4. CONTRACTOR TO REPAIR DAMAGED PUBLIC IMPROVEMENTS TO THE CONTRACTOR TO REPAIR DAMAGED PUBLIC IMPROVEMENTS TO THE SATISFACTION OF THE CITY ENGINEER.
5. SIDEWALK TO BE REPLACED CURB & GUTTER TO BE PROTECTED IN PLACE. SIDEWALK TO BE REPLACED TO THE SATISFACTION OF THE CITY ENGINEER.
6. THE CONTRACTOR SHALL RESTORE THE ROADWAY BACK TO ITS ORIGINAL CONDITION SATISFACTORY TO THE CITY ENGINEER INCLUDING, BUT NOT LIMITED TO PAVING, STRIPING, BIKE LANES, PAVEMENT LEGENDS, SIGNS, AND TRAFFIC LOOP DETECTORS.
7. SIDEWALK SHALL BE RESTORED/REPLACED PER CITY STANDARD DRAWINGS.
8. PEDESTRIAN RAMP WILL NOT BE DISTURBED.PEDESTRIAN RAMP WILL NOT BE DISTURBED.

GENERAL CONTRACTOR NOTES:

1. STREET USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. ALL WORK TO BE CONDUCTED IN THE RIGHT OF WAY.
3. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
4. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNING WILL BE PLACED.
5. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
6. CLEANUP OF SITE WILL BE COMPLETED EACH EVENING AND THE SITE WILL BE RETURNED TO EXISTING CONDITIONS AT THE COMPLETION OF CONSTRUCTION AT EACH SITE.

** CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR RESPONSIBLE FOR SAME.

R.O.W. GROUND CONSTRUCTION NOTES:

1. GROUND CONSTRUCTION TO REMOVE/CLEAN ALL DEBRIS, NAILS, STAPLES, GROUND CONSTRUCTION TO REMOVE/CLEAN ALL DEBRIS, NAILS, STAPLES, OR NON-USED VERTICALS OFF THE POLE.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MUNICIPAL, COUNTY, STATE, FEDERAL, G095 AND G0128 STANDARDS AND REGULATIONS.
3. CALL USA 48 HOURS PRIOR TO EXCAVATING AT (800) 227-2600 OR 811.
4. ALL LANDSCAPING TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.
5. ALL EQUIPMENT TO BE BONDED. ALL EQUIPMENT TO BE BONDED.
6. METERING CABINET REQUIRES 36" CLEARANCE AT DOOR OPENING.
7. CAULK CABINET BASE AT PAD.

CALIFORNIA STATE CODE COMPLIANCE:

ALL WORK AND MATERIALS SHALL BE PREFORMED 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 CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

- CALIFORNIA ADMINISTRATIVE CODE (INCLUDING TITLES 24 & 25) 2016
- 2016 CALIFORNIA BUILDING CODES WHICH ADOPTS THE 2015 IBC, 2015 IMC, 2015 IPC AND THE 2014 NEC,AND SHALL INCLUDE 2016 CBC, CFC, CMC, CEC, CPC, CGBSC.
- BUILDING OFFICIALS & CODE ADMINISTRATORS (BOCA) CURRENT NATIONAL CODES
- ANSI/EIA-222-G (2009 - 2ND EDITION)
- NFPA-101 - LIFE SAFETY CODE / CAL-OSHA - TITLE 8 / FCR - TITLE 29
- LOCAL BUILDING CODE
- CITY/COUNTY ORDINANCES
- ACCESSIBILITY REQUIREMENTS:

** FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS REQUIREMENTS DO NOT APPLY IN ACCORDANCE WITH THE 2016 CALIFORNIA BUILDING CODE.

- FCC RF/EMF EXPOSURE/EMITTANCE COMPLIANCE:

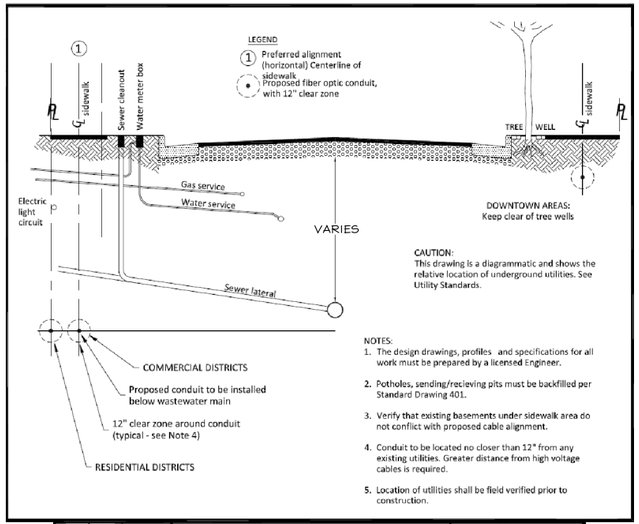
**FCC NOTE: THIS WIRELESS COMMUNICATION FACILITY COMPLIES WITH FEDERAL STANDARDS FOR RADIO FREQUENCY IN ACCORDANCE WITH THE TELECOMMUNICATION ACT OF 1996 AND SUBSEQUENT AMENDMENTS AND ANY OTHER REQUIREMENTS IMPOSED BY STATE OR FEDERAL REGULATORY AGENCIES.

CITY OF PALO ALTO UTILITIES ENGINEERING NOTES:

1. APPLICANT SHALL TAP ELECTRIC SERVICE TO THE SMALL CELL DISTRIBUTED ANTENNA SYSTEM FROM THE LOCATIONS JOINTLY IDENTIFIED DURING THE FIELD INVESTIGATION.
2. SERVICE VOLTAGE TO ALL THE PROPOSED LOCATIONS MAY NOT BE THE SAME. APPLICANT SHALL DESIGN THEIR SYSTEM TO OPERATE AT THE AVAILABLE VOLTAGE IN THE VICINITY.
3. IF BRAND NEW POLES NEED TO BE INSTALLED FOR APPLICANT'S SYSTEM THEN THE POLES MUST MATCH EXISTING POLES IN THE DOWN TOWN AREA.
4. AFTER EXCAVATION IS COMPLETED ON THE PUBLIC RIGHT OF WAY, EXISTING STREETS INCLUDING SIDEWALKS/ CURB/ GUTTER OR ANY DECORATIVE PATHS MUST BE BROUGHT TO ITS ORIGINAL CONDITION AND MUST BE APPROVED BY PUBLIC WORKS ENGINEERING DEPARTMENT'S INSPECTOR. POTHOLING MUST BE DONE AND ALL THE UTILITIES MUST BE IDENTIFIED PRIOR TO COMMENCING EXCAVATION.
5. EXCAVATION AND RESTORATION WORK MUST BE IN COMPLIANCE WITH PUBLIC WORKS ENGINEERING STANDARDS AND SPECIFICATIONS THAT ARE AVAILABLE ON THE FOLLOWING WEBSITE: http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=1834&TargetID=145
6. APPLICANTS SHALL BE RESPONSIBLE FOR MAINTAINING THEIR SYSTEM INCLUDING SUBSTRUCTURE. IN CASE OF KNOCK DOWNS, THE CITY WILL RE-INSTALL ITS STREET LIGHTING POLES BUT NOT APPLICANT'S EQUIPMENT ON OR OFF THE POLE.
7. A FIELD MEETING IS RECOMMENDED WITH UTILITIES ENGINEERING PRIOR TO COMMENCING THE WORK.
8. PLANS SHALL INCLUDE A NOTE: CONTRACTOR TREE INSPECTION REQUIREMENTS: MODIFIED TYPE III TRUNK WRAPPING SHALL BE VERIFIED BY URBAN FORESTRY PRIOR TO ANY WORK IN THE VICINITY. FOR EACH TREE SITE WRAPPED FOR PROTECTION WITHIN 15' OF ANY WORK ZONE OR CONCRETE FORM SECTION, A BILLABLE TREE INSPECTION BY URBAN FORESTRY (650-496-5953, 24-HOUR ADVANCE IS REQUIRED) SHALL BE COMPLETED PRIOR TO DEMOLITION, DRILLING, EXCAVATING,FORMING OR STREET LIGHT ACTIVITY. CONTRACTOR SHALL ARRANGE PAYMENTS AT THE DEVELOPMENT CENTER, 285 HAMILTON AVE, PALO ALTO, CA.
9. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITIES DEPARTMENT 650/329-2413 OR 650/496-6982 IF THE EXISTING WATER, WASTEWATER OR GAS MAINS ARE DISTURBED OR DAMAGED. A QUALIFIED CONTRACTOR MAY PERFORM REPAIRS ON CITY WATER AND WASTEWATER MAINS UNDER THE DIRECT SUPERVISION OF THE WGW UTILITIES INSPECTOR. FOR WATER REPAIRSALL THE DISINFECTION REQUIREMENTS OF THE WGW UTILITY STANDARDS AND THESE CONDITIONS SHALL BE ADHERED TO. ALL REPAIRS TO THE CITY GAS SYSTEM MUST BE PERFORMED BY THE CITY OF PALO ALTO UTILITIES.
10. NO WATER VALVES OR OTHER FACILITIES OWNED BY UTILITIES DEPARTMENT SHALL BE OPERATED FOR ANY PURPOSE BY THE APPLICANT'S CONTRACTOR. ALL REQUIRED OPERATION WILL ONLY BE PERFORMED BY AUTHORIZED UTILITIES DEPARTMENT PERSONNEL. WATER VALVES MAY BE OPERATED BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE WGW UTILITIES INSPECTOR. THE APPLICANT'S CONTRACTOR SHALL NOTIFY THE UTILITIES DEPARTMENT NOT LESS THAN FORTY-EIGHT (48) HOURS IN ADVANCE OF THE TIME THAT SUCH OPERATION IS REQUIRED.

NORMAL LOCATION OF UNDERGROUND UTILITIES NOTES:

1. LOCATION AND DEPTH OF EXISTING AND PROPOSED UTILITIES MUST BE PROVIDED BY THE SUBDIVIDER AND SHOWN ON ANY PLANS SUBMITTED TO THE DEPT. OF PUBLIC WORKS FOR APPROVAL.
2. CHANGES MAY BE PERMITTED BY THE DEPT. OF PUBLIC WORKS IN CASES OF CONFLICTING FACILITIES.
3. CONFLICTS BETWEEN UTILITY COMPANIES FACILITIES, EXISTING AND PROPOSED, MUST BE MUTUALLY RESOLVED BY THE UTILITY COMPANIES.
4. FOR COMMERCIAL SIDEWALKS, THE FIRE HYDRANT SHALL BE PLACED WITHIN THE SIDEWALK 1'-6" BEHIND FACE OF CURB.
5. MAXIMUM 2" DIAMETER GAS MAINS MAY BE PLACED IN JOINT UTILITIES TRENCH SUBJECT TO APPROVAL OF CITY ENGINEER (IN TRACTS).



Rev	By	Date
0	DWH	7/16/98
1	MMN	7/20/04

Scale: NTS

Conduit Location Detail
Telecommunications

City of Palo Alto Standard

Approved by:

PE No. 72158
Date 01/10/18
Dwg No. 402

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

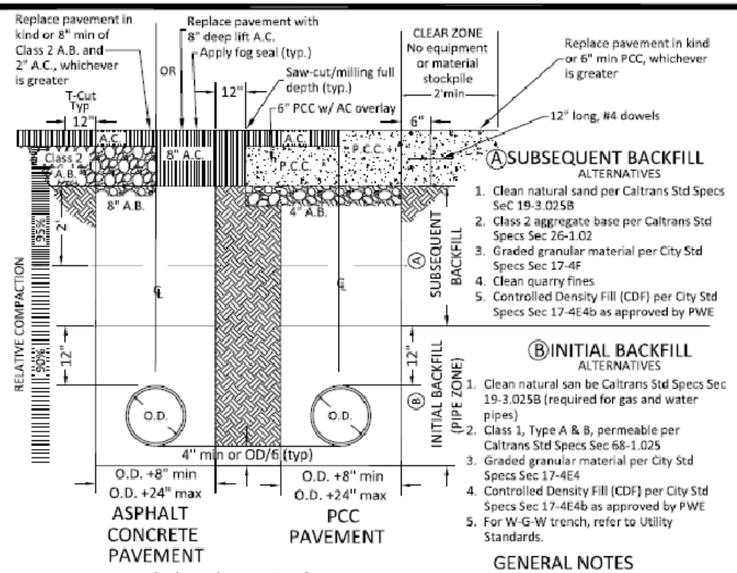
REV	DATE	DESCRIPTION	
0	01/19/2021	100% CD'S FOR SUBMITTAL	MG
C	10/14/2020	100% CD'S FOR REVIEW	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158-164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
PALO ALTO EROSION CONTROL AND CONDUIT LOCATION DETAILS & NOTES

SHEET NUMBER
L-3



Ⓐ SUBSEQUENT BACKFILL ALTERNATIVES

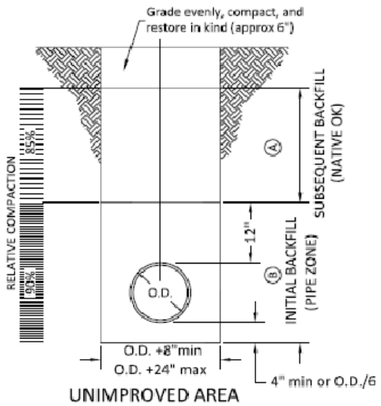
1. Clean natural sand per Caltrans Std Specs SeC 19-3.025B
2. Class 2 aggregate base per Caltrans Std Specs Sec 26-1.02
3. Graded granular material per City Std Specs Sec 17-4F
4. Clean quarry fines
5. Controlled Density Fill (CDF) per City Std Specs Sec 17-4E4b as approved by PWE

Ⓑ INITIAL BACKFILL ALTERNATIVES

1. Clean natural san be Caltrans Std Specs Sec 19-3.025B (required for gas and water pipes)
2. Class 1, Type A & B, permeable per Caltrans Std Specs Sec 68-1.025
3. Graded granular material per City Std Specs Sec 17-4E4
4. Controlled Density Fill (CDF) per City Std Specs Sec 17-4E4b as approved by PWE
5. For W-G-W trench, refer to Utility Standards.

GENERAL NOTES

1. PCC shall contain a minimum of 6 sacks concrete with a desired 28-day strength of 3,500 PSI
2. Extend T-cut to lip gutter per City Std Specs Sec 17-4G
3. Refer to City Std Dwg 403 for trench limits of restoration
4. Match existing AC thickness on PCC overlays



UNIMPROVED AREA

JETTING NOTES

1. IMPROVED AREAS
   a. INITIAL BACKFILL - jetting of sand OK
   b. SUBSEQUENT BACKFILL - jetting of sand subject to approval of City Engineer, except for top 2 ft, which must be mechanically compacted
2. UNIMPROVED AREAS: jetting of sand OK
3. WHEN JETTING IS PERMITTED:
   a. Excess water shall be collected at low points and removed by pumping
   b. San to be jetted shall be placed in lifts no thicker than 4 ft
   c. Jetting shall be performed at intervals along the trench not to exceed 6 ft

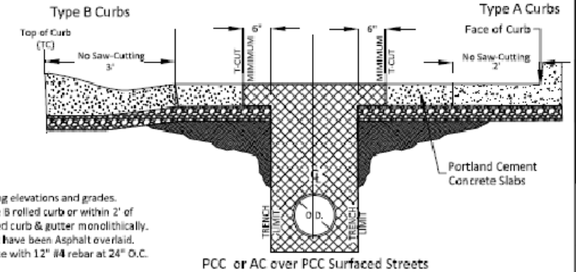
Rev	By	Date
1	MN	03/10/05
2	JT	08/18/06
3	HQN	10/04/06
4	RTN	06/08/17
Scale: NTS		

Trenches
Typical Cross-Sections

Approved by:
PE No. 72158
Date 01/10/18

City of Palo Alto Standard

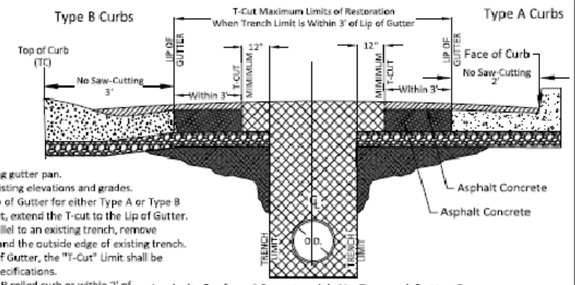
Dwg No. 401



NOTES:

1. Restore all materials in kind to match existing elevations and grades.
2. If Saw-cut is within 3' of Top of Curb of Type B rolled curb or within 2' of the face of Type A curb, remove and replaced curb & gutter monolithically.
3. These notes also pertain to PCC streets that have been Asphalt overlaid.
4. Dowel all new concrete into existing concrete with 12" #4 rebar at 24" O.C.

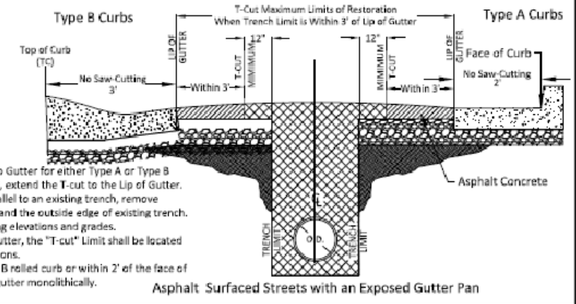
PCC or AC over PCC Surfaced Streets



NOTES:

1. Remove asphalt to verify the width of existing gutter pan.
2. Restore all materials in kind to match the existing elevations and grades.
3. When "Trench Limits" are within 3' of the Lip of Gutter for either Type A or Type B curb and gutter on an Asphalt surfaced street, extend the T-cut to the Lip of Gutter. When "Trench Limits" are within 2' and parallel to an existing trench, remove pavement section between the new trench and the outside edge of existing trench.
4. If "Trench Limit" is NOT within 3' of the Lip of Gutter, the "T-Cut" Limit shall be located 12" from the Trench Limit per the Specifications.
5. If Saw-cut is within 3' of Top of Curb of Type B rolled curb or within 2' of the face of Type A curb, remove and replace curb & gutter monolithically.

Asphalt Surfaced Streets with No Exposed Gutter Pan



NOTES:

1. When "Trench Limits" are within 3' of the Lip Gutter for either Type A or Type B curb and gutter on a Asphalt surfaced street, extend the T-cut to the Lip of Gutter. When "Trench Limits" are within 2' and parallel to an existing trench, remove pavement section between the new trench and the outside edge of existing trench.
2. Restore all materials in kind to match existing elevations and grades.
3. If "Trench Limit" is NOT within 3' of Lip of Gutter, the "T-cut" Limit shall be located 12" from the Trench Limit per the Specifications.
4. If Saw-cut is within 3' of Top of Curb of Type B rolled curb or within 2' of the face of Type A curb, remove and replace curb and gutter monolithically.

Asphalt Surfaced Streets with an Exposed Gutter Pan

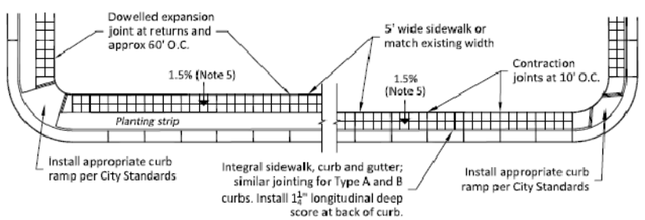
Rev	By	Date
1	MN	2/30/05
2	JT	8/14/06
3	HQN	10/16/06
4	RTN	06/11/17
Scale: NTS		

Trenches
Limits of Restoration

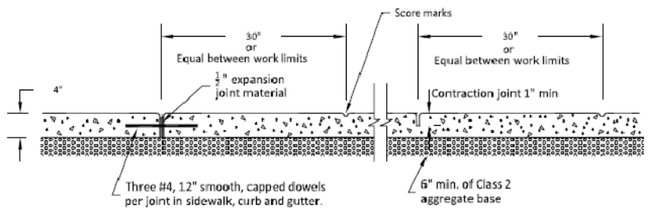
Approved by:
PE No. 72158
Date 01/10/18

City of Palo Alto Standard

Dwg No. 403



TYPICAL CITY BLOCK PLAN



Expansion joint Contraction joint

LONGITUDINAL SECTIONS

SIDEWALK CONSTRUCTION NOTES:

1. SIDEWALKS TO BE MARKED IN 30" SQUARES.
2. EDGES TO HAVE 3/4" RADIUS.
3. SCORE MARKS SHALL NOT BE LESS THAN 3/8" DEEP; CONTRACTION JOINTS SHALL BE 1" IN MINIMUM DEPTH @ 10' O.C.
4. CONTRACTION JOINTS MAY BE SAW-CUT.
5. SIDEWALKS TO HAVE 1.5% SLOPE TO STREET.
6. ALL NEW SIDEWALKS SHALL BE DOWELED AT 2'-0" O.C. INTO EXISTING CONCRETE WITH #4 12" LONG DOWELS AND EMBEDDED 6".
7. SAW CUT WALK FULL DEPTH AND FULL WIDTH ON SCORE MARKS PERPENDICULAR TO THE CURB. NO SAWCUTTING ON LONGITUDINAL SCORE MARKS.
8. INSTALL LONGITUDINAL DEEP SCORE ALONG ENTIRE BACK OF CURB THAT IS MONOLITHIC WITH SIDEWALK.

Rev	By	Date
0	DWH	12/14/92
1	MN	01/29/02
2	HQN	01/04/07
3	RTN	08/10/17
Scale: NTS		

Sidewalk Construction

Approved by:
PE No. 72158
Date 01/10/18

City of Palo Alto Standard

Dwg No. 141

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

Vinculums
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23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334940
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
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C	10/14/2020	100% CD'S FOR REVIEW	MG
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REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 162
LIC R.O.W. ADJACENT TO:
158–164 QUARRY RD.,
PALO ALTO, 94304
LOCATION CODE: 425266

SHEET TITLE
PALO ALTO TRENCHING & SIDEWALK STD. DWGS.

SHEET NUMBER
L-4

verizon

SITE ID:	SF PALO ALTO 164
PROJECT NAME:	VZW PALO ALTO SMALL CELL
POLE#:	13/14
LOCATION CODE:	425268
ADJACENT APN:	142-03-039
SITE ADDRESS:	ARBORETUM RD., PALO ALTO, 94304
COUNTY:	SANTA CLARA
SITE TYPE:	STREET LIGHT POLE
ROADWAY TYPE:	COLLECTOR
HISTORIC STATUS OR DISTRICT:	N/A

PROJECT DESCRIPTION

VERIZON WIRELESS PROPOSES TO INSTALL A NEW WIRELESS COMMUNICATION SITE ON A NEW/REPLACEMENT STREET LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- ☐ REMOVE (1) EXISTING STREET LIGHT/POLE #13/14 WITHIN ARBORETUM RD. PUBLIC R.O.W.
- ☐ INSTALL (1) NEW 'EL CAMINO REAL' ROADWAY LIGHTING POLE W/ LED LAMP IN
- ☐ PLACE OF REMOVED LIGHT/POLE #13/14, PER LIGHTING STYLE PLACEMENT GUIDE RE-CONNECT CPA STREET LIGHT POWER TO NEW/REPLACED STREET LIGHT
- ☐ INSTALL NEW POLE FOUNDATION

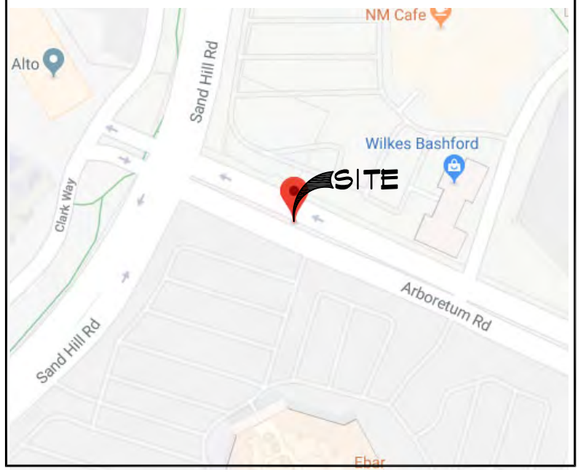
- ☐ INSTALL (2) NEW ERICSSON SM-6701 RADIO/ANTENNAS ATOP NEW POLE
- ☐ INSTALL (1) NEW COMMSCOPE VVSSP-360S-M CANISTER ANTENNA ATOP POLE
- ☐ INSTALL (2) NEW ERICSSON 4402 CBRS/LAA RADIO ATOP NEW POLE
- ☐ INSTALL (1) NEW DIPLEXER WITH IN CONCEALMENT MOUNT ATOP NEW POLE
- ☐ INSTALL (1) NEW NEMA 6P AC DISCONNECT WITHIN NEW U.G. POWER HANDHOLE
- ☐ INSTALL (1) NEW 5/8"ϕ x10'L. GROUND ROD WITHIN U.G. POWER HANDHOLE
- ☐ INSTALL NEW AC POWER CABLES FROM POC, TO DISCONNECT, TO RADIOS
- ☐ INSTALL NEW GROUND CABLES FROM DISCONNECT/RADIOS/POLE TO GROUND ROD
- ☐ INSTALL NEW FIBER CABLES FROM DEMARC TO RADIOS
- ☐ INSTALL NEW RF NOTICE AND EMERGENCY SHUT-DOWN SIGNAGE AS REQUIRED
- ☐ INSTALL NEW U.G. PATH FROM POWER POC TO NEW U.G. POWER HANDHOLE

** ALL COMPONENTS EXTERNAL TO THE POLE SHALL HAVE AN INTEGRAL COLOR OR SHALL BE PAINTED TO MATCH THE COLOR AND/OR MATERIALS OF THE POLE.

ADMINISTRATIVE REQUIREMENTS

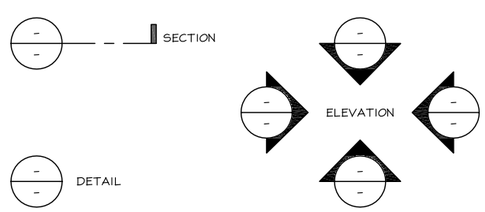
SUBCONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS & FIELD CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

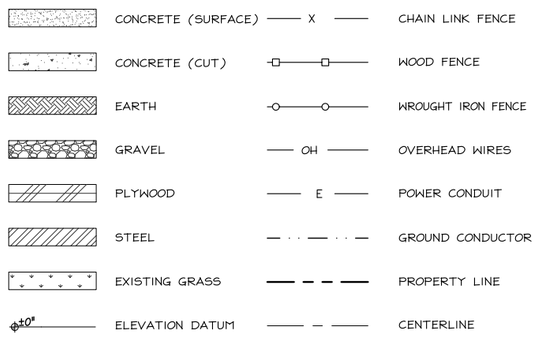
VICINITY MAP



SYMBOLS/ABBREVIATIONS LEGEND

ADD'L	ADDITIONAL
A.F.G.	ABOVE FINISHED GRADE
ANT.	ANTENNA
ASS'Y.	ASSEMBLY
AWG.	AMERICAN WIRE GAUGE
BLDG.	BUILDING
BTCW.	BARE TINNED COPPER WIRE
CLR.	CLEAR
CONC.	CONCRETE
CONN.	CONNECTION(OR)
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
DBL.	DOUBLE
D.F.	DOUGLAS FIR
DIA.	DIAMETER
DIM.	DIMENSION
EA.	EACH
ELEV	ELEVATION
EMT.	ELECTRICAL METALLIC TUBING
(E)	EXISTING
F.G.	FINISH GRADE
FT.(')	FOOT (FEET)
GA.	GAUGE
HT.	HEIGHT
IN.(")	INCH(ES)
LB.(#)	POUND(S)
L.F.	LINEAR FEET (FOOT)
L.	LONG(ITUDINAL)
MAX.	MAXIMUM
MFR.	MANUFACTURER
MIN.	MINIMUM
(N)	NEW
NTS	NOT TO SCALE
O.C.	ON CENTER
P.T.	PRESSURE TREATED
RAD.(R)	RADIUS
REQ'D	REQUIRED
RGS.	RIGID GALVANIZED STEEL
SCH.	SCHEDULE
SIM.	SIMILAR
SQ.	SQUARE
S.S.	STAINLESS STEEL
STD.	STANDARD
TEMP.	TEMPORARY
THK.	THICK(NESS)
TYP.	TYPICAL
U.G.	UNDER GROUND
U.L.	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
V.I.F.	VERIFY IN FIELD
W	WIDE (WIDTH)
w/	WITH
WD.	WOOD
W.P.	WEATHERPROOF





PROJECT TEAM

APPLICANT:
VERIZON WIRELESS
575 LENNON LANE SUITE 125
WALNUT CREEK,CA 94598
CONTACT: JEREMY STROUP
PHONE:(925) 202-8654
EMAIL:jstroup@qualtekwireless.com

LEASING CONTACT:
VINCULUMS SERVICES
575 LENNON LANE SUITE 125
WALNUT CREEK, CA 94598
CONTACT: JEREMY STROUP
PHONE:(925) 202-8654
EMAIL:jstroup@qualtekwireless.com

A&E PROJECT MANAGER:
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dba ALL STATES ENGINEERING & SURVEYING
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PM: DEAN WALKER
PHONE: (714) 230-5714
EMAIL: dean@zalzali.com

CONSTRUCTION MANAGER:
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1200 DEL PASO RD #150
SACRAMENTO, CA 95834
CONTACT: ROSA YANEZ
PHONE: (916) 247-5703
EMAIL: ryanez@qualtekwireless.com

ARBORIST CONTACT:
PROJECT ARBORIST
121 N 27TH STREET,
SAN JOSE, CA 95116
CONTACT: KATHERINE NAEGELE
PHONE: (408) 590-5976
EMAIL:Katherine@andersonstreecare.com

SITE INFORMATION

LATITUDE:
N 37° 26' 25.44"(37.440400)

LONGITUDE:
W 122° 10' 24.99"(-122.173608)

ELEVATION:
+77.44' AMSL

ZONING:
CC

JURISDICTION:
CITY OF PALO ALTO

ASSESSORS PARCEL NUMBER:
ADJACENT TO 142-03-039

PROPERTY LEGAL DESCRIPTION:
N/A PUBLIC RIGHT OF WAY

ADA COMPLIANCE:
YES

DIG ALERT

811 USA North
Know what's below. Call before you dig.
California and Nevada
Call Two Working Days Before You Dig!
811 / 800-227-2600

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS & (E) DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME IF USING 11"X17" PLOT, DRAWINGS WILL BE HALF SCALE.

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
T-2	PHOTOSIMS W/ SHROUD
T-2.1	PHOTOSIMS WITHOUT SHROUD
T-3	EME REPORT
T-4	EME REPORT
LS-1	SITE SURVEY
A-1	SITE PLAN
A-1.1	EXISTING UTILITY SITE PLAN
A-1.2	UTILITY PLAN (FOR REFERENCE)
A-1.3	LOCATION MAP
A-1.4	BORING/UNDERGROUND UTILITY PLAN
A-1.5	CITY STANDARDS & DETAILS
A-1.6	CITY STANDARDS & DETAILS
A-1.7	R.O.W SECTION
A-2	ENLARGED SITE PLAN
A-3	ELEVATIONS W/ SHROUD
A-3A	ELEVATIONS WITHOUT SHROUD
A-3.1	ELEVATIONS W/ SHROUD
A-3.1A	ELEVATIONS WITHOUT SHROUD
D-1	DETAILS W/ SHROUD
D-1.1	DETAILS WITHOUT SHROUD
D-2	FOUNDATION DETAIL
D-3	LUMINAIRE DETAILS
E-1	ELECTRICAL/GROUNDING DIAGRAMS, NOTES, & PANEL SCHEDULE
TCP-1	TRAFFIC CONTROL PLAN (BY OTHERS)
C-1	CALCS W/ SHROUD
C-2	CALCS W/ SHROUD
C-3	CALCS W/ SHROUD
C-4	CALCS W/ SHROUD
C-5	CALCS WITHOUT SHROUD
C-6	CALCS WITHOUT SHROUD
C-7	CALCS WITHOUT SHROUD
C-8	CALCS WITHOUT SHROUD
GN-1	GENERAL NOTES
GN-2	GENERAL NOTES
TPR-1	TREE PROTECTION REPORT
L-1	PALO ALTO TREE PROTECTION
L-2	PALO ALTO POLLUTION PREVENTION CHECKLIST
L-3	PALO ALTO EROSION CONTROL AND CONDUIT LOCATION DETAILS & NOTES
L-4	PALO ALTO TRENCHING & SIDEWALK STANDARD DRAWINGS

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 CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

2019 TITLE 24, CALIFORNIA CODE OF REGULATIONS

2019 CALIFORNIA BUILDING CODE

2019 CALIFORNIA ELECTRICAL CODE

2019 CALIFORNIA MECHANICAL CODE

2019 GREEN BUILDING CODE

2019 CALIFORNIA ENERGY CODE

#AS AMENDED BY CITY OF PALO ALTO AND MADE EFFECTIVE JANUARY 1ST, 2020 AS PER CURRENT CITY OF PALO ALTO MUNICIPAL CODE ORDINANCES GENERAL ORDER 95 (v.2018)

verizon
2785 MITCHELL DRIVE, SUITE 9
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PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
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REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

verizon

11/25/20

SF Palo Alto 164

Arboretum Road
Palo Alto, CA

Looking Northeast from Arboretum Road

View #1

Applied Imagination 510 914-0500

verizon

11/25/20

SF Palo Alto 164

Arboretum Road
Palo Alto, CA

Looking West from Arboretum Road

View #2

Applied Imagination 510 914-0500

verizon

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STATE OF CALIFORNIA

SF PALO ALTO 164

LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE

PHOTOSIMS W/
SHROUD

SHEET NUMBER

T-2

verizon
12/24/20

SF Palo Alto 164
Arboretum Road
Palo Alto, CA

Looking Northeast from Arboretum Road
View #1
Applied Imagination 510 914-0500

verizon
12/24/20

SF Palo Alto 164
Arboretum Road
Palo Alto, CA

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LOCATION CODE: 425268

SHEET TITLE
PHOTOSIMS
WITHOUT SHROUD

SHEET NUMBER
T-2.1

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. 425268 "SF Palo Alto 164") proposed to be sited in Palo Alto, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

Verizon proposes to install four small antennas on the municipal light pole sited in the public right-of-way along Arboretum Road in Palo Alto. 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 Exposure Limit	Occupational Limit (5 times Public)
Microwave (point-to-point)	1 – 80 GHz	1.0 mW/cm²	5.0 mW/cm²
Millimeter-wave	28–37	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"). This methodology is an industry standard for evaluating RF exposure conditions and has been demonstrated through numerous field tests to be a conservative prediction of exposure levels.

Site and Facility Description

Based upon information provided by Verizon, including drawings by All States Engineering & Surveying, dated June 9, 2020, it is proposed to install four 2-foot-tall antennas – one CommScope Model VVSSP-360S-M omnidirectional* cylindrical and three Ericsson Model 6701 directional panels with integrated radios – on a new light pole to replace the existing pole sited in the public right-of-way in the median of Arboretum Road, about 190 feet southeast of its intersection with Sand Hill Road in Palo Alto. The CommScope antenna would be mounted on top of the pole at an effective height of about 31 feet above ground and would employ up to 13° downtilt. The Ericsson antennas would be mounted around the pole below the light arm at an effective height of about 21 feet above ground and would be oriented toward 40°T, 160°T, and 280°T, together forming an omnidirectional† pattern. The maximum effective radiated power proposed in any direction is 308 watts, representing 57 watts for AWS service and 58 watts for PCS service from the CommScope antenna and 103 watts for 28 GHz service from the Ericsson antennas. There are reported no other wireless telecommunications base stations at the site or nearby.

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

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.016 mW/cm², which is 1.6% of the applicable public exposure limit. The maximum calculated level at any nearby building† is 0.27% 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.

Recommended Mitigation Measures

Due to their mounting locations and heights, the antennas would not be accessible to unauthorized persons, and so no measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all workers who have access within 8 feet outward from the antennas.‡ No access within 2 feet directly in front of the antennas should be allowed while they are in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that explanatory signs§ be posted at the antennas and/or on the pole below the antennas, readily visible from any angle of approach.

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 along Arboretum Road in Palo Alto, 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. Training authorized personnel and posting explanatory signs are recommended to establish compliance with FCC guidelines.

† Located at least 190 feet away, based on photographs from Google Maps.
‡ May include workers on the pole or on a lift to trim nearby trees.
§ Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidelines from the landlord, local zoning or health authority, or appropriate professionals may be required.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-21306, which expires on September 30, 2021. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

REGISTERED PROFESSIONAL ENGINEER — NEIL J. OLLI — No. E-21306 — Exp. 9-30-2021 — ELECTRICAL — STATE OF CALIFORNIA

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

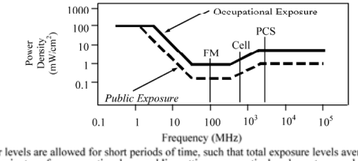
December 16, 2020

FCC Radio Frequency Protection Guide

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

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

Frequency Applicable Range (MHz)	Electromagnetic Fields (f is frequency of emission in MHz) Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm²)	
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/f²*
3.0 – 30	1842/ f	*823.8/f*	4.89/ f	*2.19/f*	900/ f²	*180/f²*
30 – 300	61.4	*27.5*	0.163	*0.0729*	1.0	*0.2*
300 – 1,500	3.54√f	*1.59√f*	√f/106	√f/*238*	f/300	*f/1500*
1,500 – 100,000	137	*61.4*	0.364	*0.163*	5.0	*1.0*



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

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

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

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

For a panel or whip antenna, power density $S = \frac{180}{\theta_{BW}} \times \frac{0.1 \times P_{net}}{\pi \times D \times h}$, in mW/cm²,

and for an aperture antenna, maximum power density $S_{max} = \frac{0.1 \times 16 \times \eta \times P_{net}}{\pi \times h^2}$, in mW/cm²,

where θ_{BW} = half-power beamwidth of 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/cm²,

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

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

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WALNUT CREEK, CA 94598

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER — WASSAM ZALZALI — 71655 — CIVIL — STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
EME REPORT

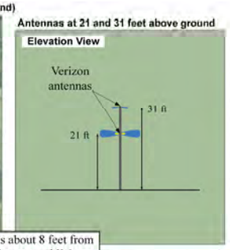
SHEET NUMBER
T-3

Verizon Wireless • Proposed Small Cell (No. 425268 "SF Palo Alto 164")
Arboretum Road • Palo Alto, California

Calculated RF Exposure Levels

at Elevation of Lower Antennas (19½ – 22½ feet above ground)

Antennas at 21 and 31 feet above ground



at Ground, at 10 feet above ground, and at Nearby Buildings

sign on pole at or below antennas

Legend:

- less than FCC Public Limit
- greater than FCC Public Limit less than FCC Occupational Limit
- greater than FCC Occupational Limit

Notes:

Calculations performed according to OET Bulletin No. 65, August 1997.

Base image from Google Maps.

FEET
10 0 10 20

HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO
©2020

(December 16, 2020) PS2&V1-GIPT
Supplemental Figure

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REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
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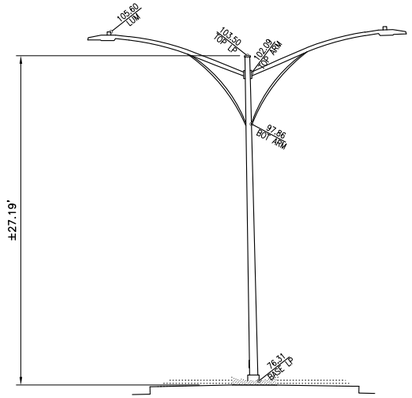
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
EME REPORT

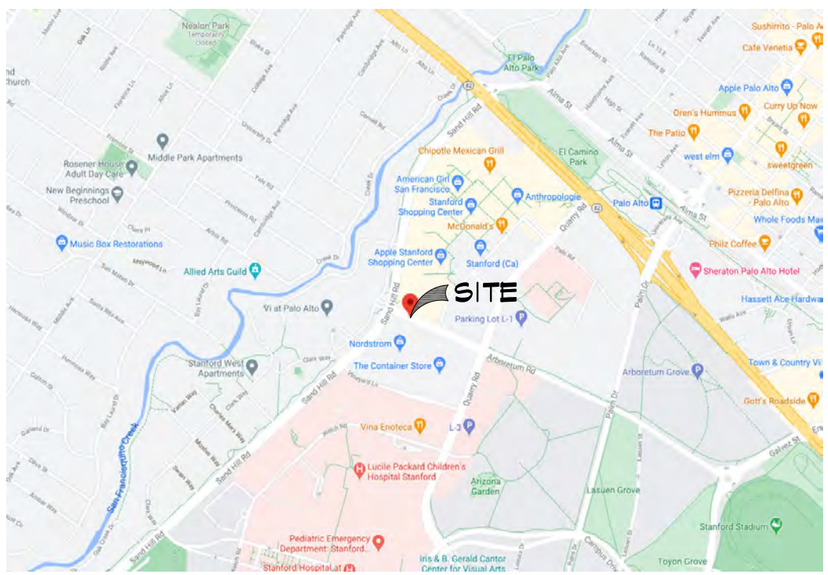
SHEET NUMBER
T-4



2 POLE ELEVATION
1 inch = 5ft.
0 2.5' 5' 10'

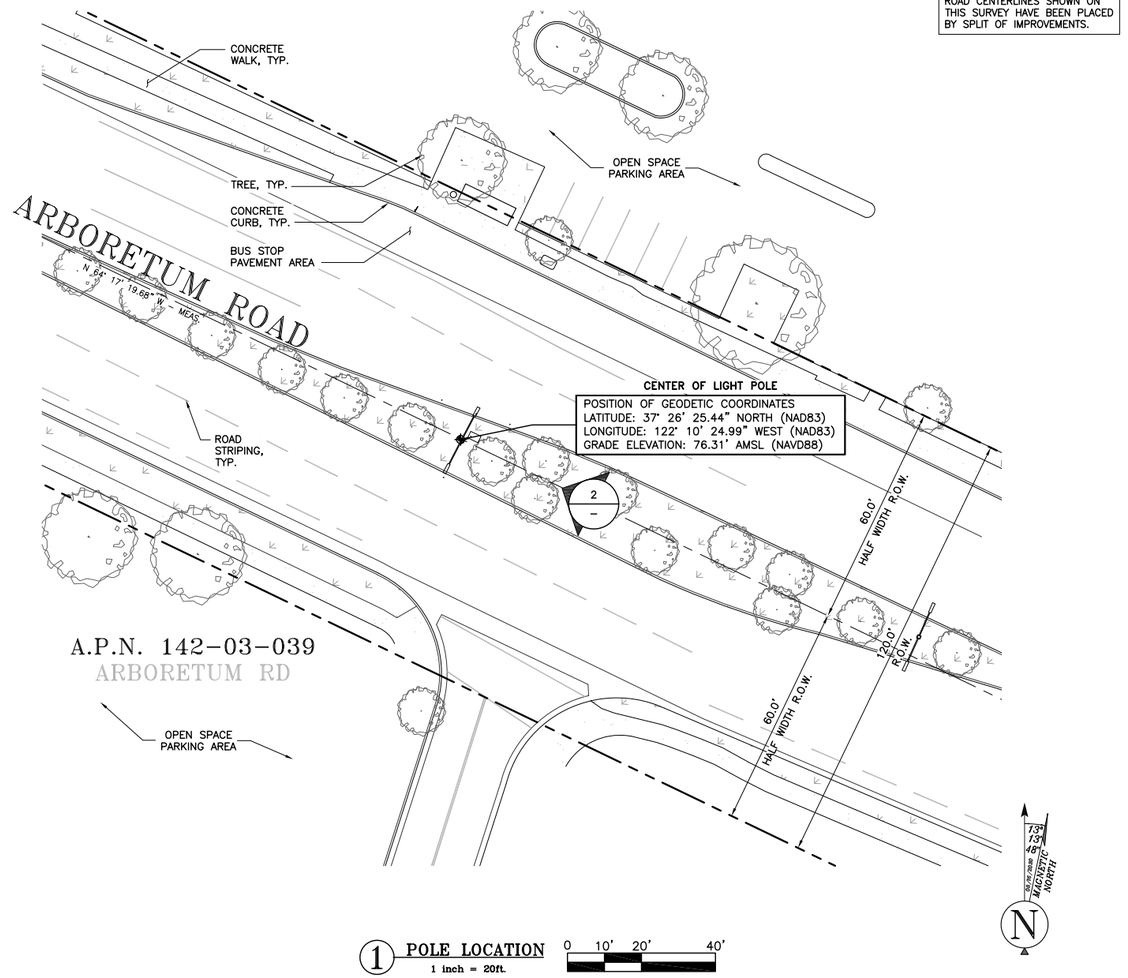
LEGEND

	TREE		U.G. UTILITY VAULT		LIMITS OF PROPERTY
	UTILITY POLE		FOUND MONUMENT	— x —	CHAIN LINK FENCE
	WATER VALVE		GEODETIC MARKER		WOOD FENCE
BOL	BOLLARD	FL	FLOW LINE	— O/H—	OVERHEAD LINE
TOP _	TOP OF ITEM	FC	FACE OF CURB		METAL FENCE
BOT _	BOTTOM OF ITEM	R.O.W.	RIGHT OF WAY		GRADE BREAK
BLDG	TOP OF BUILDING	AP	ASPHALT		SPOT ELEVATION
LP	LIGHT POLE	SW	SIDEWALK		MASONRY WALL



VICINITY MAP

RIGHT OF WAY NOTE:
ROAD CENTERLINES SHOWN ON THIS SURVEY HAVE BEEN PLACED BY SPLIT OF IMPROVEMENTS.



1 POLE LOCATION
1 inch = 20ft.
0 10' 20' 40'

TITLE REPORT
NOT APPLICABLE (RIGHT-OF-WAY)

LEGAL DESCRIPTION
NOT APPLICABLE (RIGHT-OF-WAY)

ASSESSOR'S PARCEL NO.
NOT APPLICABLE (RIGHT-OF-WAY)

UTILITY NOTE:
SURVEYOR DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN OR THEIR LOCATIONS ARE DEFINITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND DEVELOPER TO CONTACT BLUE STAKE AND ANY OTHER INVOLVED AGENCIES TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION. REMOVAL, RELOCATION AND/ OR REPLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR.

NOTES:
1. THIS IS NOT A BOUNDARY SURVEY. THIS IS A SPECIALIZED RIGHT OF WAY MAP. THE PROPERTY LINES AND EASEMENTS SHOWN HEREON ARE FROM RECORD INFORMATION AS NOTED HEREON. ALL STATES ENGINEERING & SURVEYING/ZALZALI & ASSOCIATES, INC. TRANSLATED THE TOPOGRAPHIC SURVEY TO RECORD INFORMATION USING MONUMENT(S)/LANDMARK(S) SHOWN HEREON. NO TITLE RESEARCH WAS PERFORMED BY ALL STATES ENGINEERING & SURVEYING/ZALZALI & ASSOCIATES, INC.

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4. THIS SITE IS PROPOSED TO BE DEVELOPED ON A STREET LIGHT POLE LOCATED WITHIN THE PUBLIC RIGHT OF WAY.

SURVEY DATE
08/16/2020

BASIS OF BEARING
BEARINGS SHOWN HEREON ARE BASED UPON U.S. STATE PLANE NAD83 COORDINATE SYSTEM CALIFORNIA STATE PLANE COORDINATE ZONE THREE, DETERMINED BY GPS OBSERVATIONS.

BENCHMARK
RTCM-REF 3270
NORTHING: 1970498.865
EASTING: 6082238.002
+248.11' (A.M.S.L.)

REFERENCE MAPS
- 733-RS-43

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

SEQUOIA DEPLOYMENT SERVICES, INC.
1 SPECTRUM POINTE DRIVE, SUITE 130
LAKE FOREST, CA 92630

ALLSTATES ENGINEERING & SURVEYING
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630

PROJECT NO:	SF_PALO-ALTO_164
DRAWN BY:	MG
CHECKED BY:	BC/WZ/DW

REV	DATE	DESCRIPTION	
0	09/25/2020	DRAFT FINAL SURVEY	MA
A	09/25/2020	PRELIMINARY SURVEY	MG

PROFESSIONAL LAND SURVEYOR
BRUCE T. CRAMTON
No. 9039
STATE OF CALIFORNIA

SF_PALO-ALTO_164
R.O.W. ADJACENT TO:
ARBORETUM RD
PALO ALTO, CA 94304
NEW BUILD-SMALL CELL

SHEET TITLE
SITE SURVEY

SHEET NUMBER
C-1

TREE NOTES:

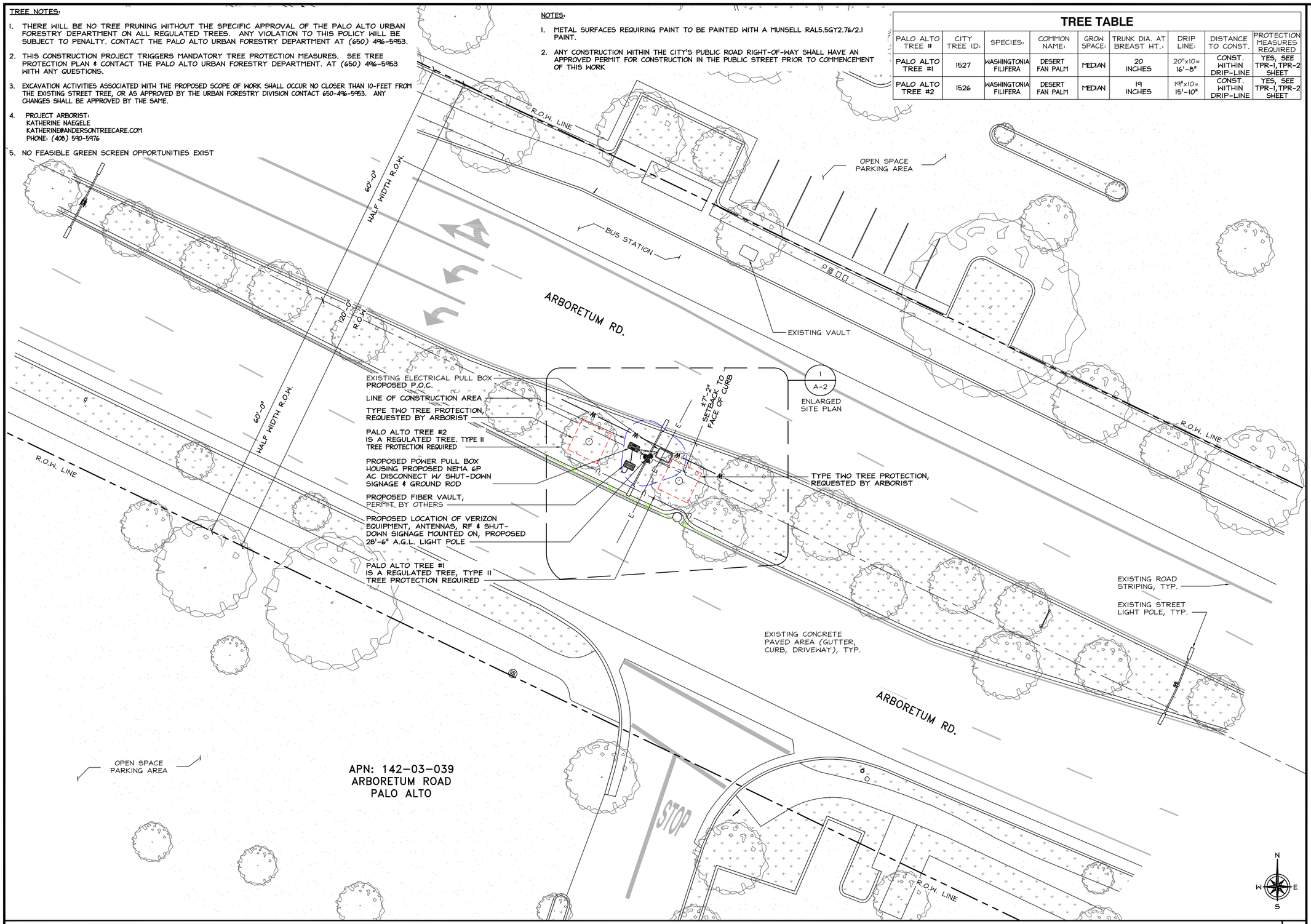
1. THERE WILL BE NO TREE PRUNING WITHOUT THE SPECIFIC APPROVAL OF THE PALO ALTO URBAN FORESTRY DEPARTMENT ON ALL REGULATED TREES. ANY VIOLATION TO THIS POLICY WILL BE SUBJECT TO PENALTY. CONTACT THE PALO ALTO URBAN FORESTRY DEPARTMENT AT (650) 496-5953.
2. THIS CONSTRUCTION PROJECT TRIGGERS MANDATORY TREE PROTECTION MEASURES. SEE TREE PROTECTION PLAN & CONTACT THE PALO ALTO URBAN FORESTRY DEPARTMENT. AT (650) 496-5953 WITH ANY QUESTIONS.
3. EXCAVATION ACTIVITIES ASSOCIATED WITH THE PROPOSED SCOPE OF WORK SHALL OCCUR NO CLOSER THAN 10-FEET FROM THE EXISTING STREET TREE, OR AS APPROVED BY THE URBAN FORESTRY DIVISION CONTACT 650-496-5953. ANY CHANGES SHALL BE APPROVED BY THE SAME.
4. PROJECT ARBORIST:
   KATHERINE NAEGELE
   KATHERINE@ANDERSONTREECARE.COM
   PHONE: (408) 590-5976
5. NO FEASIBLE GREEN SCREEN OPPORTUNITIES EXIST

NOTES:

1. METAL SURFACES REQUIRING PAINT TO BE PAINTED WITH A MUNSELL RAL5.5GY2.76/2.1 PAINT.
2. ANY CONSTRUCTION WITHIN THE CITY'S PUBLIC ROAD RIGHT-OF-WAY SHALL HAVE AN APPROVED PERMIT FOR CONSTRUCTION IN THE PUBLIC STREET PRIOR TO COMMENCEMENT OF THIS WORK

TREE TABLE

PALO ALTO TREE #	CITY TREE ID:	SPECIES:	COMMON NAME:	GROW SPACE:	TRUNK DIA. AT BREAST HT.:	DRIP LINE:	DISTANCE TO CONST.	PROTECTION MEASURES REQUIRED
PALO ALTO TREE #1	1527	WASHINGTONIA FILIFERA	DESERT FAN PALM	MEDIAN	20 INCHES	20"x10= 16'-8"	CONST. WITHIN DRIP-LINE	YES, SEE TPR-1, TPR-2 SHEET
PALO ALTO TREE #2	1526	WASHINGTONIA FILIFERA	DESERT FAN PALM	MEDIAN	19 INCHES	19"x10= 15'-10"	CONST. WITHIN DRIP-LINE	YES, SEE TPR-1, TPR-2 SHEET



SITE PLAN

24"x36" SCALE: 3/32" = 1'-0"
11"x17" SCALE: 3/64" = 1'-0"
8' 4' 0" 8'

1

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SF PALO ALTO 164
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SHEET TITLE
SITE PLAN

SHEET NUMBER
A-1

EXISTING ROAD STRIPING, TYP.

EXISTING STREET LIGHT POLE, TYP.

R.O.W. LINE

60'-0" HALF WIDTH R.O.W.

EXISTING VAULT

OPEN SPACE PARKING AREA

1 / A-1.7

BUS STATION

120'-0" R.O.W.

ARBORETUM RD.

EXISTING PLANTER WITH GRASS

PROPOSED LOCATION OF VERIZON EQUIPMENT, ANTENNAS, RF & SHUT-DOWN SIGNAGE MOUNTED ON, PROPOSED 28'-6" A.G.L. LIGHT POLE #13/14

LINE OF CONSTRUCTION AREA

EXISTING 54" STORM DRAIN LINE

EXISTING STREET LIGHT CIRCUIT

EXISTING GRASS & LANDSCAPING, TYPICAL

EXISTING CONCRETE PAVED AREA (GUTTER, CURB, DRIVEWAY), TYP.

STOP

APN: 142-03-039
ARBORETUM ROAD
PALO ALTO

PENDING

EXISTING UTILITY SITE PLAN

24"x36" SCALE: 3/32" = 1'-0"
11"x17" SCALE: 3/64" = 1'-0"

8' 4' 0" 8'

1

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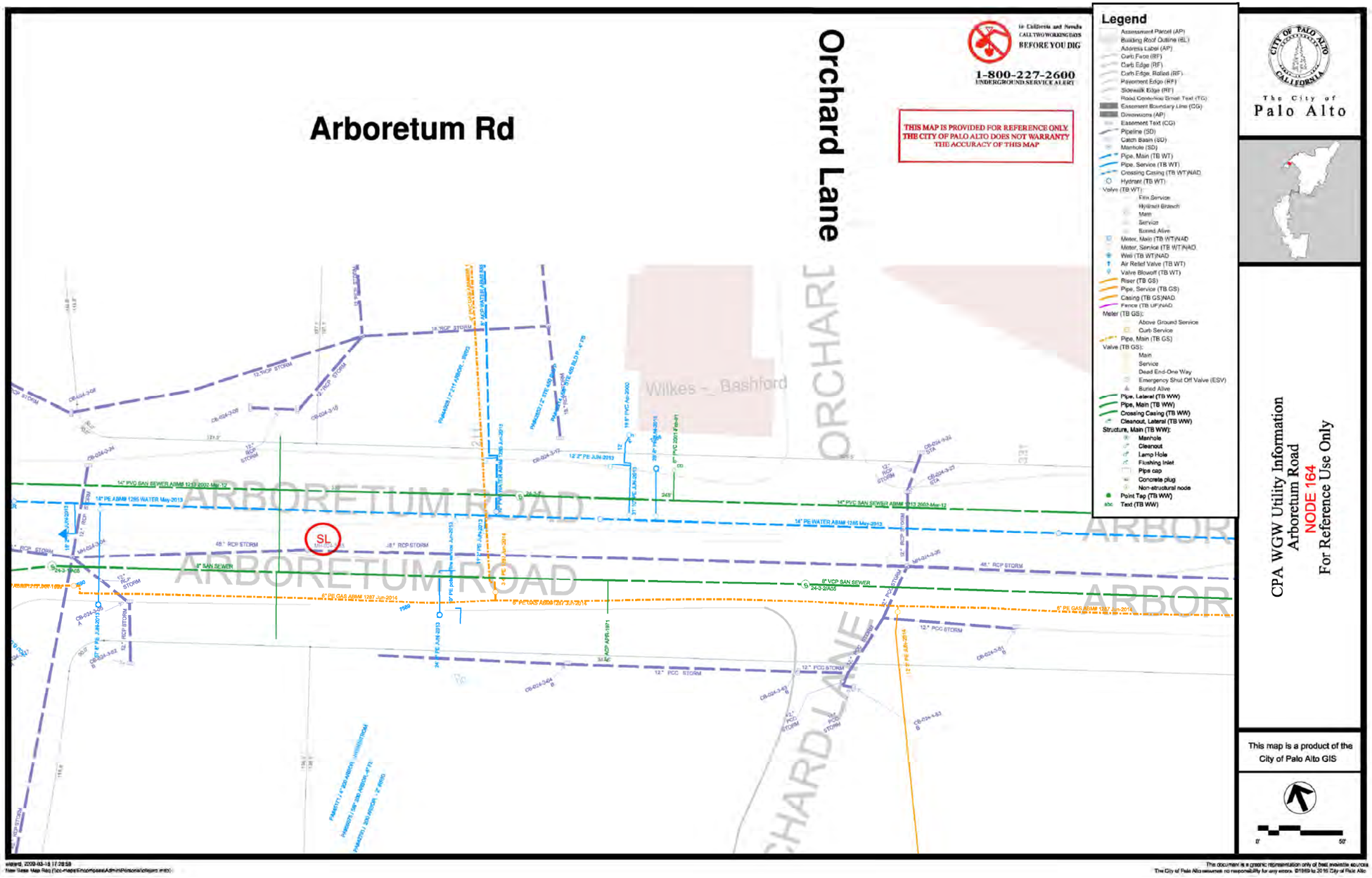
REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
EXISTING UTILITY SITE PLAN

SHEET NUMBER
A-1.1



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OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

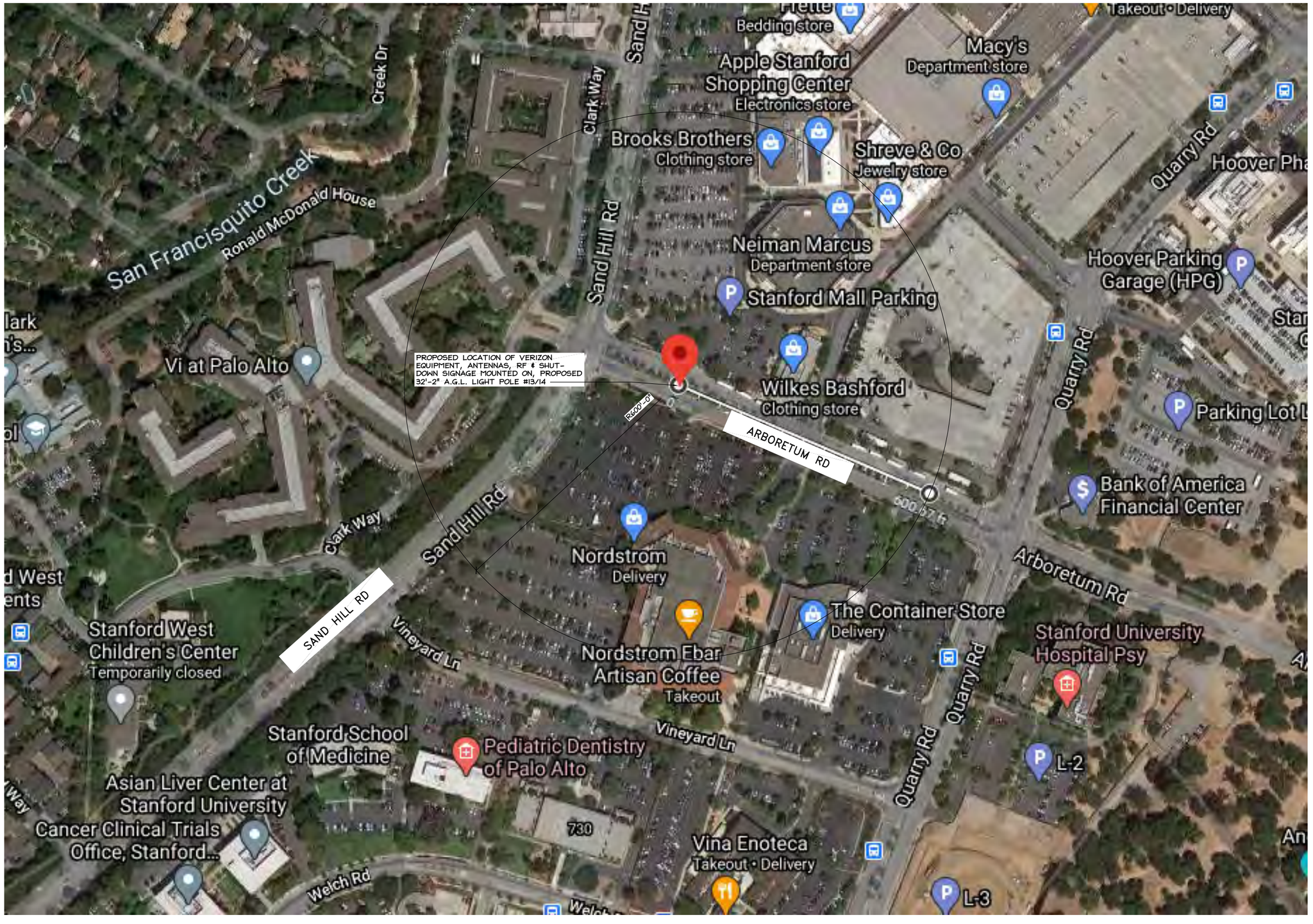
REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
UTILITY PLAN
(FOR REFERENCE)

SHEET NUMBER
A-1.2



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

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SF PALO ALTO 164
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LOCATION CODE: 425268

SHEET TITLE
LOCATION MAP

SHEET NUMBER
A-1.3

1. ALL WORK SHALL COMPLY WITH THE CITY OF PALO ALTO 2018 STANDARD DRAWINGS AND SPECIFICATIONS BORING, TRENCHING, POTHOLING AND DEWATERING, SECTION 17
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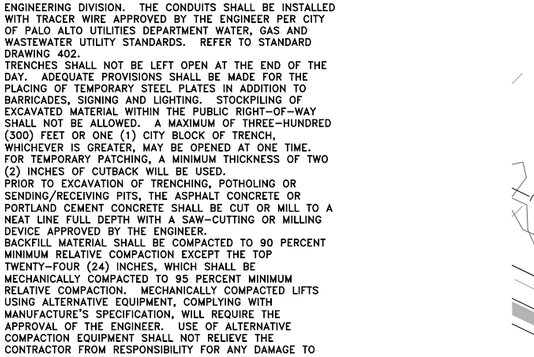
4. BACKFILL SHALL BE SAND OR GRANULAR MATERIAL FALLING WITHIN THE LIMITS DESCRIBED IN THE STANDARD DRAWING 401. AGGREGATE BASE, ASPHALT CONCRETE, PORTLAND CEMENT CONCRETE SHALL CONFORM TO THE REQUIREMENTS WITHIN THESE SPECIFICATIONS.
5. THE CONTRACTOR SHALL INSTALL THE CONDUIT IN ACCORDANCE WITH THE APPROVED STREET WORK PERMIT. ALL CONDUITS SHALL BE INSTALLED UNDERGROUND USING DIRECTIONAL BORING METHOD. MICRO-TUNNELING OR OTHER METHODS SHALL BE APPROVED BY THE PUBLIC WORKS ENGINEERING DIVISION. THE CONDUITS SHALL BE INSTALLED WITH TRACER WIRE APPROVED BY THE ENGINEER PER CITY OF PALO ALTO UTILITIES DEPARTMENT WATER, GAS AND WASTEWATER UTILITY STANDARDS. REFER TO STANDARD DRAWING 402.
6. TRENCHES SHALL NOT BE LEFT OPEN AT THE END OF THE DAY. ADEQUATE PROVISIONS SHALL BE MADE FOR THE PLACING OF TEMPORARY STEEL PLATES IN ADDITION TO BARRICADES, SIGNING AND LIGHTING. STOCKPILING OF EXCAVATED MATERIAL WITHIN THE PUBLIC RIGHT-OF-WAY SHALL NOT BE ALLOWED. A MAXIMUM OF THREE-HUNDRED (300) FEET OR ONE (1) CITY BLOCK OF TRENCH, WHICHEVER IS GREATER, MAY BE OPENED AT ONE TIME. FOR TEMPORARY PATCHING, A MINIMUM THICKNESS OF TWO (2) INCHES OF CUTBACK WILL BE USED.
7. PRIOR TO EXCAVATION OF TRENCHING, POTHOLING OR SENDING/RECEIVING PITS, THE ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE SHALL BE CUT OR MILL TO A NEAT LINE FULL DEPTH WITH A SAW-CUTTING OR MILLING DEVICE APPROVED BY THE ENGINEER.
8. BACKFILL MATERIAL SHALL BE COMPACTED TO 90 PERCENT MINIMUM RELATIVE COMPACTION EXCEPT THE TOP TWENTY-FOUR (24) INCHES, WHICH SHALL BE MECHANICALLY COMPACTED TO 95 PERCENT MINIMUM RELATIVE COMPACTION. MECHANICALLY COMPACTED LIFTS USING ALTERNATIVE EQUIPMENT, COMPLYING WITH MANUFACTURE'S SPECIFICATION, WILL REQUIRE THE APPROVAL OF THE ENGINEER. USE OF ALTERNATIVE COMPACTION EQUIPMENT SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ANY DAMAGE TO THE CONDUIT, SURROUNDING GROUND, OR EXISTING AND NEW IMPROVEMENTS.

(2) NOTES

Sawcutting & Asphalt/Concrete Removal

- ☐ Protect storm drain inlets during saw cutting.
- ☐ If saw cut slurry enters a catch basin, clean it up immediately.
- ☐ Shovel or vacuum saw cut slurry deposits and remove from the site. When making saw cuts, use as little water as possible. Sweep up, and properly dispose of all residues.



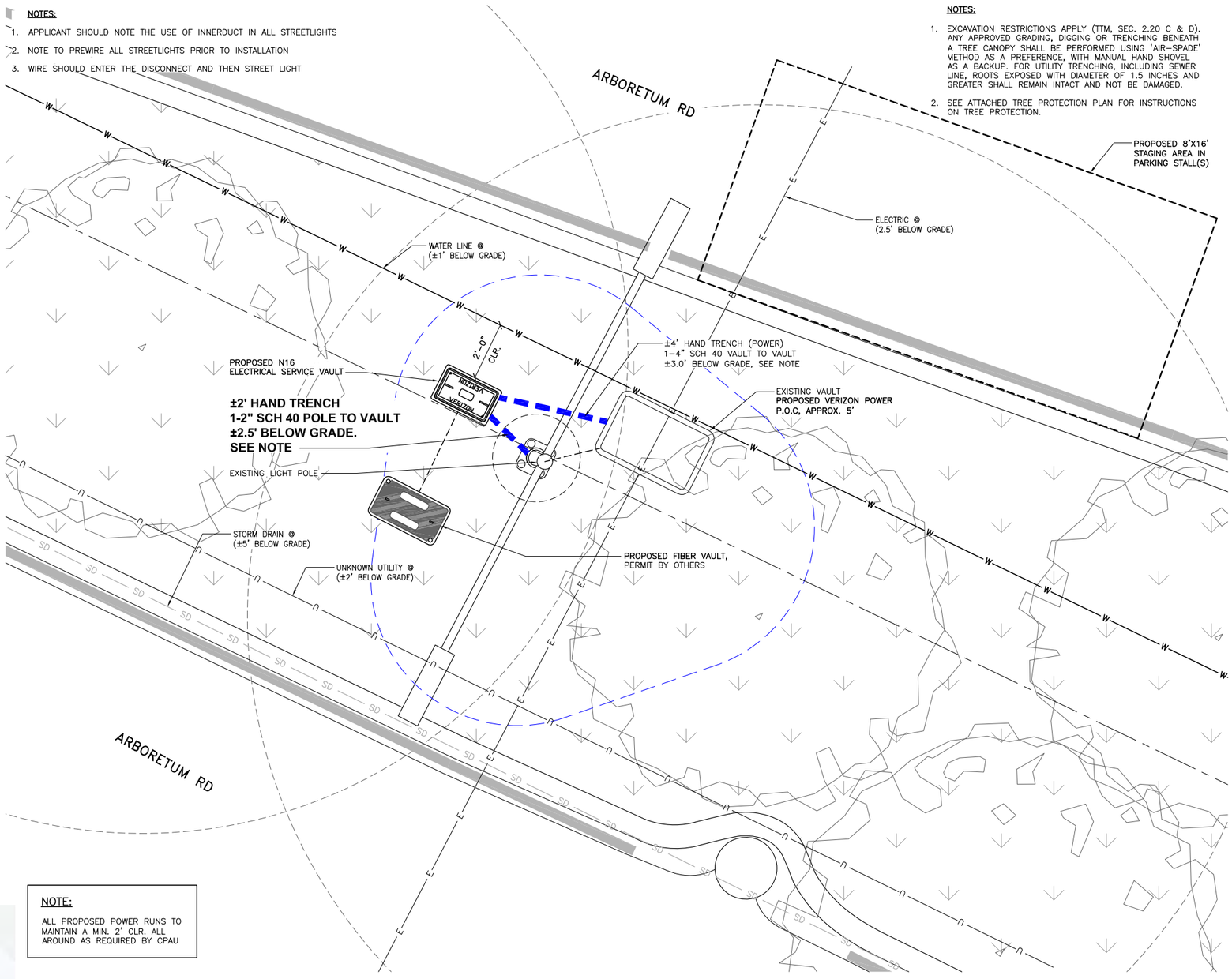
VICINITY MAP

NOTES:

1. APPLICANT SHOULD NOTE THE USE OF INNERDUCT IN ALL STREETLIGHTS
2. NOTE TO PREWIRE ALL STREETLIGHTS PRIOR TO INSTALLATION
3. WIRE SHOULD ENTER THE DISCONNECT AND THEN STREET LIGHT

NOTES:

1. EXCAVATION RESTRICTIONS APPLY (TTM, SEC. 2.20 C & D). ANY APPROVED GRADING, DIGGING OR TRENCHING BENEATH A TREE CANOPY SHALL BE PERFORMED USING 'AIR-SPADE' METHOD AS A PREFERENCE, WITH MANUAL HAND SHOVEL AS A BACKUP. FOR UTILITY TRENCHING, INCLUDING SEWER LINE, ROOTS EXPOSED WITH DIAMETER OF 1.5 INCHES AND GREATER SHALL REMAIN INTACT AND NOT BE DAMAGED.
2. SEE ATTACHED TREE PROTECTION PLAN FOR INSTRUCTIONS ON TREE PROTECTION.



NOTE:

ALL PROPOSED POWER RUNS TO MAINTAIN A MIN. 2' CLR. ALL AROUND AS REQUIRED BY CPAU

(1) LIGHT POLE
1/2" = 1 ft.

2' 1' 0" 2'

PROJECT SPECIFIC PERMIT INFORMATION		
DESCRIPTION	QTY	UNIT
PLACE (1) 4" SCH 40 CONDUIT	4	LF
PLACE (1) 2" SCH 40 CONDUIT	2	LF
REMOVE AND RESTORE SOIL	0	FT³

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N W E S

LEGEND

U.G. UTILITY VAULT	BOL	BOLLARD	FL	FLOW LINE	W WATER
MANHOLE	TOP _	TOP OF ITEM	EOP	EDGE OF PAVEMENT	SS SANITARY SEWER
UTILITY POLE	BOT _	BOTTOM OF ITEM	R.O.W.	RIGHT OF WAY	SD STORM DRAIN
SPOT ELEVATION	BLDG	TOP OF BUILDING	AP	ASPHALT	G GAS
WATER VALVE	LP	LIGHT POLE	SW	SIDEWALK	C COMMUNICATION
FOUND MONUMENT	LIMITS OF PROPERTY		O/H	OVERHEAD LINE	E ELECTRIC
GEODETIC MARKER	CHAIN LINK FENCE			METAL FENCE	U UNKNOWN UTILITY
MASONRY WALL	WOOD FENCE			GRADE BREAK	IRR IRRIGATION

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ALLSTATES ENGINEERING & SURVEYING
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
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REGISTERED PROFESSIONAL ENGINEER
WISAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
PUBLIC R.O.W. ADJACENT TO:
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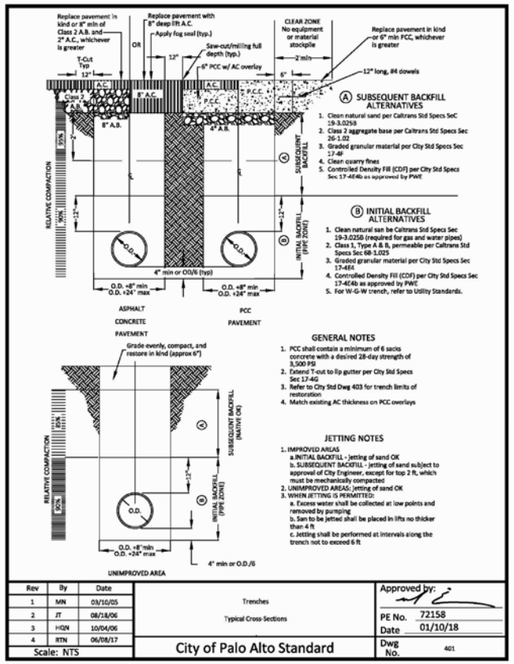
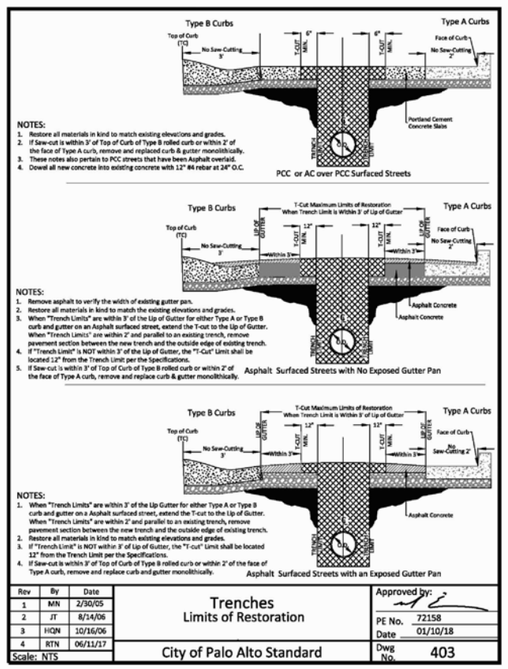
LOCATION CODE: 425268

SHEET TITLE
BORING SITE PLAN

SHEET NUMBER
A-1.4



7 CITY STANDARD DWG 401
N.T.S.



6 CITY STANDARD DWG 403
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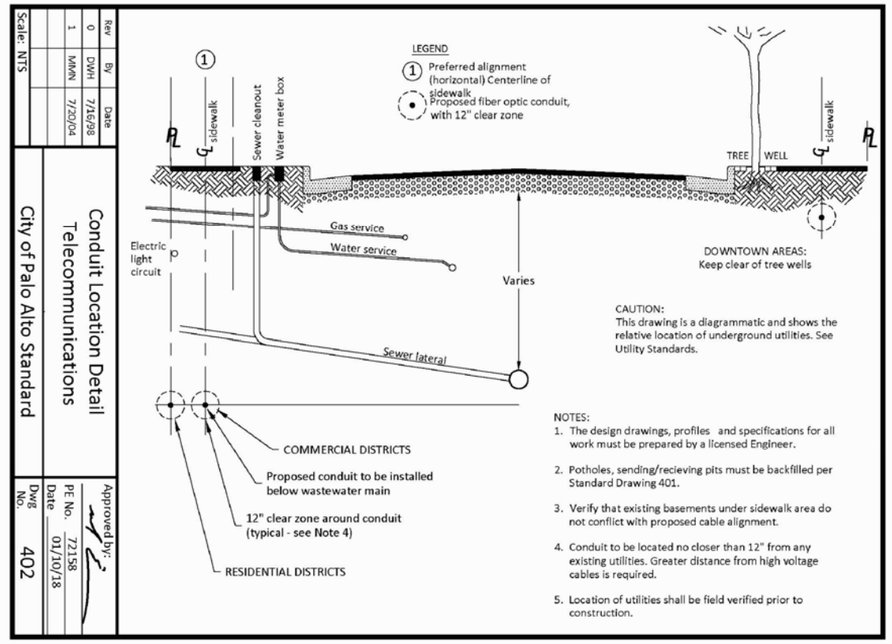
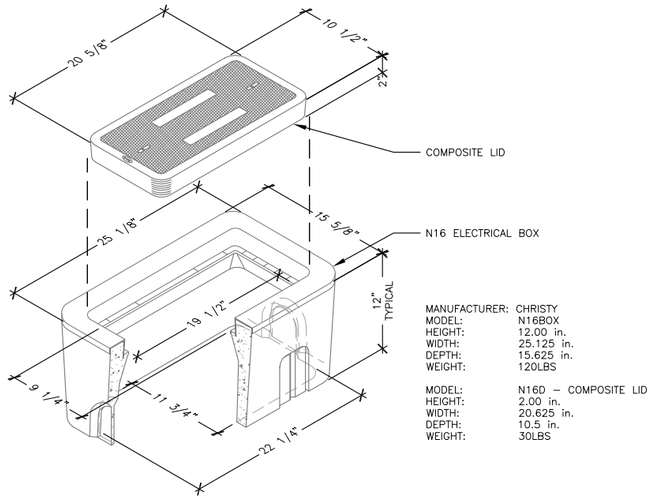
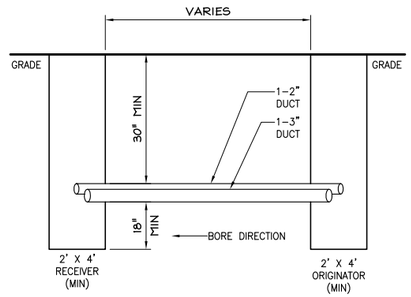


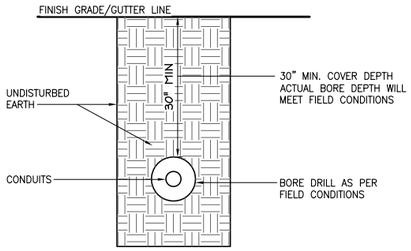
5 CITY STANDARD DWG 402
N.T.S.



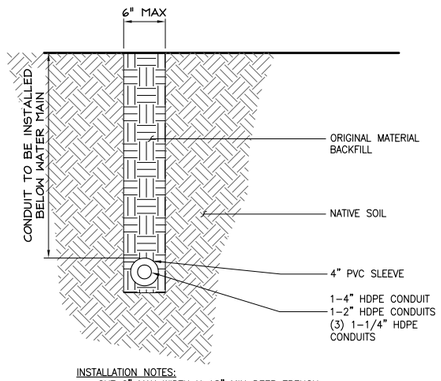
4 CHRISTY N16 ELECTRICAL BOX
N.T.S.



3 BORE PIT & RECEIVER PIT
N.T.S.



DIRECTION BORE MEHOD
2 CROSS SECTION – PRIVATE
N.T.S.



INSTALLATION NOTES:
- CUT 6" MAX WIDTH X 18" MIN DEEP TRENCH
- BACKFILL WITH THE ORIGINAL MATERIAL FROM THE TRENCH
- RESTORE SURFACE BACK TO ORIGINAL

1 IN DIRT – PRIVATE
N.T.S.

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ALLSTATES ENGINEERING & SURVEYING
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630

PROJECT ID:	P–334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
A	10/12/2020	PRELIMINARY BORING PLAN	SS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
PUBLIC R.O.W. ADJACENT TO:
ARBORETUM RD
PALO ALTO, CA 94304
LOCATION CODE: 425268

SHEET TITLE
CITY STANDARDS & DETAILS

SHEET NUMBER
A-1.5

- Grade fills over 6-inches or impervious overlay shall incorporate an approved permanent aeration system, permeable material or other approved mitigation.
- Grade cuts exceeding 4-inches shall incorporate retaining walls or an appropriate transition equivalent.

notes:

Required Practices

C. Trenching, Excavation and Equipment Use

Trenching, excavation or boring activity within the TPZ is restricted to the following activities, conditions and requirements if approved by the *City Arborist*. *(See Restriction Zones for Excavation, Trenching or Boring Near Regulated Trees, Image 2.20-1 through 2.20-3)*. Mitigating measures shall include prior notification to and direct supervision by the *project arborist*.

1. Notification. Contractor shall notify the *project arborist* a minimum of 24 hours in advance of the activity in the TPZ.
2. Root Severance. Roots that are encountered shall be cut to sound wood and repaired (*see Root Injury, Section 2.25 A-1*). Roots 2-inches and greater must remain injury free.
3. Excavation. Any approved excavation, demolition or extraction of material shall be performed with equipment sitting outside the TPZ. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology. Avoid excavation within the TPZ during hot, dry weather.
   - If excavation or *trenching* for drainage, utilities, irrigation lines, etc., it is the duty of the contractor to tunnel under any roots 2-inches in diameter and greater.
   - Prior to excavation for foundation/footings/walls, grading or *trenching* within the TPZ, roots shall first be severed cleanly 1-foot outside the TPZ and to the depth of the future excavation. The trench must then be hand dug and roots pruned with a saw, sawzall, narrow trencher with sharp blades or other approved root pruning equipment.
4. Heavy Equipment. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited unless approved by the *City Arborist*. If allowed, a protective *root buffer* (*see Root Buffer and Damage to Trees, Section 2.25.A-1*) is required. The protective buffer shall consist of a base course of tree chips spread over the root area to a minimum of 6-inch depth, layered by 3/4-inch quarry gravel to stabilize 3/4-inch plywood on top. This buffer within the TPZ shall be maintained throughout the entire construction process.
   - Structural design. If injurious activity or interference with roots greater than 2-inches will occur within the TPZ, plans shall specify a design of special foundation, footing, walls, concrete slab or pavement designs subject to *City Arborist* approval. Discontinuous foundations such as concrete pier and structural grade beam must maintain natural grade (not to exceed a 4-inch cut), to minimize root loss and allow the tree to use the existing soil.

- Basement excavations shall be designed outside the TPZ of all *protected* and *designated trees* (*see Excavation, Section 2.20-3*) and shall not be harmful to other mature or neighboring property trees.

notes:

Required Practices

D. Tunneling & Directional Drilling

If *trenching* or pipe installation has been approved within the TPZ, then the trench shall be either cut by hand, air-spade, hydraulic vac-on excavation or, by mechanically boring the tunnel under the roots with a horizontal directional drill and hydraulic or pneumatic air excavation technology. In all cases, install the utility pipe immediately, backfill with soil and soak within the same day. Installation of private utility improvements shall be tunnel bored beneath the tree and roots per *Trenching Tunneling & Distance Matrix* In Table 2-1.

TABLE 2-1
Trenching & Tunneling Distance

TRENCHING DISTANCE

When the Tree Diameter At 4.5 Ft Is:	Trenching will be Replaced with Boring at this Minimum Distance (10x tree dia.) from the Face of the Tree in any Direction:
6-9" Measured At 6" à	6-9'
10-14" Measured At 54" à	10-14'
15-19" Measured At 54" à	15-19'
Over 19" Measured At 54" à	20' +

DEPTH OF TUNNELING

Tree Diameter	Depth of Tunneling
9" Or Less Measured At 6" à	2.5'
10-14" Measured At 54" à	3.0'
15-19" Measured At 54" à	3.5'
More Than 19" Measured At 54" Depth of Tunnel à	4.0'

Bore Pits Shall Be Located At A Minimum Distance As Specified By The Trenching Distance Table Above.

1. Public Utilities
   Underground public utility improvements or repairs shall be performed in accordance with the *Utility Standards for Excavation, Trenching or Boring, Section 02200.309*; and per *Restriction Zones Near Regulated Trees (see Images 2.20-1 through 2.20-3)*.
2. Street Trees
   Exclusions for *street trees* in the publicly owned right-of-way (ROW).
   - *Street Trees* that are in conflict with utility infrastructure where the conflict cannot be resolved may be removed if approved by Public Works Operations (e.g., a tree planted directly on top of a damaged sewer lateral.)

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23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630

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REV	DATE	DESCRIPTION	
A	10/12/2020	PRELIMINARY BORING PLAN	SS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
PUBLIC R.O.W. ADJACENT TO:
ARBORETUM RD
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LOCATION CODE: 425268

SHEET TITLE
CITY STANDARDS & DETAILS

SHEET NUMBER
A-1.6

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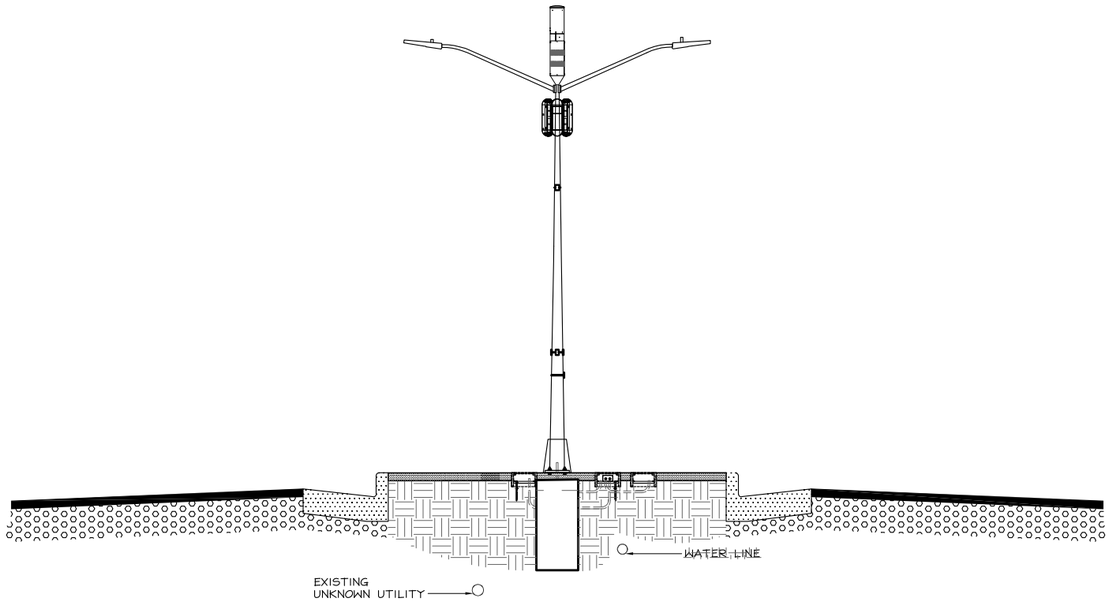
8. BACKFILL MATERIAL SHALL BE COMPACTED TO 90 PERCENT MINIMUM RELATIVE COMPACTION EXCEPT THE TOP TWENTY-FOUR (24) INCHES, WHICH SHALL BE MECHANICALLY COMPACTED TO 95 PERCENT MINIMUM RELATIVE COMPACTION. MECHANICALLY COMPACTED LIFTS USING ALTERNATIVE EQUIPMENT, COMPLYING WITH MANUFACTURE'S SPECIFICATION, WILL REQUIRE THE APPROVAL OF THE ENGINEER. USE OF ALTERNATIVE COMPACTION EQUIPMENT SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ANY DAMAGE TO THE CONDUIT, SURROUNDING GROUND, OR EXISTING AND NEW IMPROVEMENTS.

2 NOTES



1 R.O.W SECTION
NTS

Sawcutting & Asphalt/Concrete Removal

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REGISTERED PROFESSIONAL ENGINEER
NISSAN ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
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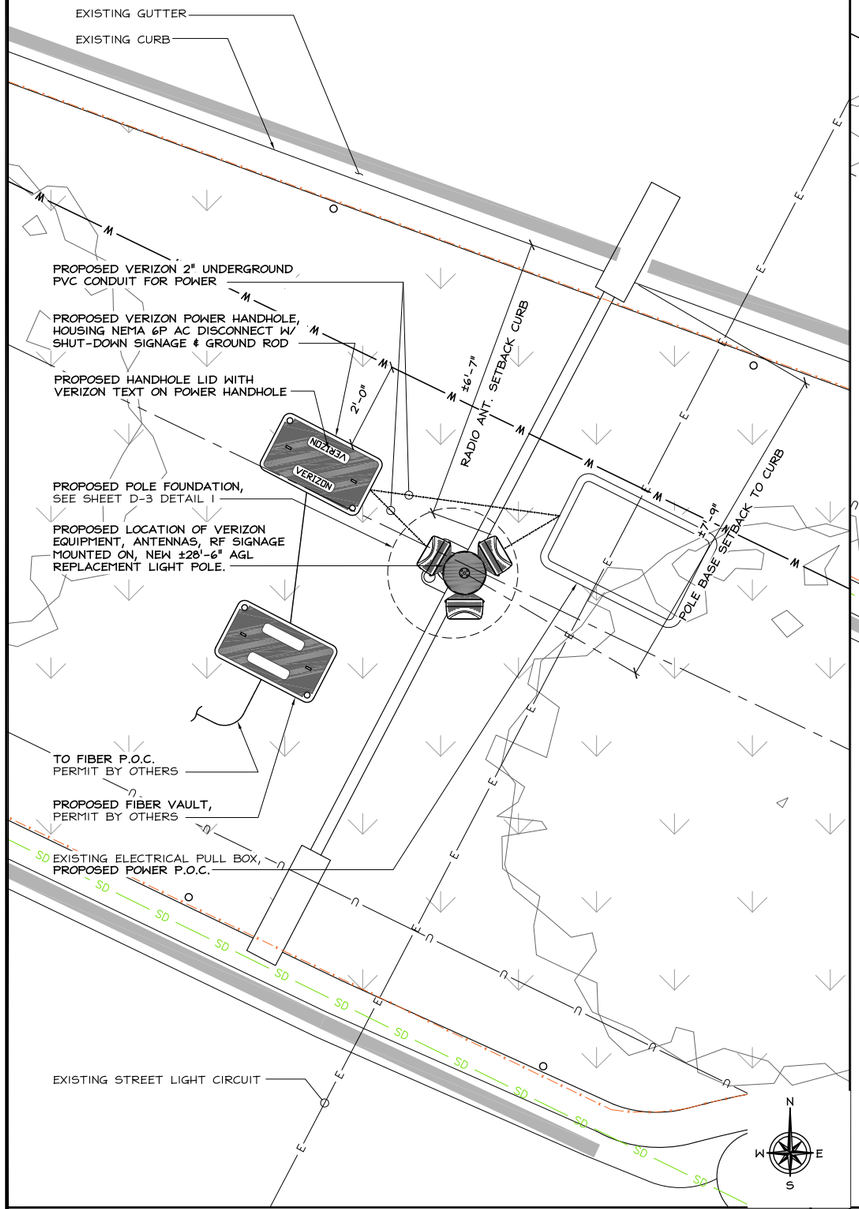
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
R.O.W. SECTION

SHEET NUMBER
A-1.7

NOTES:

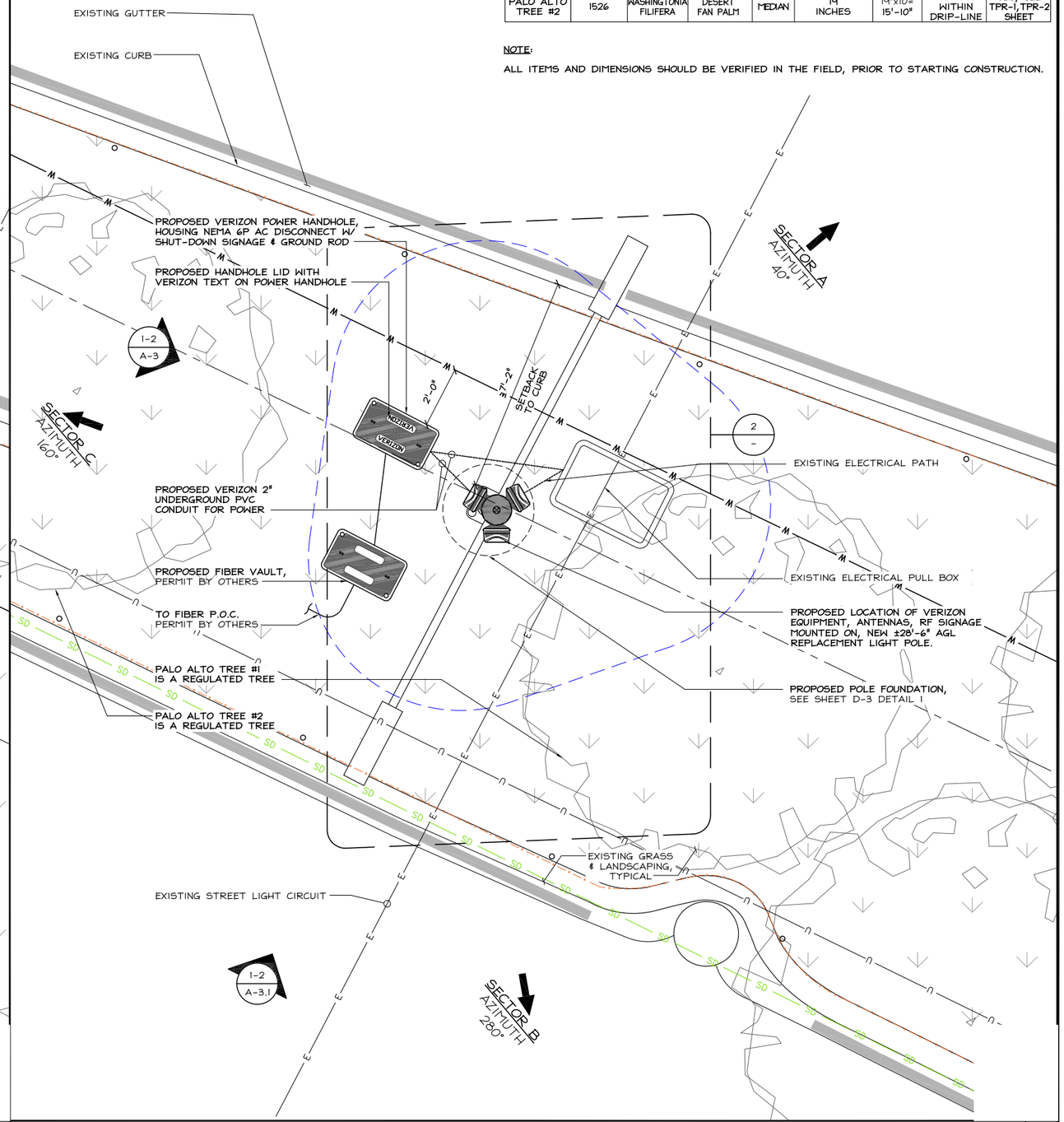
1. METAL SURFACES REQUIRING PAINT TO BE PAINTED MUNSELL GREEN.
2. THE CONTRACTOR MAY BE REQUIRED TO SUBMIT A LOGISTICS PLAN TO THE PUBLIC WORKS DEPARTMENT PRIOR TO COMMENCING WORK THAT ADDRESSES ALL IMPACTS TO THE CITY'S RIGHT-OF-WAY, INCLUDING, BUT NOT LIMITED TO: PEDESTRIAN CONTROL, TRAFFIC CONTROL, TRUCK ROUTES, MATERIAL DELIVERIES, CONTRACTOR'S PARKING, CONCRETE POURS, CRANE LIFTS, WORK HOURS, NOISE CONTROL, DUST CONTROL, STORM WATER POLLUTION PREVENTION, CONTRACTOR'S CONTACT, NOTICING OF AFFECTED SURROUNDING PROPERTIES , AND SCHEDULE OF WORK. THE REQUIREMENT TO SUBMIT A LOGISTICS PLAN WILL BE DEPENDENT ON THE NUMBER OF APPLICATIONS PUBLIC WORKS ENGINEERING RECEIVES WITHIN CLOSE PROXIMITY TO HELP MITIGATE AND CONTROL THE IMPACT TO THE PUBLIC-RIGHT-OF-WAY. IF NECESSARY, PUBLIC WORKS MAY REQUIRE A LOGISTICS PLAN DURING CONSTRUCTION.
3. TREES MAY NOT BE PLANTED WITHIN 10 FEET OF EXISTING WATER, GAS OR WASTEWATER MAINS/SERVICES OR METERS; LESSER DISTANCES REQUIRE A PERMANENT IMPERMEABLE ROOT-BARRIER A MINIMUM OF 3' HORIZONTAL FROM WATER, GAS AND WASTEWATER SERVICES/MAINS/METERS.



ENLARGED SITE PLAN

24"x36" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"
2' 1' 0" 2'

2



ENLARGED SITE PLAN

24"x36" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"
2' 1' 0" 2'

1

TREE TABLE

PALO ALTO TREE #	CITY TREE ID:	SPECIES:	COMMON NAME:	GROW SPACE:	TRUNK DIA. AT BREAST HT.:	DRIP LINE:	DISTANCE TO CONST.	PROTECTION MEASURES REQUIRED
PALO ALTO TREE #1	1527	WASHINGTONIA FILIFERA	DESERT FAN PALM	MEDIAN	20 INCHES	20"x10= 16'-8"	CONST. WITHIN DRIP-LINE	YES, SEE TPR-1, TPR-2 SHEET
PALO ALTO TREE #2	1526	WASHINGTONIA FILIFERA	DESERT FAN PALM	MEDIAN	19 INCHES	19"x10= 15'-10"	CONST. WITHIN DRIP-LINE	YES, SEE TPR-1, TPR-2 SHEET

NOTE:

ALL ITEMS AND DIMENSIONS SHOULD BE VERIFIED IN THE FIELD, PRIOR TO STARTING CONSTRUCTION.

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

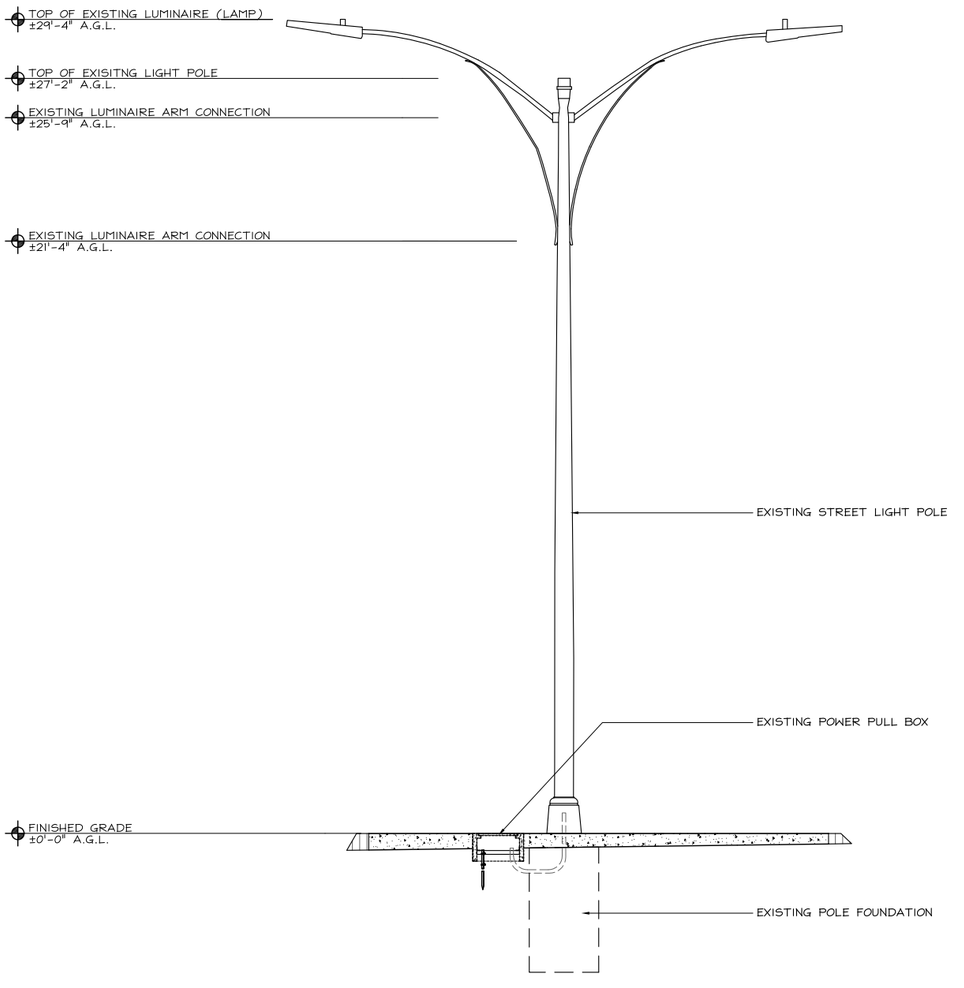
REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
HASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
ENLARGED SITE PLAN

SHEET NUMBER
A-2



EXISTING SOUTHEAST ELEVATION

24"x36" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"

2' 1' 0" 2'

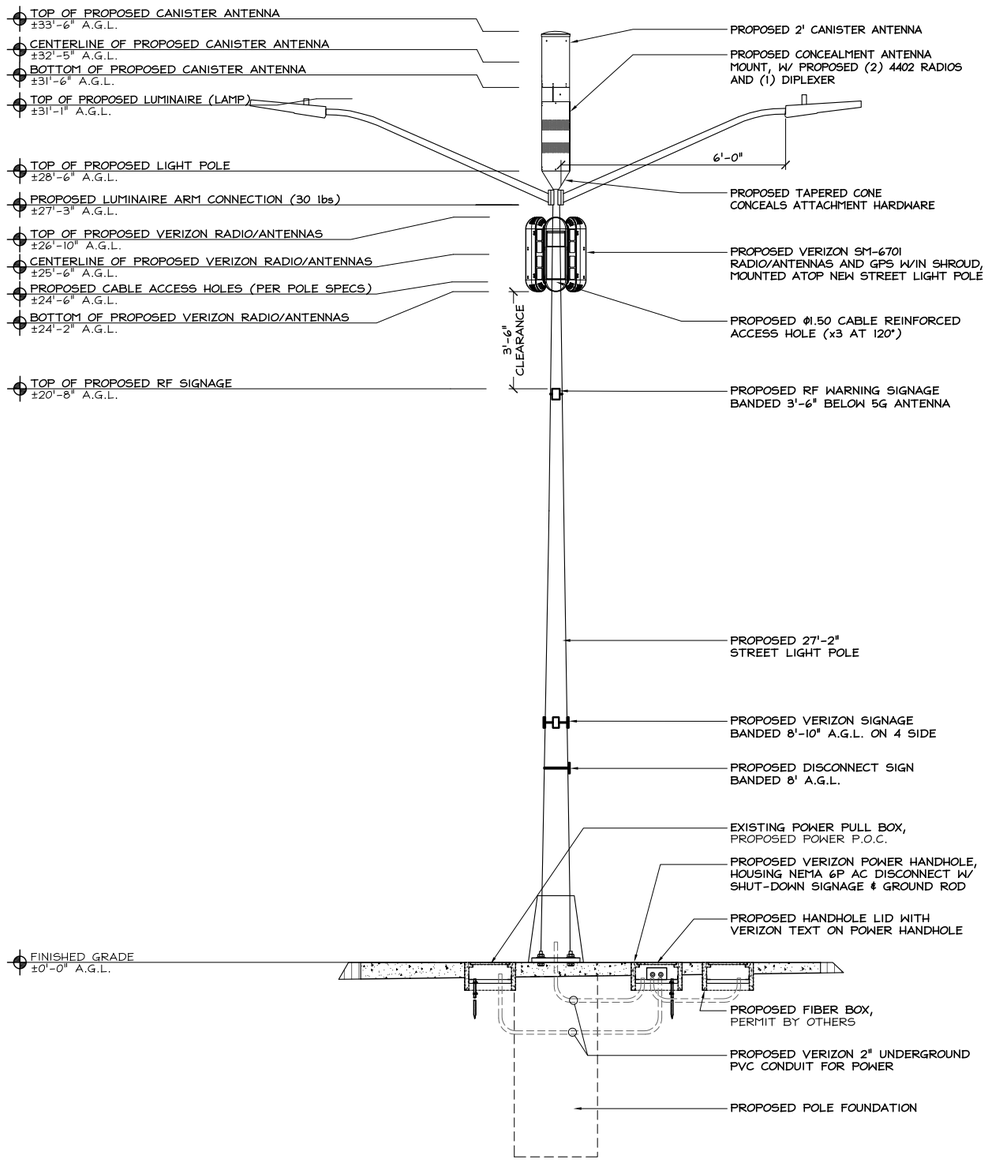
2

NOTES:

1. NEW GALVANIZED LIGHT POLE TO BE PAINTED WITH MUNSELL RAL5.5GY2.76/2.1 PAINT.
2. NEW RADIOS AND HARDWARE TO BE PAINTED MUNSELL RAL5.5GY2.76/2.1 OR WRAPPED AS ALLOWED BY THE MANUFACTURER.
3. ALL CABLE/WIRE BETWEEN THE POLE ACCESS HOLE AND THE SHROUD GROMMET HOLE WILL RUN TROUGH 1.5" CONDUIT PAINTED/COLORED TO MATCH POLE COLOR.

TOTAL ANETNNA/SHROUD VOLUME (CU. FT.)

MODEL	TOTAL	TOTAL VOLUME (CU. FT.)
COMMSCOPE	1	±4.41
COMTEK	3	±3.3



PROPOSED SOUTHEAST ELEVATION

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11"x17" SCALE: 1/4" = 1'-0"

2' 1' 0" 2'

1

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Vinculums

575 LENNON LANE #125
WALNUT CREEK, CA 94598
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ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY

23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

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CHECKED BY:	DW

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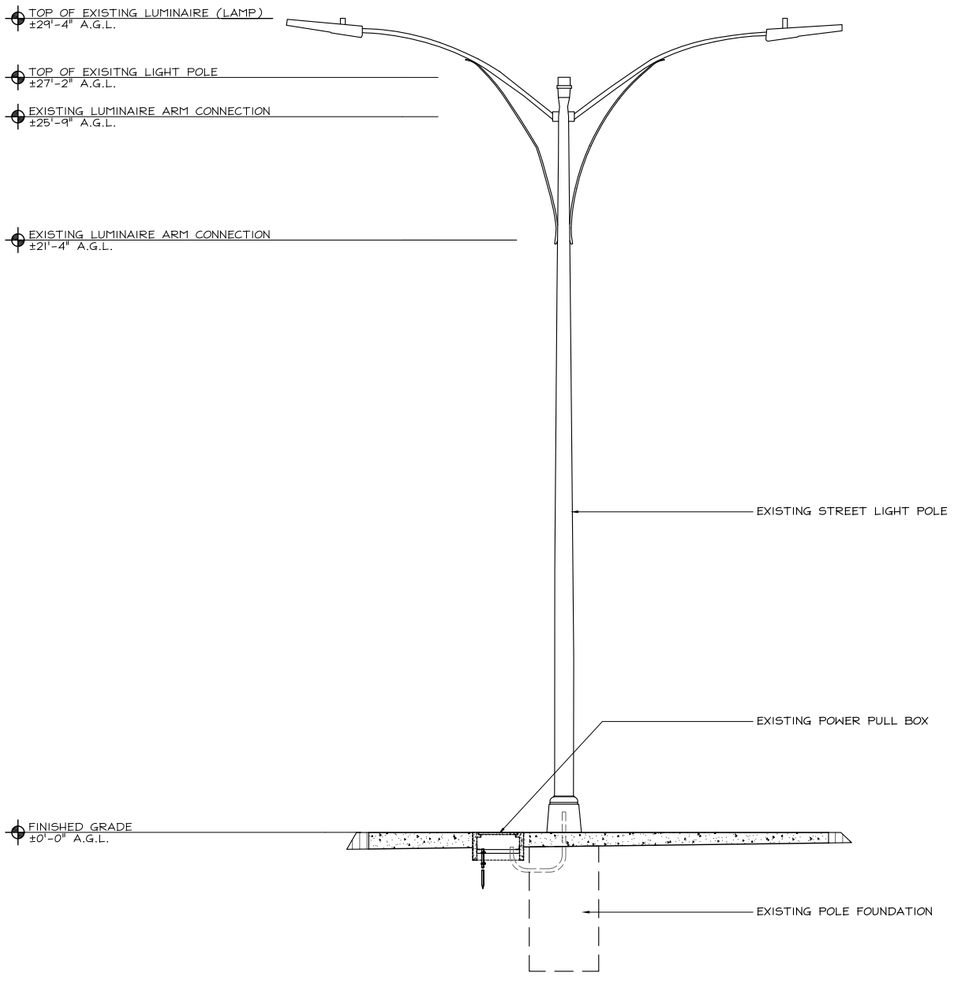
REGISTERED PROFESSIONAL ENGINEER
WASSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
ELEVATIONS W/ SHROUD

SHEET NUMBER
A-3



EXISTING SOUTHEAST ELEVATION

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11"x17" SCALE: 1/4" = 1'-0"
2' 1' 0" 2'

2

NOTES:

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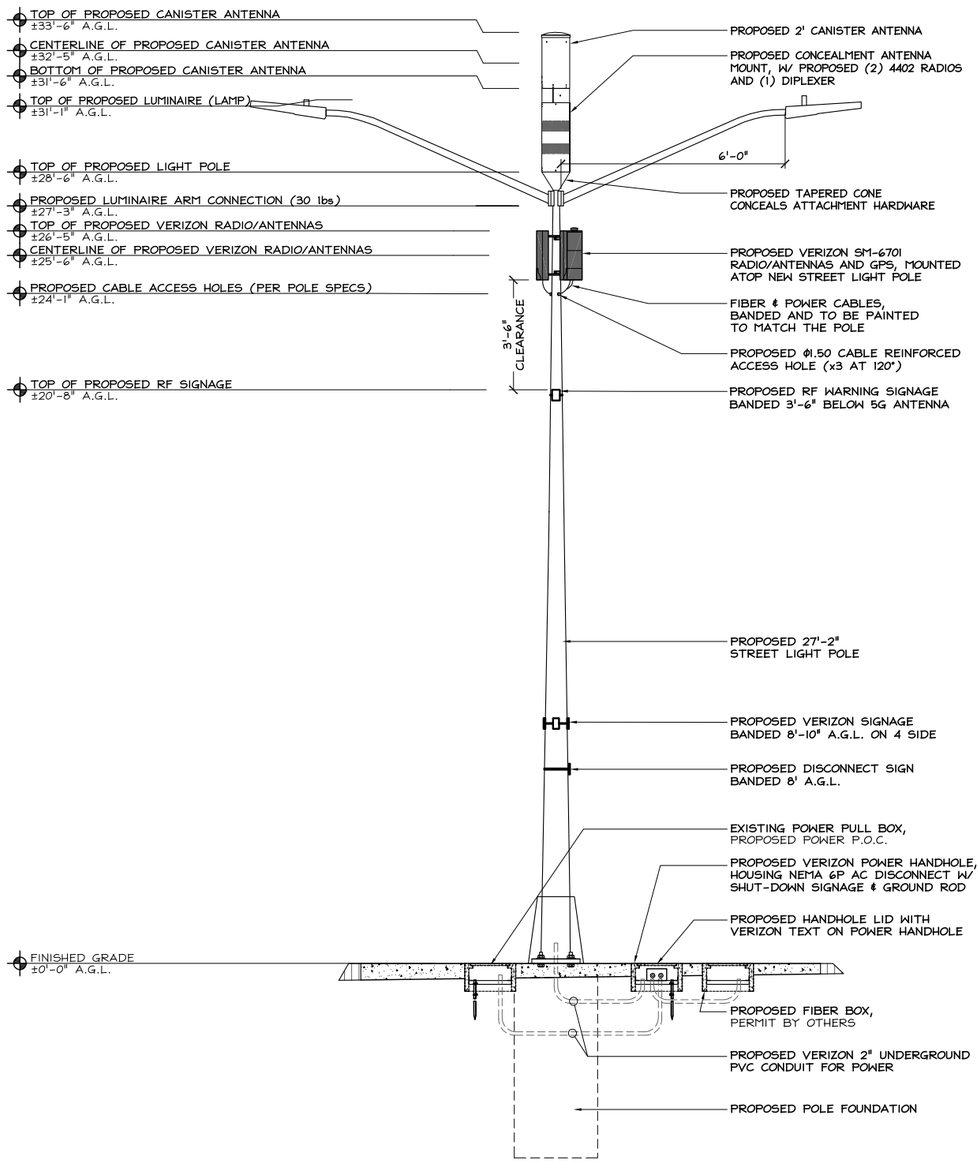
3. ALL CABLE/WIRE BETWEEN THE POLE ACCESS HOLE AND THE ANTENNA PAINTED/COLORED TO MATCH POLE COLOR.

TOTAL ANETNNA/SHROUD VOLUME (CU. FT.)

MODEL	TOTAL	TOTAL VOLUME (CU. FT.)
COMMSCOPE	1	±4.41
6701	3	±1.53



PROPOSED SOUTHEAST ELEVATION

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2' 1' 0" 2'

1

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

Vinculums
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ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
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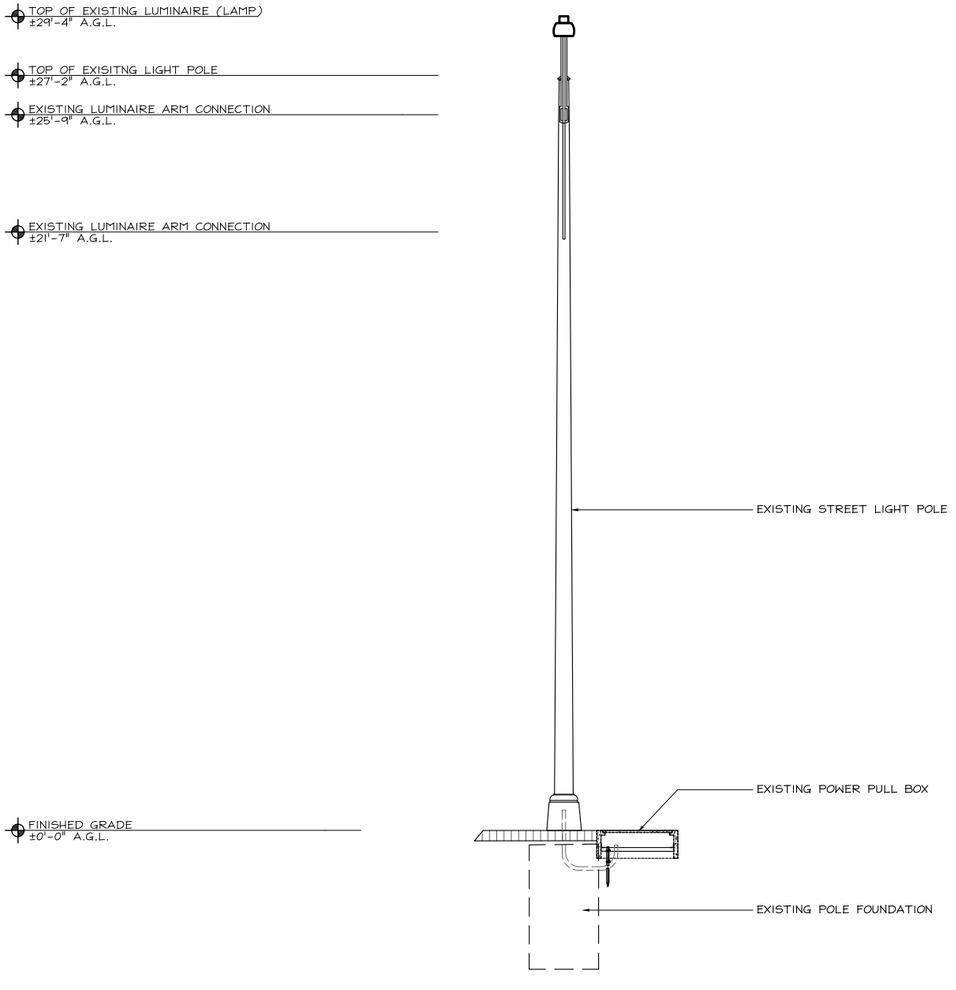
SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
ELEVATIONS
WITHOUT SHROUD

SHEET NUMBER
A-3A



EXISTING SOUTHEAST ELEVATION

24"x36" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"

2 2' 1' 0" 2'

NOTES:

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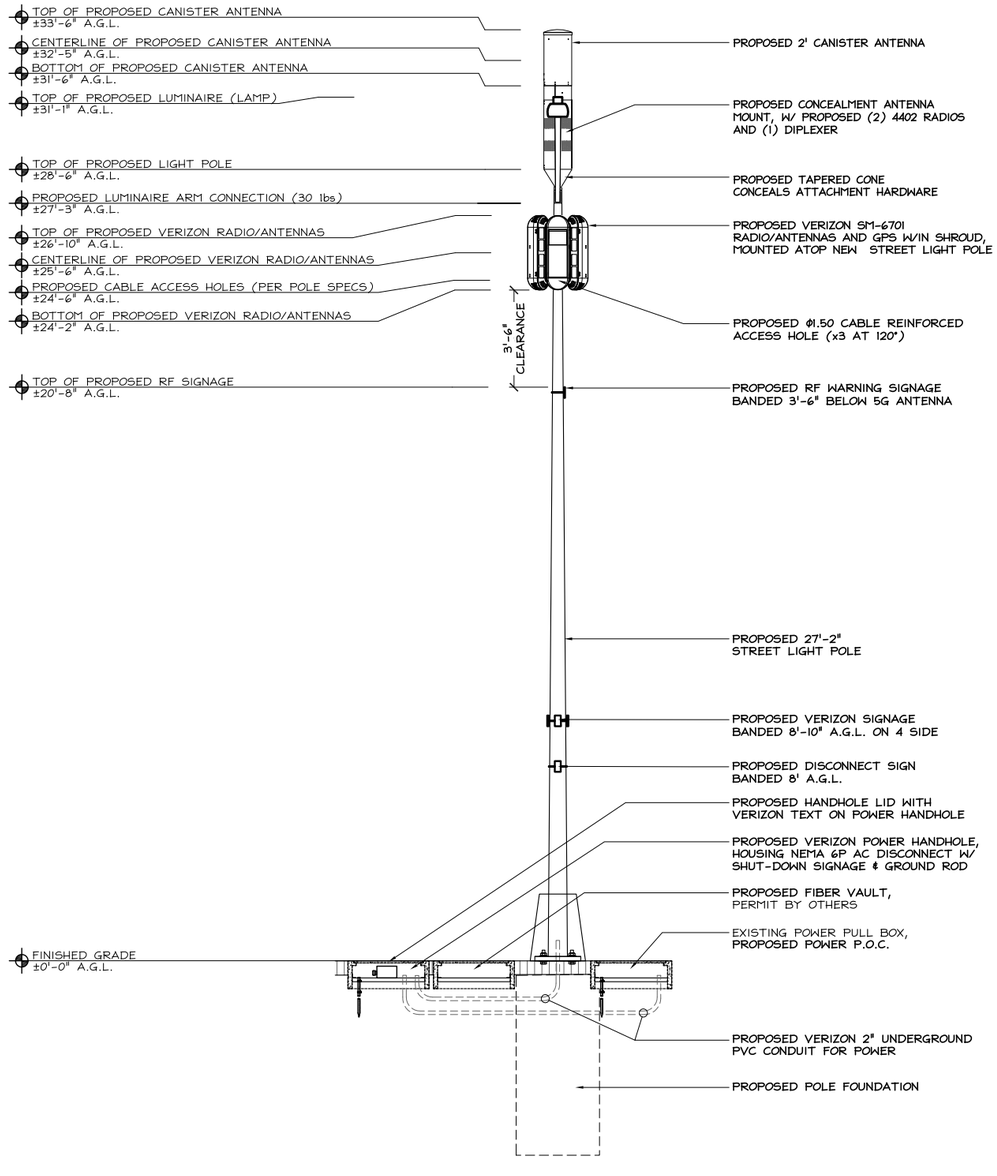

PROPOSED SOUTHEAST ELEVATION

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1

verizon
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REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
ELEVATIONS W/ SHROUD

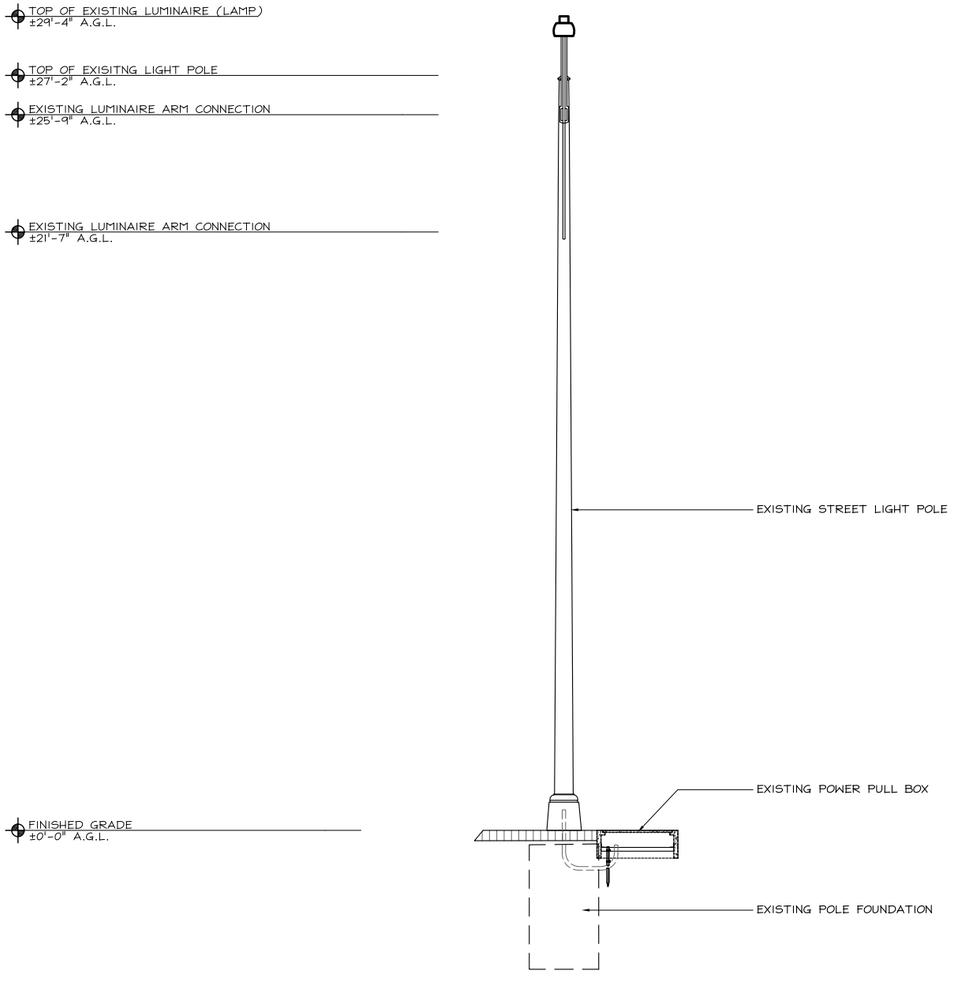
SHEET NUMBER
A-3.1

NOTES:

1. NEW GALVANIZED LIGHT POLE TO BE PAINTED WITH MUNSELL RAL5.5GY2.76/2.1 PAINT.
2. NEW RADIOS AND HARDWARE TO BE PAINTED MUNSELL RAL5.5GY2.76/2.1 OR WRAPPED AS ALLOWED BY THE MANUFACTURER.
3. ALL CABLE/WIRE BETWEEN THE POLE ACCESS HOLE AND THE ANTENNA PAINTED/COLORED TO MATCH POLE COLOR.

TOTAL ANETNNA/SHROUD VOLUME (CU. FT.)

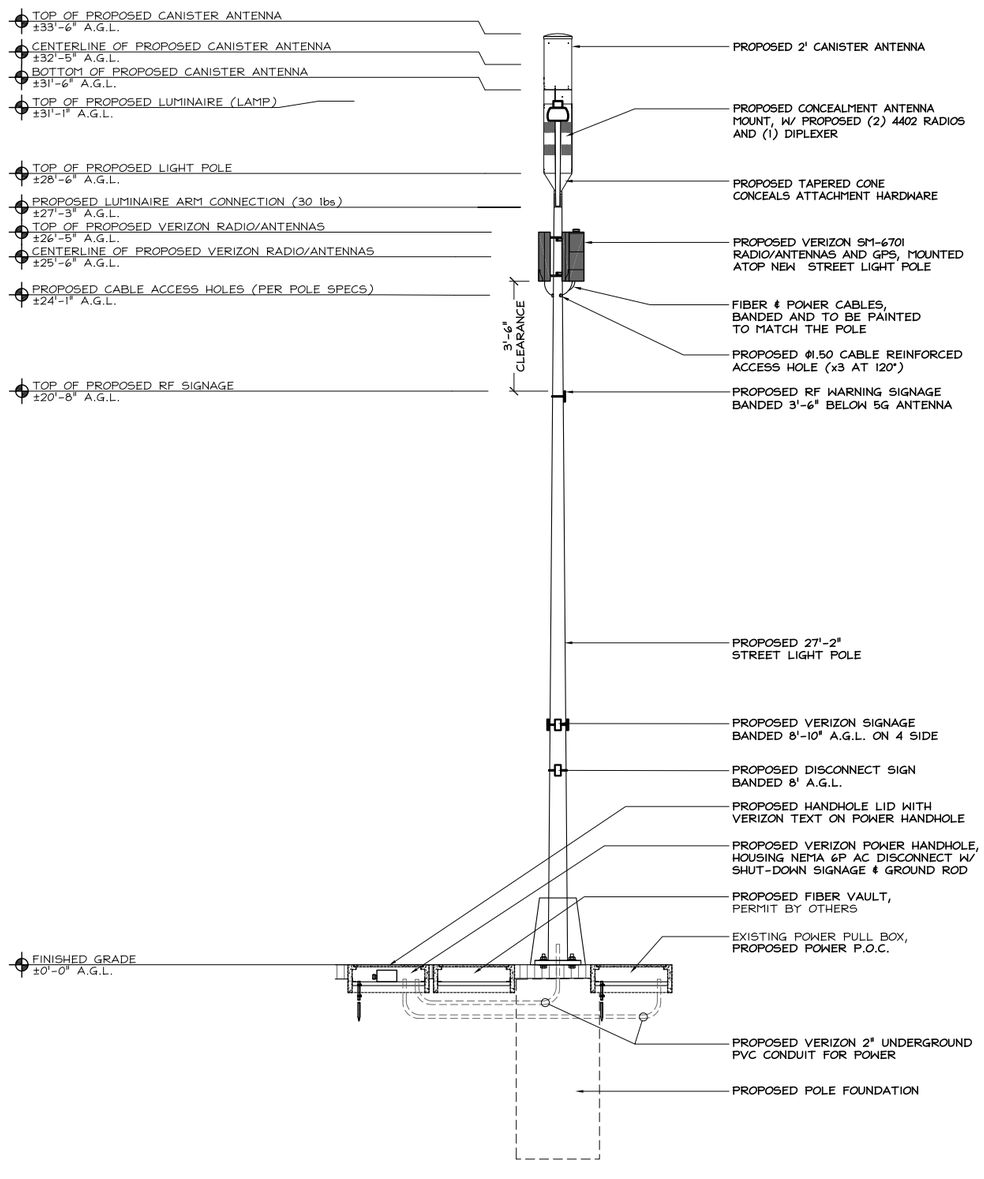
MODEL	TOTAL	TOTAL VOLUME (CU. FT.)
COMMSCOPE	1	±4.41
6701	3	±1.53



EXISTING SOUTHEAST ELEVATION

24"x36" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"
2' 1' 0" 2'

2



PROPOSED SOUTHEAST ELEVATION

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11"x17" SCALE: 1/4" = 1'-0"
2' 1' 0" 2'

1

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

Vinculums
575 LENNON LANE #125
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ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

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REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

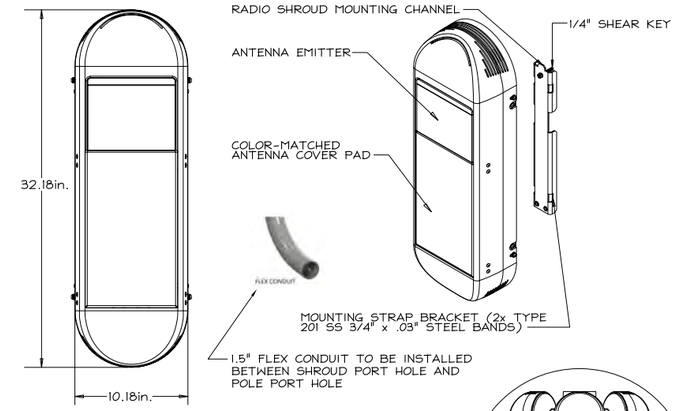
SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
ELEVATIONS
WITHOUT SHROUD

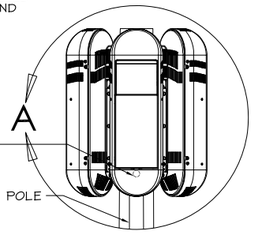
SHEET NUMBER
A-3.1A

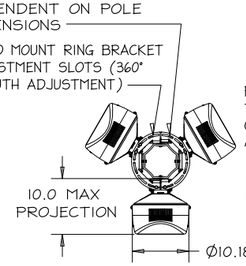
ERICSSON 6701 POLE ATTACHMENT SHROUD
PART NO. 30311
(OR APPROVED EQUAL)

NOTES:
1. FULL SHROUD PAINTABLE TO MATCH COLOR OF EXISTING STRUCTURE.
2. COLOR-MATCHED 3M FILM TO BE APPLIED TO ANTENNA EMITTER FACE.
3. SHROUD DRY WEIGHT = 18 LBS.
4. TOTAL WEIGHT INCLUDING ANTENNA = 49LBS.
5. ANTENNA/SHROUD VOLUME = 1.1 CU.FT. (EACH)

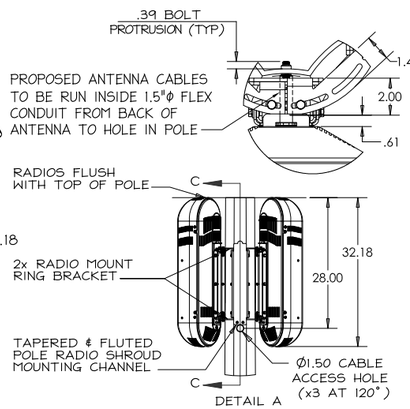


DETAIL A (SECTOR 1 RADIO HIDDEN FOR CLARITY)

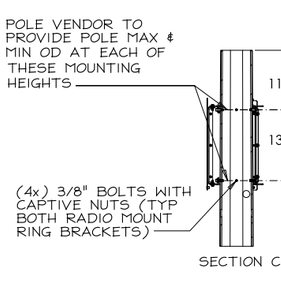




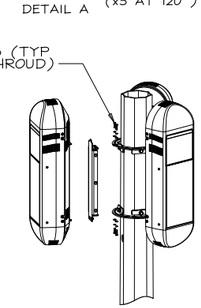
DETAIL B



DETAIL A



SECTION C-C

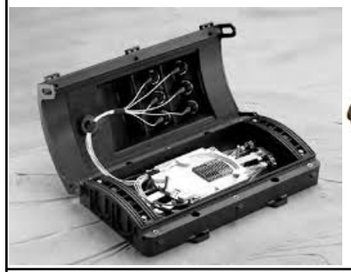


SM6701 SHROUD & MOUNTING DETAILS
24"x36" SCALE: NTS
11"x17" SCALE: NTS
7

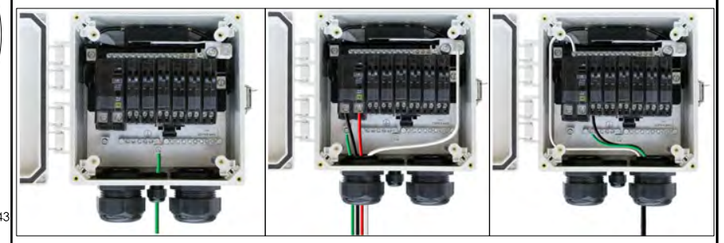
PREFORMED LINE PRODUCTS
COYOTE TERMINAL CLOSURE (FIBER DEMARCATION UNIT)

- DIMENSIONS: 18.76"L x 9.70"W x 5.13"D
- WEIGHT: N/A

OR VERIZON APPROVED EQUAL

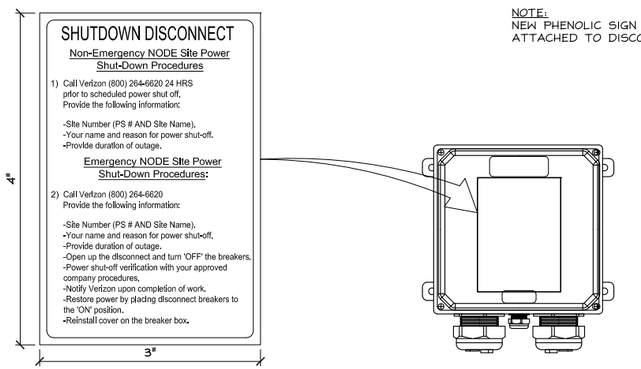


FIBER DEMARCATION UNIT
24"x36" SCALE: NTS
11"x17" SCALE: NTS
6



GROUND | AC POWER "IN" | AC POWER "OUT"

AC POWER DISCONNECT WIRE DIAGRAM
5

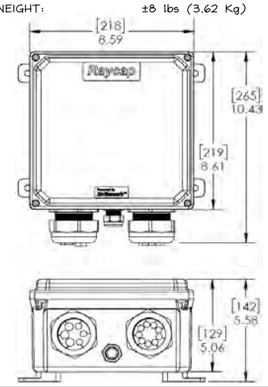


NOTE:
NEW PHENOLIC SIGN TO BE ATTACHED TO DISCONNECT

SHUTDOWN SIGN ON DISCONNECT
24"x36" SCALE: NTS
11"x17" SCALE: NTS
4

Raycap
RSCAC-1333-PH-240 AC POWER DISCONNECT
(OR APPROVED EQUAL)

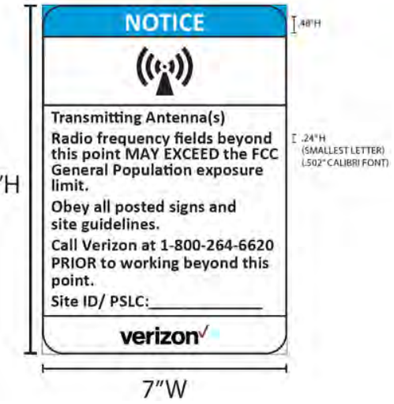
- DIMENSIONS: 10.43"L x 8.59"W x 5.06"D
- WEIGHT: ±8 lbs (3.62 Kg)



RSCAC-1333-PH-240

NEMA 6P AC POWER DISCONNECT
24"x36" SCALE: NTS
11"x17" SCALE: NTS
3

CONTRACTOR NOTE:
- SITE ID WILL BE SWITCH #, SITE # AND SITE NAME.
- NODE NUMBER WILL BE MARKET#-NODE.B#-SMALL CELL NAME.



NOTE:
INSTALL EME NOTICE SIGN 3' BELOW STREET MACRO UNITS.

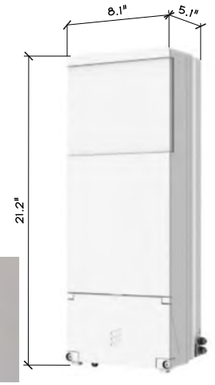
GO95 RF SIGNAGE
24"x36" SCALE: NTS
11"x17" SCALE: NTS
2

ERICSSON
STREET MACRO 6701

- DIMENSION W/ PROTRUDING ITEMS INCL GPS ANT: 21.2"H x 8.1"W x 5.1"D
- TOTAL RADIO AREA (CU. IN.): 875.77 CU. IN.
- WEIGHT: ±31 lbs

RADIO AREA (CU. FT.)			
RADIO MODEL	TOTAL RADIO(S)	TOTAL RADIO AREA (CU. IN.)	TOTAL RADIO AREA (CU. FT.)
MACRO 6701	1	875.77 CU. IN.	0.51 CU. FT.

NEW GPS ATTACHED ON TOP OF SM 6701 (PRE INSTALLED BY MANUFACTURER) (1) TOTAL (MAX. MEASUREMENTS WILL NOT EXCEED)



STREET MACRO 6701
24"x36" SCALE: NTS
11"x17" SCALE: NTS
1

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

Vinculums
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SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
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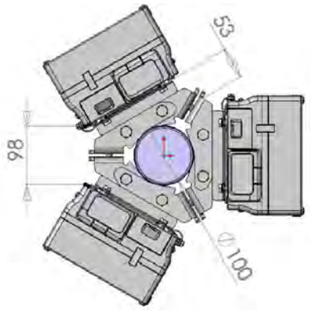
PALO ALTO, 94304
LOCATION CODE: 425268

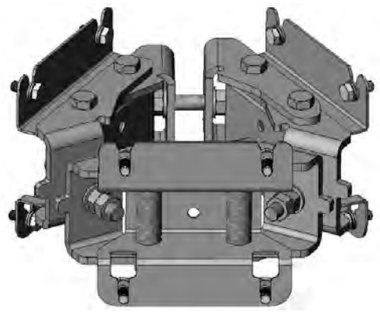
SHEET TITLE
DETAILS

SHEET NUMBER
D-1

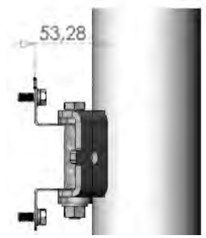
TRIPLE BRACKET PHOTOS - WITH AZIMUTH/TILT BRACKET (OPTIONAL / AS NEEDED)



TRIPLE BRACKET - PLAN VIEW

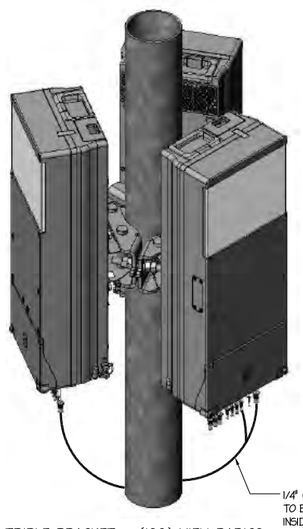


TRIPLE BRACKET - (ISO) VIEW WITHOUT RADIOS



SINGLE BRACKET - SIDE VIEW

TRIPLE BRACKET - SXK 109 2157/5



TRIPLE BRACKET - (ISO) VIEW RADIOS

SM 6701 TRIPLE- BRACKET

24"x36" SCALE: NTS
11"x17" SCALE: NTS

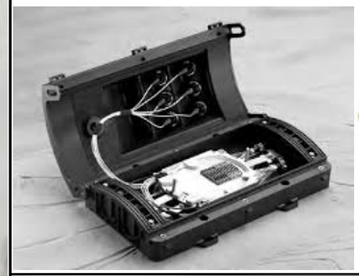
7

PREFORMED LINE PRODUCTS

COYOTE TERMINAL CLOSURE (FIBER DEMARCATION UNIT)

- DIMENSIONS: 18.76"L x 9.70"W x 5.13"D
- WEIGHT: N/A

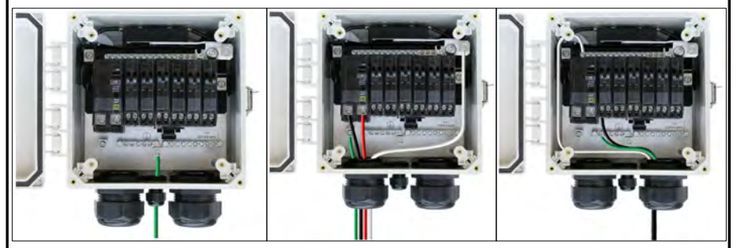
OR VERIZON APPROVED EQUAL



FIBER DEMARCATION UNIT

24"x36" SCALE: NTS
11"x17" SCALE: NTS

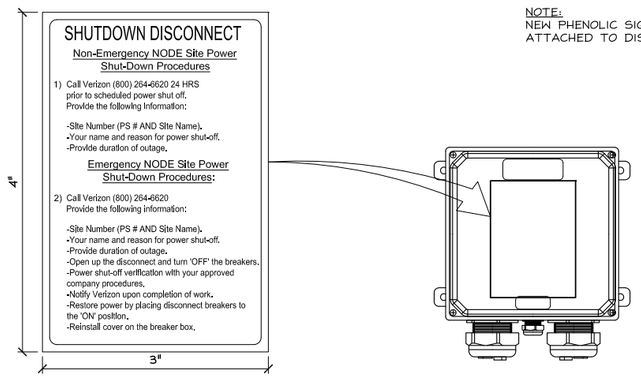
6



GROUND | AC POWER "IN" | AC POWER "OUT"

AC POWER DISCONNECT WIRE DIAGRAM

5



NOTE:
NEW PHENOLIC SIGN TO BE ATTACHED TO DISCONNECT

PROPOSED ANTENNA CABLES TO BE RUN INSIDE 1.5"ϕ FLEX CONDUIT FROM BACK OF ANTENNA TO HOLE IN POLE

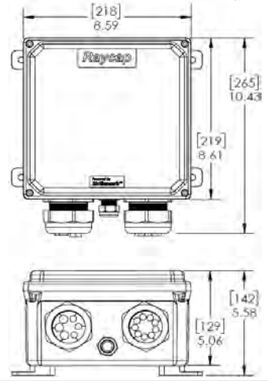
SHUTDOWN SIGN ON DISCONNECT

24"x36" SCALE: NTS
11"x17" SCALE: NTS

4

Raycap RSCAC-1333-PH-240 AC POWER DISCONNECT
(OR APPROVED EQUAL)

- DIMENSIONS: 10.43"L x 8.59"W x 5.06"D
- WEIGHT: ±8 lbs (3.62 Kg)



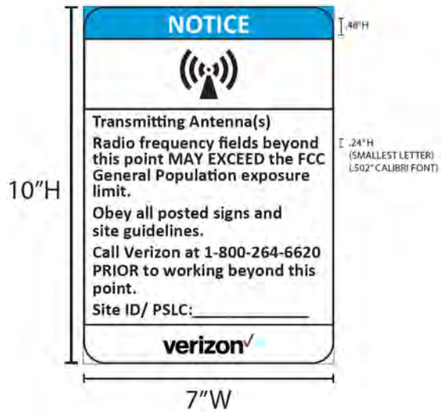
RSCAC-1333-PH-240

NEMA 6P AC POWER DISCONNECT

24"x36" SCALE: NTS
11"x17" SCALE: NTS

3

CONTRACTOR NOTE:
- SITE ID WILL BE SWITCH #, SITE # AND SITE NAME.
- NODE NUMBER WILL BE MARKET#-NODE.B#-SMALL CELL NAME.



NOTE:
INSTALL EME NOTICE SIGN 3' BELOW STREET MACRO UNITS.

GO95 RF SIGNAGE

24"x36" SCALE: NTS
11"x17" SCALE: NTS

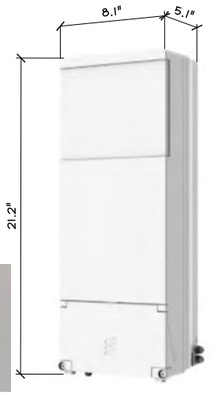
2

ERICSSON STREET MACRO 6701

- DIMENSION W/ PROTRUDING ITEMS INCL GPS ANT: 21.2"H x 8.1"W x 5.1"D
- TOTAL RADIO AREA (CU. IN.): 875.77 CU. IN.
- WEIGHT: ±31 lbs

RADIO AREA (CU. FT.)			
RADIO MODEL	TOTAL RADIO(S)	TOTAL RADIO AREA (CU. IN.)	TOTAL RADIO AREA (CU. FT.)
MACRO 6701	1	875.77 CU. IN.	0.51 CU. FT.

NEW GPS ATTACHED ON TOP OF SM 6701 (PRE INSTALLED BY MANUFACTURER) (1) TOTAL (MAX. MEASUREMENTS WILL NOT EXCEED)



STREET MACRO 6701

24"x36" SCALE: NTS
11"x17" SCALE: NTS

1

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

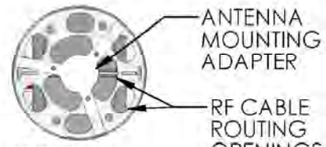
SF PALO ALTO 164

LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

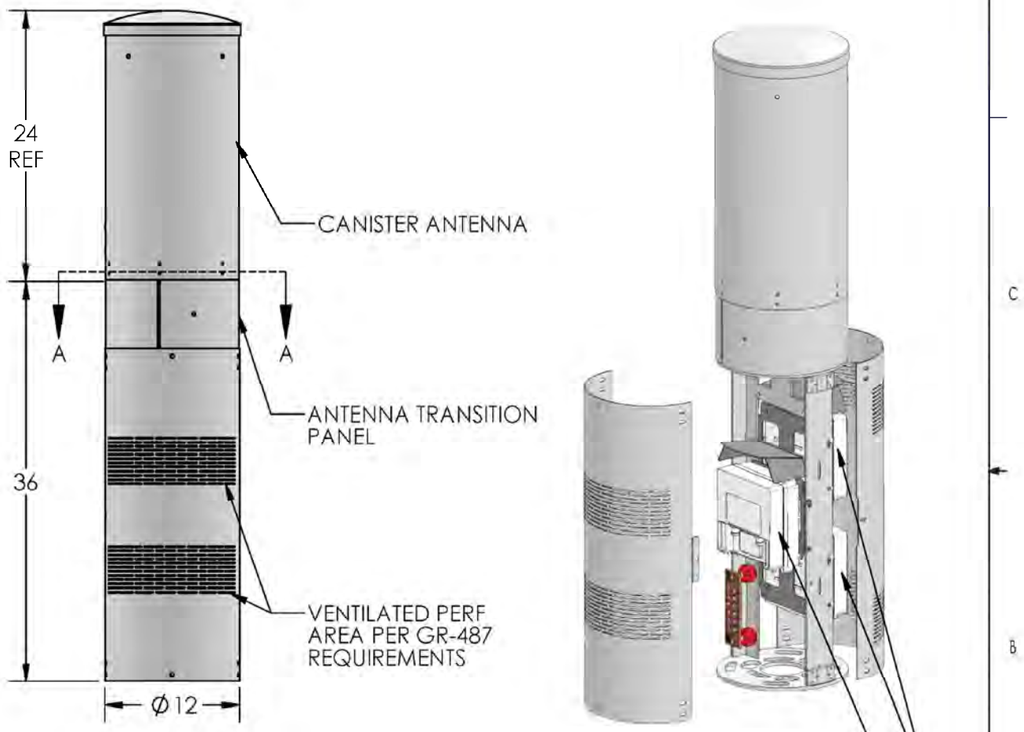
SHEET TITLE
DETAILS

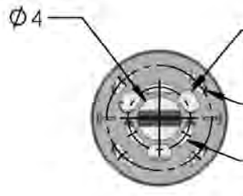
SHEET NUMBER
D-1.1

REVISIONS			
REV.	DESCRIPTION	BY	DATE
A	INITIAL RELEASE	MJP	02/12/2019



SECTION A-A



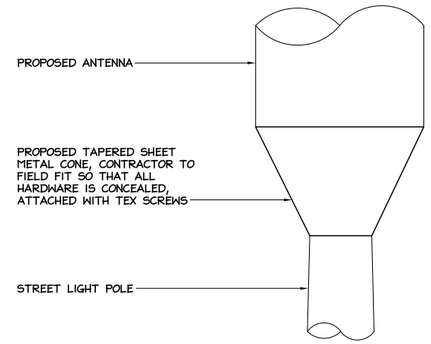


ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
X = ± .12 ANGLES ±2°
XX = ± .06 FRACTIONS ±1/32
XXX = ± .031
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

DRAWN BY: MJP	PART: 1 of 1	PART NUMBER: SSC760236966E21x	
CHECKED BY:	SCALE:	DESCRIPTION: METRO CELL, SOLN - PT 12 IN, ERC	
DATE:	MATERIAL:	QUALIFICATION:	
REVISION: A	FINISH:		
	WEIGHT:	COMMSCOPE®	

24"x36" SCALE: NTS
11"x17" SCALE: NTS | 4

NOTE:
PAINT CONE TO MATCH AS REQUIRED BY JURISDICTION



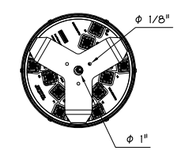
CONE DETAIL

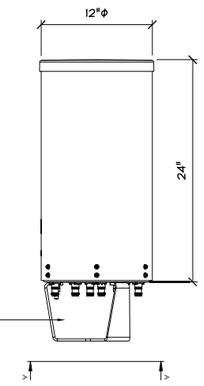
24"x36" SCALE: NTS
11"x17" SCALE: NTS | 3

COMMSCOPE® COMMSCOPE VVSSP-360S-M CANISTER ANTENNA

- DIMENSIONS: 24"H x 12"Ø
- WEIGHT: ±38.6 lbs (17.5 Kg)

VIEW A-A
BRACET NOT SHOWN





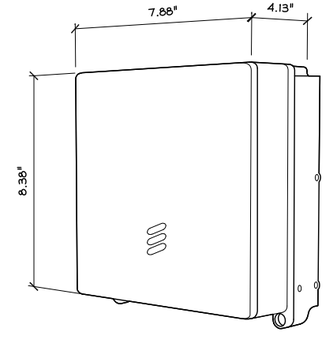
COMMSCOPE ANTENNA

24"x36" SCALE: NTS
11"x17" SCALE: NTS | 2

ERICSSON

ERICSSON 4402 AWS/PCS RADIO

- DIMENSIONS: 8.38"H x 7.88"W x 4.13"D
- WEIGHT: ±10.15 lbs (4.6 Kg)



ERICSSON 4402 AWS/PCS RADIO

24"x36" SCALE: NTS
11"x17" SCALE: NTS | 1

verizon
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PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
STATE OF CALIFORNIA
CIVIL

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
DETAILS

SHEET NUMBER
D-2

Verizon Wireless • Proposed Small Cells
Three Pole Locations • Palo Alto, 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 wireless telecommunications carrier, to evaluate three small cells proposed to be sited in Palo Alto, California, for compliance with municipal limits on sound levels from the installations.

Executive Summary

Verizon proposes to install antennas and equipment on three light poles sited in the public right-of-way in Palo Alto. Noise from the proposed operations will comply with the City's pertinent noise limits.

Prevailing Standard

Palo Alto adopted Resolution No. 9825 (April 15, 2019) "Resolution of the Council of the City of Palo Alto Adopting Objective Aesthetic, Noise, and Related Standards for Wireless Communication Facilities in the Public Rights of Way," which sets limits on noise at residential areas for wireless facilities installed in public rights-of-way. Noise at the nearest residential property line is limited to an increase of 5 dB over existing ambient levels, if the ambient noise level would remain below 60 dBA L_{dn}, or to an increase of 3 dB, otherwise. The composite "day-night" average L_{dn} incorporates a 10 dB penalty during nighttime hours (10 pm to 7 am), to reflect typical residential conditions, where noise is more readily heard at night. By definition, sound from a continuous noise source will be 6.4 dB higher when expressed in L_{dn}.

It is noted that the amended language also references Chapter 9.10 of the Code, which had set a more relaxed increase of 15 dB increase for such WCF sitings, assessed at 25 feet from the pole. It is assumed for this study that the minimum reference ambient level is 40 dBA, as defined in Chapter 9.10.

A summary of noise assessment and calculation methodologies is shown in Figure 1.

General Facility Requirements

Small cells typically consist of two distinct parts: the electronic transceivers (also called "radios"), that are connected to traditional wired telephone lines, and the antennas that send 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 the base of the pole, and are connected to the antennas by cables. Some radios require fans to cool the electronics inside. Some radios are integrated with the antennas as a single unit.

Verizon Wireless • Proposed Small Cells
Three Pole Locations • Palo Alto, California

Site & Facility Description

According to information provided by Verizon, that carrier proposes to install a cylindrical antenna and two Ericsson Model 4402 radio units within a shroud on top of the light pole in the public right-of-way at each of the three locations listed in Table 1, and three Ericsson Model 6701 antennas, with integrated radios, within shrouds below the light arm on the pole.

Study Results

Ericsson reports that the maximum noise level from any one Model 4402 radio is 40.9 dBA,* and that the maximum noise level from three Model 6701 units is 39.6 dBA,* both at a reference distance of 5 feet. The cylindrical antenna is passively cooled, generating no noise.

At a distance of 6¼ feet, the calculated noise level from the simultaneous operation of this combined equipment would result in an increase not exceeding 5 dB above the minimum allowed ambient level of 40 dBA; the increase above the ambient would be less than 5 dB for any siting of the equipment beyond this distance. If the existing ambient were determined to be above 40 dBA statutory minimum, then the calculated increase due to the Verizon operation would, by definition, decrease. **All of the proposed small cells in Table 1 meet this distance requirement.**

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of these Verizon Wireless small cells proposed in Palo Alto will, under the conditions noted above, comply with the municipal standards limiting acoustic noise emission levels.

Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2021. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

REGISTERED PROFESSIONAL ENGINEER — WILLIAM F. HAMMETT — E-13026 M-20676 Exp. 6-30-2021 — ELECTRICAL MECHANICAL — STATE OF CALIFORNIA

William F. Hammett, P.E.
707/996-5200

December 16, 2020

* Adjusted value based on manufacturer data, to reflect record high temperature of 107°F in Palo Alto.

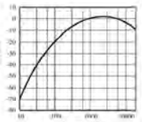
Verizon Wireless • Proposed Small Cells
Three Pole Locations • Palo Alto, California

Small Cell No.	Approximate Address	Nearest Residential Property
425225 "SF Palo Alto 121"	1600 El Camino Real (CA-82)	120 feet
425266 "SF Palo Alto 162"	158-164 Quarry Road	1,130 feet
425268 "SF Palo Alto 164"	Arboretum Road	200 feet

Table 1. Proposed Verizon small cells

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure ("Lp") at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. S.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 μPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_P and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

where L_T is the total sound pressure level and L_1, L_2, etc are individual sound pressure levels.

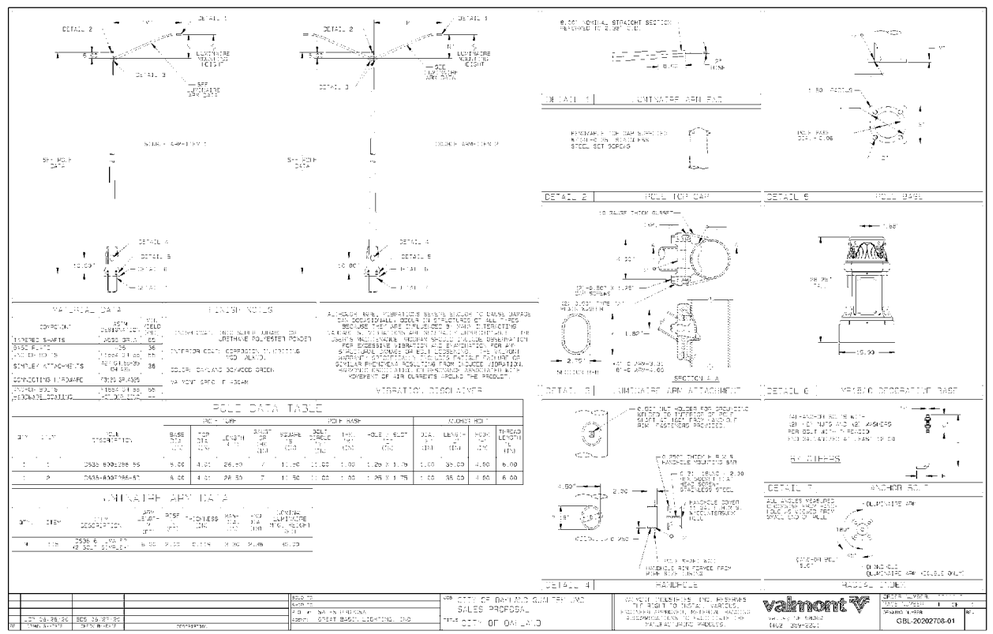
$$L_T = 10 \log (10^{L_1/10} + 10^{L_2/10} + \ldots),$$

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients ("NRC") are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier's effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.

NOISE STUDY

24"x36" SCALE: NTS
11"x17" SCALE: NTS

2

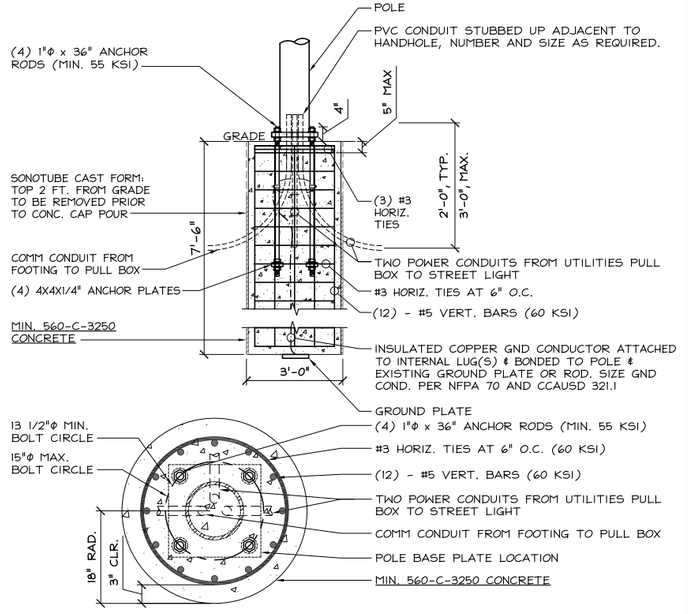


POLE SPECS

24"x36" SCALE: NTS
11"x17" SCALE: NTS

3

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



FOUNDATION DETAIL

24"x36" SCALE: NTS
11"x17" SCALE: NTS

1

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER — WASAM ZALZALI — 71655 — CIVIL — STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
NOISE STUDY,
FOUNDATION DETAILS,
POLE DRAWINGS

SHEET NUMBER
D-3

Submittal Cover Letter

Date: June 12, 2018

Contractor name: Phoenix Electric

Project name: City of Palo- Downtown Improvements

Customer PO# 767-02

JAM SO# 54798

Please see the enclosed set of submittals for the materials to be supplied on the above-mentioned project; these are for APPROVAL. The material will remain ON HOLD pending the receipt of signed approved submittals. Please note standard factory lead times will apply upon release.

Submittal page#	Item Description	Spec Section	Check if Deviation	Request for information
2-5	LED Luminaires	N/A		

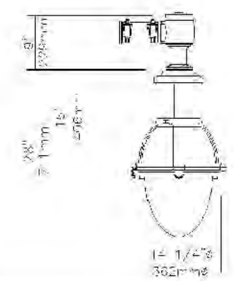
*Per the factory, there is a smaller scale version. However, this version maxes out at 55 watts, and the specified version is 135w. Please advise.

If you have any questions please let me know.

Thank you,
Samantha Douglas
Project Administration
JAM Services, Inc.

958 E. AIRWAY BLVD • LIVERMORE, CALIFORNIA • 94551
PHONE: (925) 455-5267 • FAX: (925) 455-5271

RNS20 (Reference=L23638-3)



EPA: 2.03 sqft / weight: 43 lb (19.5 kg)
Note: 3D image may not represent color or option selected.
Logos above include link, click to access.

Qty	1	Luminaire	RNS20-55W32LED4K-T-ACDR-LE3-120-DMG-SMB-RC-BKTX

Description of Components:

Hood: Cast 356.1 aluminum dome, mechanically assembled on the housing, c/w a watertight grommet, mechanically assembled to the bracket with four bolts 3/8-16 UNC. This suspension system permits for a full rotation of the luminaire in 90 degree increments.

Housing: In a round shape, this housing is made of 356.1 aluminum, c[illegible]h a weatherproof door giving a tool-free access to the ballast, mechanically assembled. This suspension sys[illegible] permits for a full rotation of the luminaire in 90 degree increments.

Access Mechanism: A gravity die cast 356 aluminum fra[illegible] with [illegible] and hinge[illegible] mechanism shall offer tool-free access to the inside of the luminaire. An embedded memory-r[illegible]tive g[illegible]t shall en[illegible] weatherproofing.

Light Engine: LEDgine composed of 4 m[illegible] comp[illegible] **/ LED [illegible] / Optical System / Driver**
Electrical components are RoHS compliant.

Heat Sink: Made of cast al[illegible]mising [illegible] LE[illegible] efficiency and life. Product does not use any cooling device with moving parts (only passi[illegible] cooling dev[illegible]

Globe: (ACDR), [illegible]de of [illegible]-piece se[illegible]ess [illegible]ion-molded impact-resistant (DR) acrylic having an inner prismatic surface. Complete [illegible] a se[illegible] prismatic [illegible]se side shield and external glare softening prisms. The globe is mechanically assem[illegible] and seal[illegible] into th[illegible] wer pa[illegible] the heat sink.

[illegible] Mod[illegible] [illegible] ilips L[illegible] eds LUXEON T. Composed of 3[illegible] high-performance white LEDs. Color temperature as per ANSI/[illegible] A bin[illegible] White, 4000 Kelvin nominal (39[illegible] +/- 27[illegible] or 3710K to 4260K), CRI 70 Min. 75 Typical.

SPEC20180612_115403_10361_0
06-12-2018 Page 1 / 4

PHILIPS LUMEC

RNS20 (Reference=L23638-3)

Optical System: (LE3), IES type III (asymmetrical). Composed of high-performance optical grade PMMA acrylic refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. Optical system is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. Street side indicated.

Driver: High power factor of 90% minimum. Electronic driver, operating range 50/60 Hz. **Auto-adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class I**, THD of 20% max. Maximum ambient operating temperature from -40F(-40C) to 130F(55C) degrees. **Driver comes with dimming compatible 0-10 volts.**

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

Driver Options: (DMG), Dimming compatible 0-10 volts. For applicable warranty, certification and operation guide see *"Philips Lumec dimmable luminaire specification document for unapproved device installed by other"*. To get document, click on this link: Specification document or go on web site on this address: http://www.lumec.com/Lumec3DV2/PdfWebLink/Philips Lumec dimmable luminaire specification document for unapproved device installed by other.pdf

Surge Protector: Surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid-State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA.

Adaptor: (SMB), Made of cast 356 aluminum, complete with a block connector, mechanically assembled to the bracket. Can be mounted on a 1.66"(42mm) to 2.38"(60mm) outside diameter bracket arm tubing that slip fits 6.5" (165mm) long inside the adaptor, permits an adjustment of ± 5°.

Luminaire Options: (RC), Receptacle for a twist-lock photoelectric cell or a shorting cap. Use of photocell or shorting cap is required to ensure proper illumination.

SPEC20180612_115403_10361_0
06-12-2018 Page 2 / 4

PHILIPS LUMEC

RNS20 (Reference=L23638-3)

Miscellaneous

Description of Components:

Wiring: Gauge (#14) TEW/AWM 1015 or 1230 wires, 6" (152mm) minimum exceeding from lumin[illegible]

Hardware: All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce s[illegible] of the [illegible] and offers a high resistance to corrosion. All seals and sealing devices are made and/[illegible]ed with EPDM [illegible]or silico[illegible]nd/or rubber.

Finish: Color to be **black textured RAL9005TX (BKTX)** and in accordance with the [illegible]A 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The[illegible] ting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as l[illegible]ntion in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 2000 hours for salt spray resistant finish in accordance with [illegible]ing performed and per ASTM B117 standard.

LED products manufacturing standard: The electronic components sensitive to electrostatic discharge (ESD) such [illegible] light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as [illegible] eliminate ESD events that could decrease the useful life of the product.

Quality Control: The manufacturer must provide a written confirmation of its ISO 9001-2008 and ISO 14001-2004 International Quality Standards Certification.

Certification: The manufacturer will have to supply a copy of approval products certificate, CSA or UL.

Vibration Resistance: The RNS20 meets the **ANSI C136.31-2001**, American National Standard for Roadway Luminaire Vibration specifications for normal applications. (Tested for 1.5G over 100 000 cycles)

Web site information details: Click on any specific information details you need:

Paint finish / Warranties / ISO 9001-2008 Certification / ISO 14001-2004 Certification

SPEC20180612_115403_10361_0
06-12-2018 Page 3 / 4

PHILIPS LUMEC

[illegible]0 (R[illegible]erence=L23638-3)

LED light en[illegible] technical information for RNS20-30
LED Philip[illegible] [illegible]xeon T, CRI 70, CCT 4000K (3985K +/- 275K or 3710K to 4260K)
System (LED + driver) rated life = 100,000 hrs [1]

LED module	Delivered lumens	Typical system wattage [2] (W)	Typical current @ 120 V (A)	Typical current @ 208 V (A)	Typical current @ 240 V (A)	Typical current @ 277 V (A)	LED current (mA)	HID Replacement [3]	Luminaire Efficacy Rating (Lm/W)	BUG rating
[illegible]	3040	28	0.25	0.15	0.13	0.12	530	70-100	107	B1-U2-G1
[illegible]	3017	28	0.25	0.15	0.13	0.12	530	70-100	106	B1-U2-G1
24W16LED4K-T-LE4	3032	28	0.25	0.15	0.13	0.12	530	70-100	107	B1-U2-G1
24W16LED4K-T-LE5	3060	28	0.25	0.15	0.13	0.12	530	70-100	107	B2-U2-G2
30W16LED4K-T-LE2	3825	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE3	3796	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE4	3815	37	0.32	0.19	0.17	0.15	700	70-100	103	B1-U2-G1
30W16LED4K-T-LE5	3837	37	0.32	0.19	0.17	0.15	700	70-100	104	B3-U3-G3
35W32LED4K-T-LE2	4236	36	0.31	0.19	0.17	0.16	350	70-100	118	B1-U3-G1
35W32LED4K-T-LE3	4175	36	0.31	0.19	0.17	0.16	350	70-100	116	B1-U2-G1
35W32LED4K-T-LE4	4225	36	0.31	0.19	0.17	0.16	350	70-100	117	B1-U2-G1
35W32LED4K-T-LE5	4249	36	0.31	0.19	0.17	0.16	350	70-100	118	B3-U3-G3
55W32LED4K-T-LE2	5945	53	0.47	0.27	0.24	0.22	530	100-150	111	B1-U3-G1
55W32LED4K-T-LE3	5900	53	0.47	0.27	0.24	0.22	530	100-150	110	B1-U3-G2
55W32LED4K-T-LE4	5930	53	0.47	0.27	0.24	0.22	530	100-150	111	B1-U3-G2
55W32LED4K-T-LE5	5994	53	0.47	0.27	0.24	0.22	530	100-150	113	B3-U3-G3

1 L70 = 100,000 hrs (at ambient temperature = 25°C)
2 System wattage or total luminaire wattage includes the LED module and the LED driver.
3 Note: These guidelines show typical replacements for the HID wattage ranges shown. Replacements should always be confirmed with a photometric layout.
Note: Due to rapid and continuous advances in LED technology, LED luminaire data is subject to change without notice and at the discretion of Philips.

SPEC20180612_115403_10361_0
06-12-2018 Page 4 / 4

PHILIPS LUMEC

PENDING NEW LUMINAIRE DETAILS

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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.

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
LUMINAIRE DETAILS

SHEET NUMBER
D-4

- CARLON HAL-FREE RISER-GARD, HJ4X4C-2000:

Technical Info:

UL Listed to 2024	Test Method	Maximum Value
Maximum Flame Propagation	UL 2024	3'6"
Maximum Air Temperature	UL 2024	387°F

- Storage and Handling -4°F to 150°F
- No UV protection (not suitable for outdoor use)
- Do NOT store outside

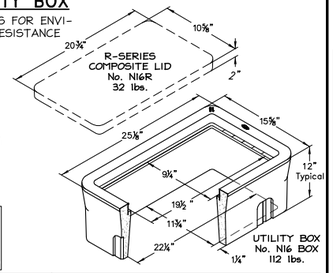
	Color	Part No.	Nom. I.D.	Nom. O.D.	Pull Tape	Reel Size	Reel Type	Reel Length (feet)	Reel Weight (lbs.)	Wt. per 100 ft. (lbs.)
2"	White	HJ4X4C-2000	2.000	2.425	900 lb.	82" x 41"	W	2000	375	20.8

W = Wood

OLDCASTLE N16 UTILITY BOX

- EXCEEDS ASTM-D1693 STANDARDS FOR ENVIRONMENTAL STRESS CRACKING RESISTANCE
- ETCHED POLYPROPYLENE FACE
- FACE ANCHORED IN CONCRETE
- ULTRA-VIOLET INHIBITOR

A HIGH DENSITY REINFORCED CONCRETE BOX WITH NON-SETTING SHOULDERS POSITIONED TO MAINTAIN GRADE AND FACILITATE BACK FILLING. APPROXIMATE DIMENSIONS AND WEIGHT SHOWN.



NOTE:
SPECIFICATION OF THIS VAULT MANUFACTURER AND MODEL ARE SUBJECT TO REPLACEMENT WITH APPROVED EQUIVALENT VAULT/LID

OLDCASTLE ORDER CODE	ITEM	APPROXIMATE SHIP'G. WEIGHT	DESCRIPTION
N16BOX	BOX	112 lbs.	N16 ELECTRICAL BOX (11-3/4"x22-1/4") - 20 PER PALLET
N16R	LID	32 lbs.	R-SERIES COMPOSITE LID WITH POLYPROPYLENE RING (ORDER N90 BOLT DOWN KIT SEPARATELY)
FLI6T	LID	13 lbs.	FIBRELYTE LID, NON-CONCRETE BOLT DOWN (ORDER N90 BOLT-DOWN KIT SEPARATELY)
N16J	LID	36 lbs.	CAST IRON LID BOLT DOWN (ORDER N90 BOLT-DOWN KIT SEPARATELY)
B16-6ID	COVER	28 lbs.	STEEL CHECKER PLATE COVER
N16-6IJ	COVER	28 lbs.	STEEL CHECKER PLATE COVER (ORDER N90 BOLT-DOWN KIT SEPARATELY)
B16XI2	EXTENSION	113 lbs.	12" REINFORCED CONCRETE BOX EXTENSION - 20 PER PALLET
B30SL	SLAB	52 lbs.	REINFORCED CONCRETE SLAB (16"x28")

PANEL 'A'

SITE NAME: P-64 - SF PALO ALTO 039

PANEL DESIGNATION: AC PANEL 'A'

VOLTAGE: 120/240 V
PHASE: 1
WIRE: 3
MAIN BREAKER: 60 AMP
BUSS RATING: 60 AMP
LOCATION: UG VAULT

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	MAIN	60	2	ON			0		250		1.25	200	ON	2	15	ERICSSON SM-6701 #3	2
3								0		250	1.25	200					4
5	ERICSSON SM-6701 #1	15	2	ON	200	1.25	250		313		1.25	250	ON	2	15	ERICSSON 4402 #1	6
7					200	1.25		250		313	1.25	250					8
9	ERICSSON SM-6701 #2	15	2	ON	200	1.25	250		313		1.25	250	ON	2	15	ERICSSON 4402 #2	10
11					200	1.25		250		313	1.25	250					12

CONTRACTOR SHALL LABEL PANEL WITH CARRIER I.D., SERVICE RATING, AND FEED SOURCE

PHASE A TOTAL VA	1375
PHASE B TOTAL VA	1375
TOTAL KVA	2.75
TOTAL AMPS	11.46

NOTES:
1. ALL LOADS CALCED AS LCL/MCL LOADS (OK TO DESIGN TO 100% CAPACITY)
2. UNUSED BREAKER POSITIONS SHALL REMAIN COVERED W/ MFR. COVER
3. ALL EQUIPMENT/BREAKERS SHALL BEAR A LABEL FOR I.D. & RATING

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
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B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

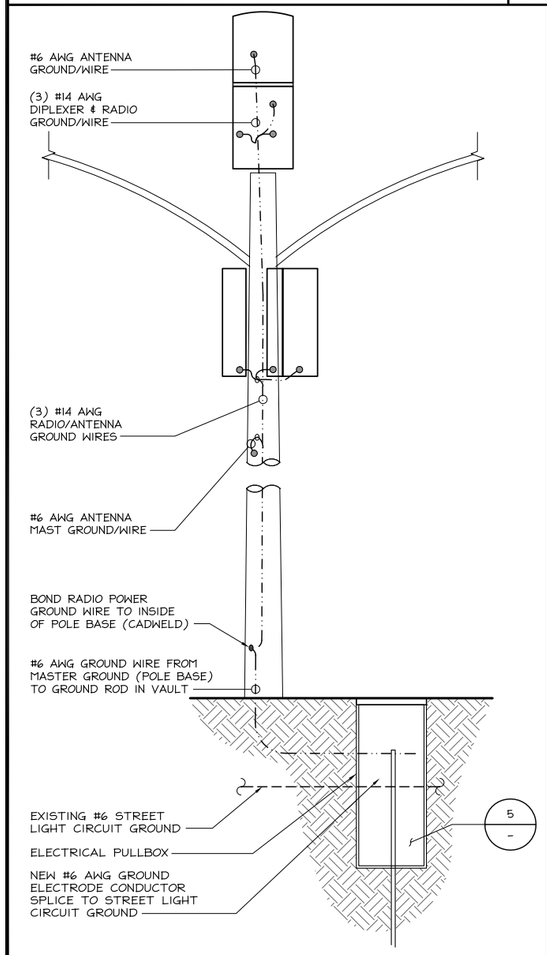
REGISTERED PROFESSIONAL ENGINEER
WASSAM ZALZALI
71655
STATE OF CALIFORNIA
CIVIL

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
ELECTRICAL/GROUNDING DIAGRAMS, NOTES, & PANEL SCHEDULE

SHEET NUMBER
E-1

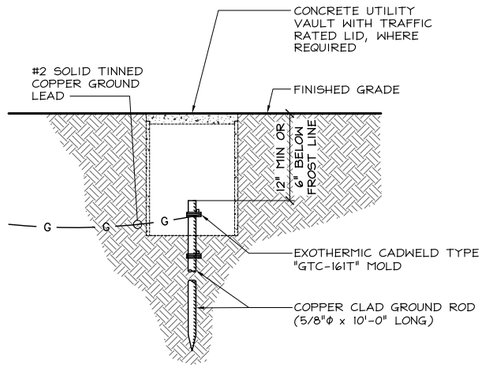
CARLON RISER-GARD — 7



GROUND RISER DIAGRAM — 7

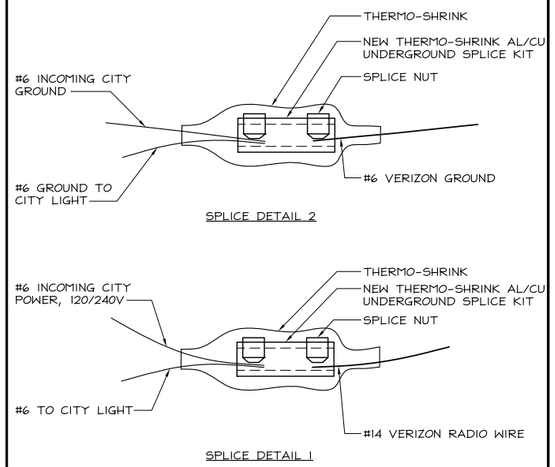
N16 U.G. UTILITY BOX — 6

24"x36" SCALE: NTS
11"x17" SCALE: NTS



GROUND WELL/ROD — 5

24"x36" SCALE: NTS
11"x17" SCALE: NTS



NOT USED — 4

24"x36" SCALE: NTS
11"x17" SCALE: NTS

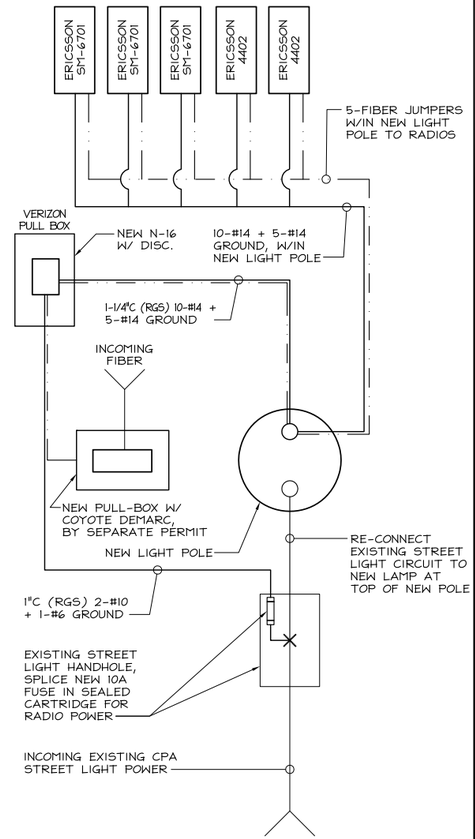
PANEL SCHEDULE — 2

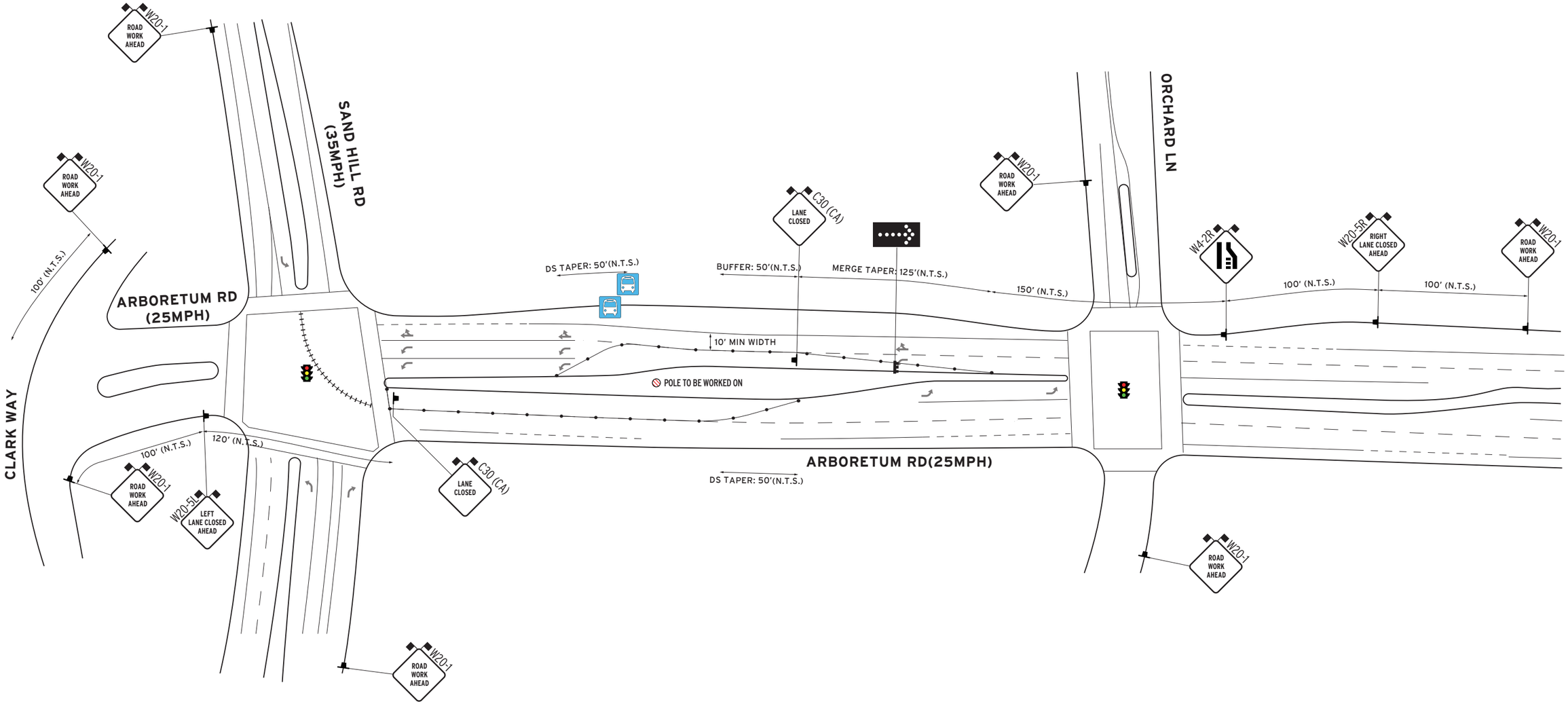
ELECTRICAL NOTES — 3

ELECTRICAL NOTE:

1. ALL WORK SHALL COMP;Y TO THE CURRENT EDITION OF THE CALIFORNIA ELECTRICAL CODE, CALIFORNIA BUILDING CODE, NATIONAL ELECTRICAL CODE, ALL APPLICABLE REGULATIONS GOVERNING NON-JPA UTILITY POLES (G.O. 95), AND ALL APPLICABLE LOCAL CODES.
2. ALL WORK SHALL COMPLY WITH VERIZON CARRIER CONSTRUCTION STANDARDS FOR SMALL CELL INSTALLATION.
3. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND ALL APPLICABLE LOCAL CODES.
4. AC PANEL SHALL HAVE A 'MAIN' BREAKER AFFIXED TO BOTH POLES OF THE MAIN LUG BUSS AND FED THROUGH LOAD SIDE TO PROVIDE SINGLE SHUT-OFF SWITCH FOR ALL SMALL CELL POWER ON AC PANEL.
5. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT. SHALL BE SINGLE CONDUCTOR (#14 AWG AND LARGER), 600V, OIL RESISTANT. THWN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED.
6. REFER TO PANEL SCHEDULE (2/-) AND ONE-LINE DIAGRAM (1/-) FOR CIRCUIT ARRANGEMENT & WIRING CONNECTION.
7. SUBCONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY BEFORE THE START OF CONSTRUCTION. POWER AND TELEPHONE CONDUIT SHALL BE PROVIDED AND INSTALLED PER UTILITY REQUIREMENTS.
8. SUBCONTRACTOR SHALL PROVIDE 20 AMP, SINGLE PHASE, 120/240 (OR 120/208) VAC, 60HZ SERVICE FOR VERIZON SITE.

ONE-LINE DIAGRAM — 1





LEGEND:

- CHANNELIZING DEVICE
- TRAFFIC CONE W/CLIP ON SIGN
- SIGN
- WORK ZONE
- DIRECTION OF TRAFFIC
- TYPE 1 BARRICADE
- TYPE 1 BARRICADE W/SIGN
- TYPE 3 BARRICADE
- TYPE 3 BARRICADE W/SIGN
- CERTIFIED FLAGGER
- TEMPORARY ADA RAMP
- TEMPORARY RAISED PAVEMENT MARKERS
- MESSAGE BOARD (PCMS)
- FLASHING ARROWBOARD
- TEMP NO PARKING SIGNS
- FLASHING BEACON/BARRICADE LIGHT
- K-RAIL/WATER FILLED BARRIER
- PEDESTRIAN BARRICADE

PLAN 1
TEMP TRAFFIC CONTROL PLAN

NOTES

- Traffic control shall conform with the most current CAMUTCD part 6 and/or Caltrans Standards
- One lane of traffic in each direction and all high volume turning lanes shall be maintained at all times on all streets at a minimum lane width of 10 feet.
- Contractor shall notify local authorities once signs are posted.
- All advanced warning signs shall be equipped with 2 (18" orange flags)
- Certified Traffic Control Workers shall have Type II vests, work shoes, and hard hats.
- Temporary no parking signs shall be placed a min of 72 hrs prior of work.
- Driveways shall be monitored and maintained at all times during work hours.
- Distance between sign and work area will be determined on speed limit.
- Roadway shall not be opened until safe for public use. All open trenches must be plated or backfilled prior to public usage.
- All Devices shall be removed when no longer required.

MUTCD TABLE 6C-1 — MEANING OF LETTER CODES ON TYPICAL APPLICATION DIAGRAMS

ROAD TYPE	DISTANCE BETWEEN SIGNS A	B	C
Urban (Low Speed) - 25 mph or less	100 ft	100 ft	100 ft
Urban (Low Speed) + 25 to 40 mph	250 ft	250 ft	250 ft
Urban (High Speed) + 40 mph	350 ft	350 ft	350 ft
Rural	500 ft	500 ft	500 ft
Expressway / Freeway	1,000 ft	1,500 ft	2,640 ft

COMPASS:

SCALE: NOT TO SCALE

DATE REQSTD: 4-13-20

DATE COMPLTD: 4-29-20

PROJECT LOCATION: ARBORETUM RD PALO ALTO

JOB# SF PALO ALTO 164

PAGE# 1/1

REQUEST BY:
YVONNE WASHINGTON
VINCULUMS SERVICES
510-677-1963
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B.A.T.S.
AFTER HOURS EMERGENCY
510-299-5666
Drawn By: Andie Tonnu
CSLB# 917034
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Fax: 510-657-2544
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575 Lennon Lane #125
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(925) 482-8500

ALLSTATES ENGINEERING & SURVEYING
23675 Birtcher Dr.
Lake Forest, CA
(949) 273-0996

VERIZON
PALO ALTO_164

All States Engineering & Surveying
Project No: 64 – CLUSTER-6 \ PALO ALTO_164

Structural Analysis Report

ROW Adjacent to Arboretum Rd., Palo Alto, 94304
Proposed 28'- 6" AGL Steel Double-Arm Light Pole & Foundation

REGISTERED PROFESSIONAL ENGINEER WISSAM ZALZALI C 71655 CIVIL STATE OF CALIFORNIA

Rev. #	Reason for Revision	Total # of Sheets	Prepared By	Checked By	Approved /Accepted	Date
0	Updated Pole Specs	20	LeT	LeT	WZ	12/7/2020

	Quantity/Type /Shape	Strength (min.)	Dimensions	Thickness /Depth	Capacity Utilization	
Pole Shaft	Steel / 8-sided tapered	25 ksi*	4.01"Φ at top 8.0"Φ at bottom	0.1875"	**46.2 %**	PASS
Anchor Bolts	4	55 ksi	1" Φ	-	**62.0 %**	PASS
Base Plate	1	36 ksi	11.5"x11.5"x1"	-	ADEQUATE	
Foundation	*Circular Caisson*	*3.25 ksi*	*36"Dia.*	*7'-6"***	ADEQUATE	

* Pole grade is 6063-T6 per provided specs.
** Required depth of caisson (**Unrestrained** at G/L) - This analysis was performed without a soil report, and minimum soil properties from IBC-18 were used. Required pole foundation embedment depth may change with a soil report from the proposed pole location.

Professional Engineering Firm
ARCHITECTURAL . CIVIL . STRUCTURAL . ELECTRICAL . GEOTECHNICAL . SURVEYING
www.allstatesengineering.com

Steel Decorated Pole
Palo Alto
PALO ALTO_164

ALLSTATES ENGINEERING & SURVEYING

Project Description:
All States Engineering & Surveying (ASES) is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the metal pole.
The purpose of the analysis is to determine acceptability of the pole stress level. Based on our analysis we have determined the metal pole stress level for the structure and anchorage, under the following load case:

LC: Proposed Pole + Proposed Equipment
(Please see page 5 for details)

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

Structural Analysis Parameters:
This analysis has been performed in accordance with AASHTO 2013 guidelines.

- Wind Speed: ***85 mph per AASHTO 2013***
- Exposure Category: ***C***
- Risk Category: ***II***
- Topographical: ***1***
- Crest Height = ***0***
- Ice Thickness = ***0 in***
- Min. Soil Lateral Bearing = ***100 psf/ft*2 = 200 psf/ft per CBC & IBC 1806.3.4***
- Min. Soil Bearing = ***1500 psf***

We at *All States Engineering & Surveying* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

ATC Hazards by Location

Search Information

Address:	Arboretum Rd, Palo Alto, CA 94304, USA
Coordinates:	37.438972, -122.1694949
Elevation:	77 ft
Timestamp:	2020-12-07T22:27:38.781Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default

Basic Parameters

Name	Value	Description
S_S	1.791	MCE_R ground motion (period=0.2s)
S_1	0.663	MCE_R ground motion (period=1.0s)
S_{MS}	2.15	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.433	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.91	Coefficient of risk (0.2s)
CR_1	0.896	Coefficient of risk (1.0s)
PGA	0.737	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.885	Site modified peak ground acceleration

T_L	12	Long-period transition period (s)
SsRT	2.104	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.312	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.791	Factored deterministic acceleration value (0.2s)
S1RT	0.844	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.942	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.663	Factored deterministic acceleration value (1.0s)
PGAd	0.737	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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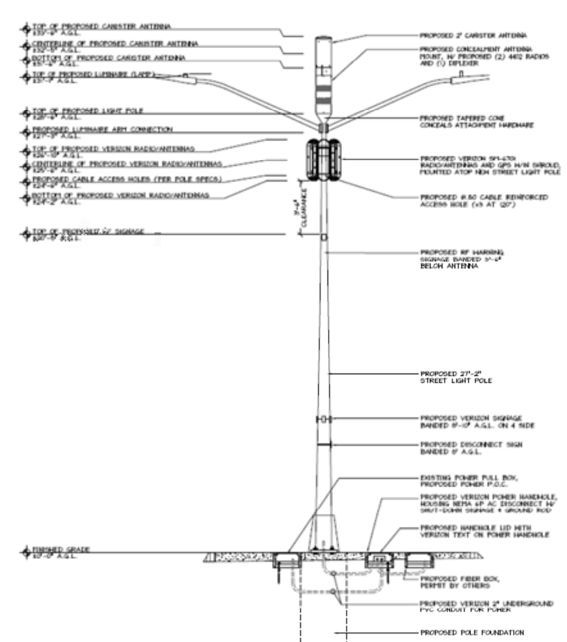
ALLSTATES
PROJECT: PALO ALTO_164
CLIENT: 102 - Sequoia VZW Bakersfield
DESIGN BY:
REVIEW BY: LeT
DATE: 12/7/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 | **Proposed Elevation**

NOTES:
1. NEW GALVANIZED LIGHT POLE TO BE PAINTED WITH MUNSELL RAL5.5GY2.76/2.1 PAINT.
2. NEW RADIOS AND HARDWARE TO BE PAINTED MUNSELL RAL5.5GY2.76/2.1 OR WRAPPED AS ALLOWED BY THE MANUFACTURER.
3. ALL CABLE/WIRE BETWEEN THE POLE ACCESS HOLE AND THE SHROUD GROMMET HOLE WILL RUN TROUGH 1.5" CONDUIT PAINTED/COLORED TO MATCH POLE COLOR.

TOTAL ANETNNA/RADIO VOLUME (CU. FT.)		
MODEL	TOTAL	TOTAL VOLUME (CU. FT.)
4G	1	±4.4
5G	3	±4.5



ALLSTATES
PROJECT: PALO ALTO_164
CLIENT: 102 - Sequoia VZW Bakersfield
DESIGN BY:
REVIEW BY: LeT
DATE: 12/7/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 | **Loading**

PROPOSED COMPONENTS

Rad Center	Component Type	QUANTITY	MOUNT TYPE
31'-0"	(N) Canister Antenna w/ Shroud	1	Top Mounted Pole
25'-6"	(N) Ericsson SM6701 Antennas	3	Pole Mounted
9'-0"	(E) / (N) Street Sign - Max 30"x30" EPA	1	
-	(N) RF Signage	-	
-	(N) & (E) Conduit, Wire, & In-line Fuse	-	Inside Pole

WIND PRESSURE DERIVATION (AASHTO 2013)

Height of Pole	$h =$	28.5	ft	
Wind Speed	$V =$	85	mph	*(AASHTO 2013)*
Wind Exposure (B, C or D)		C		
Wind Directionality (Pole)	$K_d =$	0.95		*(AASHTO 2013, Table 3.8.5-1)*
Gust Effect Factor	$G =$	1.14		*(AASHTO 2013, Sec. 3.8.6)*
3-sec Gust Exponent	$\alpha =$	9.50		*(ASCE 7-16, Table 26.11-1)*
Atmospheric Height	$Z_g =$	900	ft	*(ASCE 7-16, Table 26.11-1)*
Vel. Pressure Coeff. (Min)	$K_{z\,min} =$	0.84		*(ASCE 7-16, Table 29.10-1)*
Velocity Pressure Coeff	$K_z = 2.0(z/Z_g)^{(2/\alpha)} =$	0.97		*(AASHTO 2013, Equation 3.8.4-1)*
Wind Force @ Pole top	$F_H = 0.00256 K_z K_d G V^2 (C_d A) =$	19.4	psf $*C_dA$	*(Wind Pressure Input For O-Calc Analysis)*
Total Applied Shear	$V_u =$	1019	lbs	*(From TNX Report)*
Total Applied Moment	$M_u =$	20302	lb-ft	*(From TNX Report)*

CALCULATION OF WIND DRAG COEFFICIENTS (Cd) FROM AASTHO 2013, TABLE 3.8.7-1 $C_v =$ 1.00 For V<105 mph

Appurtenance	Height (in)	Width (in)	Depth (in)	d (ft)	C_vVd	C_d
(N) Canister Antenna w/ Shroud	65.0	12.0	-	1.00	85	**0.45**
(N) Ericsson SM6701 Antennas	32.2	10.2	7.3	1.05	-	**1.70**
(E) Round Luminaire	2.9	88.0	-	0.24	20	**0.50**
(E) Round Pole	342	7.85	-	0.65	56	**0.69**

SEISMIC LOAD ANALYSIS (ASCE 7-16)

Total Pole Weight	$W = P_u =$	1063	lbs	*(Approximate Wt. Including Pole With (N) Components)*
Spectral Response (Short)	$S_{DS} =$	1.791		*(ATC Hazards Design Maps Summary)*
Spectral Response (1 sec.)	$S_1 =$	0.650		*(ATC Hazards Design Maps Summary)*
Importance Factor	$I_e =$	1.0		*(ASCE 7-16, Section 15.4.1.1)*
Response Factor	$R =$	1.5		*(ASCE 7-16, Table 15.4-2)*
Seismic Response Coeff	$C_s = 0.044 S_{DS} I =$	0.079		*(ASCE 7-16, Section 15.4-1)*
Seismic Response Coeff	$C_s = 0.8 S_1/(R/I_e) =$	0.347		*(ASCE 7-16, Section 15.4-2)*
Seismic Response Coeff	$C_s = S_{DS}/(R/I_e) =$	1.194		*(ASCE 7-16, Section 12.8-2)*
Lateral Seismic Force	$V_s = MAX(C_s)W =$	1.194	*W	
Total Applied Shear	$V_u =$	1269	lbs	
Total Applied Moment	$M_u = V_u(1/2h) =$	18086	lb-ft	

(Wind Loads Governing For Pole Shaft Capacity Check)

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

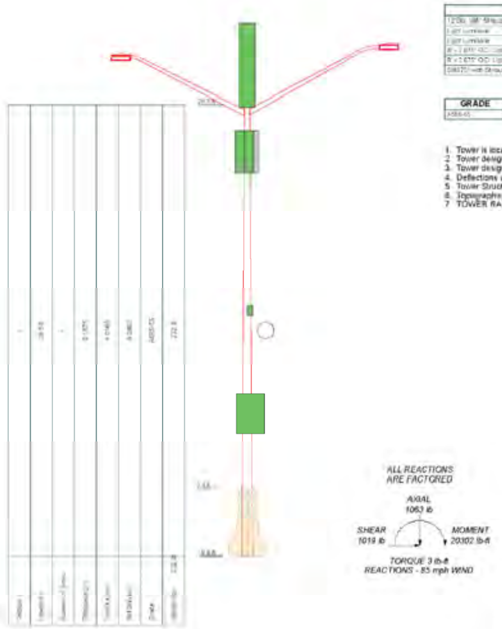
REGISTERED PROFESSIONAL ENGINEER WISSAM ZALZALI 71655 CIVIL STATE OF CALIFORNIA

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.

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
CALCS W/ SHROUD

SHEET NUMBER
C-1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12"Dia. x65" Shroud w/ Antenna	31	SM6701 with Shroud	25.5
Light Luminarie	30.5	SM6701 with Shroud	25.5
Light Luminarie	30.5	FCC RF Notice Signage	15.5
8' x 2.875" O.D. Light Pole Arm	29.5	30"x30" Street Sign	9
8' x 2.875" O.D. Light Pole Arm	29.5	Decorative Base	1.42
SM6701 with Shroud	25.5		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A595-55	55 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in Santa Clara County, California.
2. Tower designed for Exposure C to the AASHTO 2013 Standard.
3. Tower designed for a 85 mph basic wind in accordance with the AASHTO 2013 Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 46.2%

All States Engineering & Surveying	Palo Alto_Light Pole
23675 Birtcher Drive	PALO ALTO_162
Lake Forest, CA 92630	64 - Vinculums_VZW
Phone: (949) 273-0996	AASHTO 2013 — 12/07/[illegible]
FAX: (949) 608-7222	

Steel Decorated Pole
Palo Alto
PALO ALTO_164

ALLSTATES ENGINEERING & SURVEYING

Tower Input Data

The tower is a monopole.
This tower is designed using the AASHTO 2013 standard.
The following design criteria apply:
- Tower is located in Santa Clara County, California.
- Basic wind speed of 85 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Deflections calculated using a wind speed of 60 mph.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	28.50-0.00	28.50		Round	4.0100	8.0000	0.1875		A595-55 (55 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	4.0100	2.2516	4.1224	1.3531	2.0050	2.0560	8.2447	1.1251	0.0000	0
	8.0000	4.6019	35.1303	2.7629	4.0000	8.7826	70.2605	2.2996	0.0000	0

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 28.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Existing Cable Inside Pole	C	No	Yes	CaAa (Out Of Face)	28.50 - 0.00	1	No Ice	0.06	0.15

Steel Decorated Pole
Palo Alto
PALO ALTO_164

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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	28.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.796	4.28
		D	0.000	0.000	0.000	0.000	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Light Luminarie	A	From Leg	6.50 0.00 0.00	0.0000	30.50	No Ice	2.36	2.36	55.00
Light Luminarie	C	From Leg	6.50 0.00 0.00	0.0000	30.50	No Ice	2.36	2.36	55.00
8' x 2.875" O.D. Light Pole Arm	A	From Leg	4.00 0.00 1.75	0.0000	29.50	No Ice	1.92	0.06	65.00
8' x 2.875" O.D. Light Pole Arm	C	From Leg	4.00 0.00 1.75	0.0000	29.50	No Ice	1.92	0.06	65.00
FCC RF Notice Signage	C	From Leg	0.00 0.00 0.00	0.0000	15.50	No Ice	0.33	0.01	0.20
*									
SM6701 with Shroud	C	From Leg	0.25 0.25 0.00	0.0000	25.50	No Ice	2.80	2.08	49.00
SM6701 with Shroud	B	From Leg	0.25 0.25 0.00	0.0000	25.50	No Ice	2.80	2.08	49.00
SM6701 with Shroud	D	From Leg	0.25 0.25 0.00	0.0000	25.50	No Ice	2.80	2.08	49.00
*									
30"x30" Street Sign	C	From Leg	0.00 0.00 0.00	0.0000	9.00	No Ice	7.50	0.05	5.00
*									
Decorative Base	C	None		0.0000	1.42	No Ice	2.01	2.01	50.00
*									
12"Dia. x65" Shroud w/ Antenna	C	None		0.0000	31.00	No Ice	3.06	3.06	107.10

Steel Decorated Pole
Palo Alto
PALO ALTO_164

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Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	Dead+Wind 0 deg - Service
9	Dead+Wind 45 deg - Service
10	Dead+Wind 90 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	28.5 - 0	Pole	Max Tension	8	0.00	-0.00	-0.00
			Max. Compression	4	-1061.48	-12583.31	12542.07
			Max. Mx	6	-1060.96	-20159.23	-2402.71
			Max. My	2	-1060.97	2361.52	20117.97
			Max. Vy	6	1013.11	-20159.23	-2402.71
			Max. Vx	2	-1013.10	2361.52	20117.97
			Max. Torque	6			-31.32

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	4	1063.08	-624.72	624.72
	Max. H_x	3	797.31	127.44	1010.96
	Max. H_z	3	797.31	127.44	1010.96
	Max. M_x	2	20117.97	127.44	1010.92
	Max. M_z	6	20159.24	-1010.92	-127.44
	Max. Torsion	2	2.04	127.44	1010.92
	Min. Vert	5	797.31	-624.67	624.67
	Min. H_x	7	797.31	-1010.96	-127.44
	Min. H_z	7	797.31	-1010.96	-127.44
	Min. M_x	6	-2402.69	-1010.92	-127.44
	Min. M_z	2	-2361.51	127.44	1010.92
	Min. Torsion	6	-31.27	-1010.92	-127.44

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	885.90	-0.01	-0.05	24.73	-7.42	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	1063.08	-127.44	-1010.92	-20117.97	2361.51	-2.04
0.9 Dead+1.6 Wind 0 deg - No Ice	797.31	-127.44	-1010.96	-19927.65	2341.42	-1.98
1.2 Dead+1.6 Wind 45 deg - No Ice	1063.08	624.72	-624.72	-12542.07	-12583.30	20.70

Steel Decorated Pole
Palo Alto
PALO ALTO_164

ALLSTATES ENGINEERING & SURVEYING

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
0.9 Dead+1.6 Wind 45 deg - No Ice	797.31	624.67	-624.67	-12424.17	-12454.55	20.56
1.2 Dead+1.6 Wind 90 deg - No Ice	1063.08	1010.92	127.44	2402.69	-20159.24	31.27
0.9 Dead+1.6 Wind 90 deg - No Ice	797.31	1010.96	127.44	2371.75	-19958.05	31.02
Dead+Wind 0 deg - Service	885.90	-35.50	-303.12	-5832.05	648.71	0.53
Dead+Wind 45 deg - Service	885.90	189.24	-189.24	-3652.00	-3686.08	5.77
Dead+Wind 90 deg - Service	885.90	303.21	35.51	683.02	-5868.15	7.63

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	28.5 - 0 (1)	TP8x4.01x0.1875	28.50	28.50	123.8	4.6019	-1060.96	67853.00	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	28.5 - 0 (1)	TP8x4.01x0.1875	20301.92	45495.58	0.446	0.00	45495.58	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	28.5 - 0 (1)	TP8x4.01x0.1875	1021.12	113898.00	0.009	31.27	72456.17	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	28.5 - 0 (1)	0.016	0.446	0.000	0.009	0.000	0.462 ✓	1.000	4.8.2 ✓

Steel Decorated Pole
Palo Alto
PALO ALTO_164

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Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	28.5 - 0	Pole	TP8x4.01x0.1875	1	-1060.96	67853.00	46.2	Pass
							Summary	
						Pole (L1)	46.2	Pass
						RATING =	**46.2**	**Pass**

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A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER WISSAM ZALZALI 71655 CIVIL STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
CALCS W/ SHROUD

SHEET NUMBER
C-2

HILTI

Hilti PROFIS Engineering 3.0.65

www.hilti.com

Company:	All State Eng. & Surveying	Page:	1
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020 (1)	Date:	12/7/2020
Fastening point:			

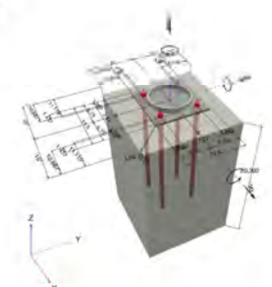
Specifier's comments:

1 Input data

Anchor type and diameter:	**Heavy Hex Head ASTM F 1554 GR. 55 1**
Item number:	not available
Effective embedment depth:	h_{ef} = 25.000 in.
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-08 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 1.00; e_b = 1.250 in.; t = 0.500 in.
Anchor plate[R]:	l_x x l_y x t = 11.500 in. x 11.500 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Round HSS (AISC), HSS8-5/8X.188; (L x W x T) = 8.625 in. x 8.625 in. x 0.188 in.
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 84.000 in.
Reinforcement:	tension: condition A, shear: condition B; anchor reinforcement: tension
	edge reinforcement: > No. 4 bar with stirrups
Seismic loads (cat. C, D, E, or F)	no

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, ft.lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!

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Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020 (1)	Date:	12/7/2020
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [ft.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -1,063; V_x = 0; V_y = -1,019; M_x = 20,302.000, M_y = 0.000, M_z = 0.000,	no	62

Input data and results must be checked for conformity with the existing conditions and for plausibility!

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Design:	Concrete - Sep 9, 2020 (1)	Date:	12/7/2020
Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	Proof	Load	Capacity	β_N / β_V [%]	Status
Tension	Pullout Strength	15,411	25,217	62 / -	OK
Shear	Steel failure (with lever arm)	255	988	- / 26	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.611	0.258	5/3	55	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

Input data and results must be checked for conformity with the existing conditions and for plausibility!

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Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
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Design:	Concrete - Sep 9, 2020 (1)	Date:	12/7/2020
Fastening point:			

4 Remarks; Your Cooperation Duties

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Input data and results must be checked for conformity with the existing conditions and for plausibility!

ALLSTATES ENGINEERING & SURVEYING

All States Engineering & Surveying
Zalzali & Associates, Inc.
23675 Birtcher Drive
Lake Forest
CA
92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

Pole Footing Embedded in Soil

Lic. # : KW-06009186 — File: Caisson Depth.ec6 — Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27 — Zalzali & Associates Inc.

DESCRIPTION: Poposed Caisson embedment (soil values From IBC Table 1806.2 with lateral bearing load increase from IBC 1806.3.4)

Code References

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Pole Footing Shape	Circular
Pole Footing Diameter	36.0 in
Calculate Min. Depth for Allowable Pressures	
No Lateral Restraint at Ground Surface	
Allow Passive	200.0 pcf
Max Passive	1,500.0 psf

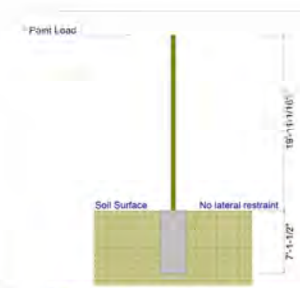
Controlling Values

Governing Load Combination :	+D+W
Lateral Load	1.019 k
Moment	20.302 k-ft

NO Ground Surface Restraint

Pressures at 1/3 Depth	
Actual	465.497 psf
Allowable	466.839 psf

Minimum Required Depth	7.125 ft
Footing Base Area	7.069 ft^2
Maximum Soil Pressure	0.1504 ksf



Provide 36" Dia. x 7.5' Embed. Circular Caisson

Applied Loads

Lateral Concentrated Load (k)		Lateral Distributed Loads (klf)	Vertical Load (k)
D : Dead Load	k	k/ft	1.063 k
Lr : Roof Live	k	k/ft	k
L : Live	k	k/ft	k
S : Snow	k	k/ft	k
W : Wind	1.019 k	k/ft	k
E : Earthquake	k	k/ft	k
H : Lateral Earth	k	k/ft	k
Load distance above ground surface	19.923 ft	TOP of Load above ground surface ft	
		BOTTOM of Load above ground surface ft	

Load Combination Results

	Forces @ Ground Surface		Required	Pressure at 1/3 Depth		Soil Increase
Load Combination	Loads - (k)	Moments - (ft-k)	Depth - (ft)	Actual - (psf)	Allow - (psf)	Factor
+D+W	1.019	20.302	7.13	465.5	466.8	1.000

ALLSTATES ENGINEERING & SURVEYING

All States Engineering & Surveying
Zalzali & Associates, Inc.
23675 Birtcher Drive
Lake Forest
CA
92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

Concrete Caisson

Lic. # : KW-06009186 — File: Caisson Depth.ec6 — Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27 — Zalzali & Associates Inc.

DESCRIPTION: Design Concrete Caisson

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

f'c : Concrete 28 day strength	=	3.250 ksi
E =	=	3,122.0 ksi
Density	=	150.0 pcf
β	=	0.850
fy - Main Rebar	=	60.0 ksi
E - Main Rebar	=	29,000.0 ksi
Allow. Reinforcing Limits		ASTM A615 Bars Used
Min. Reinf.	=	0.250 %
Max. Reinf.	=	8.0 %

Overall Caisson Height = 7.50 ft
End Fixity: Top Free, Bottom Fixed
Brace condition for deflection (buckling) along Caisson :
X-X (width) axis :
Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis :
Fully braced against buckling ABOUT X-X Axis

Caisson Cross Section

Caisson Dimensions: 36.0in Diameter, Caisson Edge to Rebar Edge Cover = 3.0in

Caisson Reinforcing : 12 - #5 bars

Applied Loads

Entered loads are factored per load combinations specified by user.

Caisson self weight included : 7,952.16 lbs * Dead Load Factor
AXIAL LOADS . . .
Reaction from Pole: Axial Load at 7.50 ft above base, D = 1.063 k
BENDING LOADS . . .
Reaction from Pole: Lat. Point Load at 7.0 ft creating Mx-x, W = 1.698 k
Reaction from Pole: Moment acting about X-X axis at 7.0 ft, W = 33.836 k-ft

DESIGN SUMMARY

Load Combination	+0.90D+W+1.60H
Location of max.above base	7.450 ft
Maximum Stress Ratio	**0.097 : 1**

Ratio = (Pu^2+Mu^2)^.5 / (PhiPn^2+PhiMn^2)^.5

Pu =	8.114 k	φ * Pn =	86.887 k
Mu-x =	33.830 k-ft	φ * Mn-x =	-356.890 k-ft
Mu-y =	0.0 k-ft	φ * Mn-y =	0.0 k-ft
Mu Angle =	0.0 deg		
Mu at Angle =	33.830 k-ft	φMn at Angle =	350.522 k-ft

Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Caisson Capacities . . .

Pnmax : Nominal Max. Compressive Axial Capacity	3,024.81 k
Pnmin : Nominal Min. Tension Axial Capacity	k
φ Pn, max : Usable Compressive Axial Capacity	1,799.76 k
φ Pn, min : Usable Tension Axial Capacity	k

Maximum SERVICE Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	1.019 k

Maximum SERVICE Load Deflections . . .

Along Y-Y -0.004886 in at 7.50 ft above base
for load combination : W Only
Along X-X 0.0 in at 0.0 ft above base
for load combination :

General Section Information . . φ = 0.70 β = 0.850 γ = 0.850

ρ % Reinforcing	0.3655 %	Rebar % Ok
Reinforcing Area	3.720 in^2	
Concrete Area	1,017.88 in^2	

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Vinculums

575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

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A ZALZALI & ASSOCIATES COMPANY

23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

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SF PALO ALTO 164

LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE

CALCS W/ SHROUD

SHEET NUMBER

C-3

19

All States Engineering & Surveying
Zalzali & Associates, Inc.
23675 Birtcher Drive
Lake Forest
CA
92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

Concrete Caisson

File: Caisson Depth.ec6
Zalzali & Associates Inc.

DESCRIPTION: Design Concrete Caisson

Governing Load Combination Results

Governing Factored Load Combination	Moment X-X	Moment Y-Y	Dist. from base ft	Axial Load k Pu	Axial Load k φ * Pn	δ x	δ x * Mux	δ y	δ y * Muy	Alpha (deg)	δ Mu	φ Mn	Utilization Ratio
+1.40D+1.60H			7.45	12.62	1,798.76					0.000			0.007
+1.20D+0.50Lr+L+W+1.60H	Actual		7.45	10.82	121.85	1.000	33.83			0.000	33.83	336.20	0.088
+0.90D+W+1.60H	Actual		7.45	8.11	86.99	1.000	33.83			0.000	33.83	350.52	0.097

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	X-X Axis Reaction k @ Top	Y-Y Axis Reaction @ Base	Y-Y Axis Reaction @ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	My - End Moments k-ft @ Top	Mx - End Moments @ Base	Mx - End Moments @ Top
+D+H					9.015				
+D+0.60W+H			1.019		9.015	13.169			
+0.60D+0.60W+0.60H			1.019		5.409	13.169			

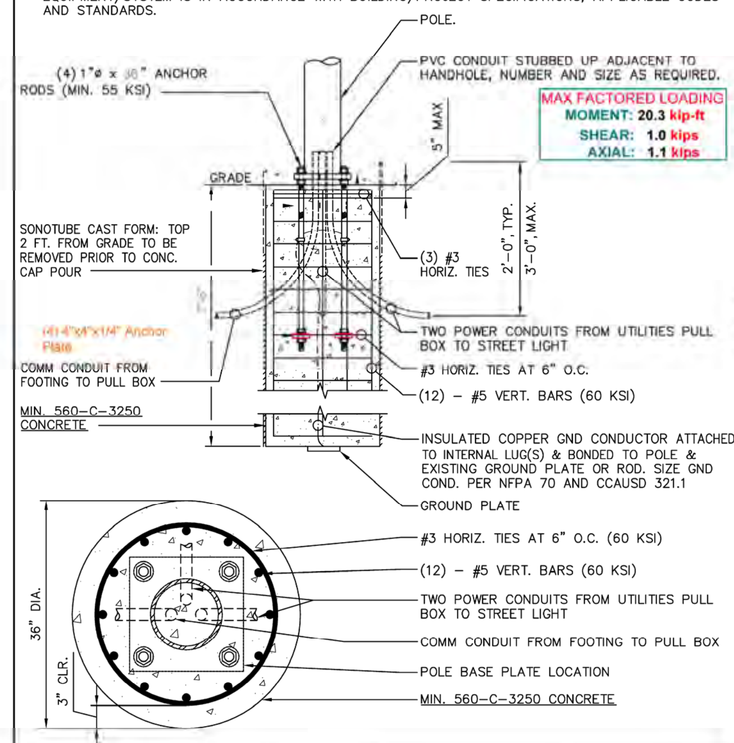
Maximum Moment Reactions

Note: Only non-zero reactions are listed

Load Combination	Moment About X-X Axis @ Base	Moment About X-X Axis @ Top		Moment About Y-Y Axis @ Base	Moment About Y-Y Axis @ Top	
+D+H			k-ft			k-ft
+D+0.60W+H	13.169		k-ft			k-ft
+0.60D+0.60W+0.60H	13.169		k-ft			k-ft

20

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



FOUNDATION DETAIL

DO NOT SCALE DRAWINGS

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REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
CALCS W/ SHROUD

SHEET NUMBER
C-4

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VERIZON
PALO ALTO_164

All States Engineering & Surveying
Project No: 64 – CLUSTER-6 \ PALO ALTO_164

Structural Analysis Report

ROW Adjacent to Arboretum Rd., Palo Alto, 94304
Proposed 28'- 6" AGL Steel Double-Arm Light Pole & Foundation

REGISTERED PROFESSIONAL ENGINEER · WISSAM ZALZALI · C 71655 · CIVIL · STATE OF CALIFORNIA

Rev. #	Reason for Revision	Total # of Sheets	Prepared By	Checked By	Approved /Accepted	Date
0	Updated Pole Specs	20	LeT	LeT	WZ	12/22/2020

	Quantity/Type /Shape	Strength (min.)	Dimensions	Thickness /Depth	Capacity Utilization	
Pole Shaft	Steel / 8-sided tapered	55 ksi*	4.01"Φ at top 8.0"Φ at bottom	0.1875"	41.5 %	PASS
Anchor Bolts	4	55 ksi	1" Φ	-	55.0 %	PASS
Base Plate	1	36 ksi	11.5"x11.5"x1"	-	ADEQUATE	
Foundation	*Circular Caisson*	*3.25 ksi*	*36"Dia.*	*7'-6"***	ADEQUATE	

* Pole grade is A595-55 per provided specs.

Required depth of caisson (Unrestrained** at G/L) - This analysis was performed without a soil report, and minimum soil properties from IBC-18 were used. Required pole foundation embedment depth may change with a soil report from the proposed pole location.

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www.allstatesengineering.com

Steel Decorated Pole
Palo Alto
PALO ALTO_164

Project Description:
All States Engineering & Surveying (ASES) is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the metal pole.
The purpose of the analysis is to determine acceptability of the pole stress level. Based on our analysis we have determined the metal pole stress level for the structure and anchorage, under the following load case:

LC: Proposed Pole + Proposed Equipment without Shroud
(Please see page 5 for details)

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

Structural Analysis Parameters:
This analysis has been performed in accordance with AASHTO 2013 guidelines.

- Wind Speed: ***85 mph per AASHTO 2013***
- Exposure Category: ***C***
- Risk Category: ***II***
- Topographical: ***1***
- Crest Height = ***0***
- Ice Thickness = ***0 in***
- Min. Soil Lateral Bearing = ***100 psf/ft*2 = 200 psf/ft per CBC & IBC 1806.3.4***
- Min. Soil Bearing = ***1500 psf***

We at *All States Engineering & Surveying* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

ATC Hazards by Location

Search Information

Address:	Arboretum Rd, Palo Alto, CA 94304, USA
Coordinates:	37.438972, -122.1694949
Elevation:	77 ft
Timestamp:	2020-12-07T22:27:38.781Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default

Basic Parameters

Name	Value	Description
S_S	1.791	MCE_R ground motion (period=0.2s)
S_1	0.663	MCE_R ground motion (period=1.0s)
S_{MS}	2.15	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.433	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.91	Coefficient of risk (0.2s)
CR_1	0.896	Coefficient of risk (1.0s)
PGA	0.737	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.885	Site modified peak ground acceleration

T_L	12	Long-period transition period (s)
SsRT	2.104	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.312	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.791	Factored deterministic acceleration value (0.2s)
S1RT	0.844	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.942	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.663	Factored deterministic acceleration value (1.0s)
PGAd	0.737	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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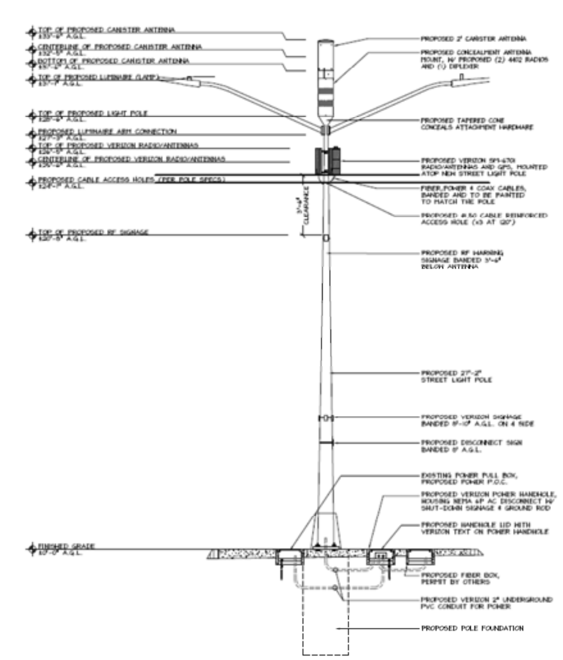
ALLSTATES — PROJECT: PALO ALTO_164 — CLIENT: 102 - Sequoia VZW Bakersfield — DESIGN BY: — REVIEW BY: LeT — DATE: 12/22/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 — Proposed Elevation

NOTES:

1. NEW GALVANIZED LIGHT POLE TO BE PAINTED WITH MUNSELL RAL5.5GY2.76/2.1 PAINT.
2. NEW RADIOS AND HARDWARE TO BE PAINTED MUNSELL RAL5.5GY2.76/2.1 OR WRAPPED AS ALLOWED BY THE MANUFACTURER.
3. ALL CABLE/WIRE BETWEEN THE POLE ACCESS HOLE AND THE ANTENNA PAINTED/COLORED TO MATCH POLE COLOR.

TOTAL ANETNNA/RADIO VOLUME (CU. FT.)		
MODEL	TOTAL	TOTAL VOLUME (CU. FT.)
4G	1	±4.8
5G	3	±1.52



ALLSTATES — PROJECT: PALO ALTO_164 — CLIENT: 102 - Sequoia VZW Bakersfield — DESIGN BY: — REVIEW BY: LeT — DATE: 12/22/2020

Pole Wind & Seismic Analysis Based on AASHTO 2013 — Loading

PROPOSED COMPONENTS

Rad Center	Component Type	QUANTITY	MOUNT TYPE
31'-0"	(N) Canister Antenna w/ Shroud	1	Top Mounted Pole
25'-6"	(N) Ericsson SM6701 Antennas	3	Pole Mounted
9'-0"	(E) / (N) Street Sign - Max 30"x30" EPA	1	
-	(N) RF Signage	-	
-	(N) & (E) Conduit, Wire, & In-line Fuse	-	Inside Pole

WIND PRESSURE DERIVATION (AASHTO 2013)

		Value	Unit	Reference
Height of Pole	h =	28.5	ft	
Wind Speed	V =	85	mph	(AASHTO 2013)
Wind Exposure (B, C or D)		C		
Wind Directionality (Pole)	K_d =	0.95		(AASHTO 2013, Table 3.8.5-1)
Gust Effect Factor	G =	1.14		(AASHTO 2013, Sec. 3.8.6)
3-sec Gust Exponent	α =	9.50		(ASCE 7-16, Table 26.11-1)
Atmospheric Height	Z_g =	900	ft	(ASCE 7-16, Table 26.11-1)
Vel. Pressure Coeff. (Min)	$K_{V,min}$ =	0.84		(ASCE 7-16, Table 29.10-1)
Velocity Pressure Coeff.	$K_z = 2.0(z/Z_g)^{2/\alpha}$ =	0.97		(AASHTO 2013, Equation 3.8.4-1)
Wind Force @ Pole top	$F_H = 0.00256K_zK_dGV^2(C_dA)$ =	19.4	psf *C_dA	(Wind Pressure Input For O-Calc Analysis)
Total Applied Shear	V_u =	938	lbs	(From TNX Report)
Total Applied Moment	M_u =	18155	lb-ft	(From TNX Report)

CALCULATION OF WIND DRAG COEFFICIENTS (Cd) FROM AASTHO 2013, TABLE 3.8.7-1 C_v = 1.00 For V<105 mph

Appurtenance	Height (in)	Width (in)	Depth (in)	d (ft)	C_vVd	C_d
(N) Canister Antenna w/ Shroud	65.0	12.0	-	1.00	85	0.45
(N) Ericsson SM6701 Antennas	32.2	10.2	7.3	1.05	-	1.70
(E) Round Luminaire	2.9	88.0	-	0.24	20	0.50
(E) Round Pole	342	7.85		0.65	56	0.69

SEISMIC LOAD ANALYSIS (ASCE 7-16)

		Value	Unit	Reference
Total Pole Weight	$W = P_u$ =	1052	lbs	(Approximate Wt. Including Pole With (N) Components)
Spectral Response (Short)	S_{DS} =	1.791		(ATC Hazards Design Maps Summary)
Spectral Response (1 sec.)	S_1 =	0.650		(ATC Hazards Design Maps Summary)
Importance Factor	I_e =	1.0		(ASCE 7-16, Section 15.4.1.1)
Response Factor	R =	1.5		(ASCE 7-16, Table 15.4-2)
Seismic Response Coeff	$C_s = 0.044S_{DS}I$ =	0.079		(ASCE 7-16, Section 15.4-1)
Seismic Response Coeff	$C_s = 0.8S_1/(R/I_e)$ =	0.347		(ASCE 7-16, Section 15.4-2)
Seismic Response Coeff	$C_s = S_{DS}/(R/I_e)$ =	1.194		(ASCE 7-16, Section 12.8-2)
Lateral Seismic Force	$V_s = MAX(C_s)W$ =	1.194	*W	
Total Applied Shear	V_u =	1256	lbs	
Total Applied Moment	$M_u = V_u(1/2h)$ =	17899	lb-ft	

(Wind Loads Governing For Pole Shaft Capacity Check)

---

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CALCS WITHOUT SHROUD

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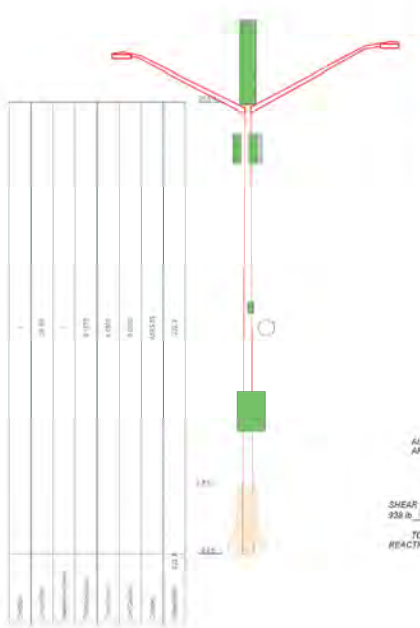

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
[illegible]	[illegible]	[illegible]	[illegible]

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
[illegible]	[illegible]	[illegible]			

TOWER DESIGN NOTES

1. Tower is located in Santa Clara County, California.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 85 mph basic wind in accordance with the TIA-222-G Standard.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 41.5%

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Palo Alto_Light Pole
PALO ALTO_164
84 - Vinculums_VZW
AASHTO 2013
10/22/20
E-1

Steel Decorated Pole
Palo Alto
PALO ALTO_164

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Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

- Tower is located in Santa Clara County, California.
- Basic wind speed of 85 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Deflections calculated using a wind speed of 60 mph.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	28.50-0.00	28.50		Round	4.0100	8.0000	0.1875		A595-55 (55 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	4.0100	2.2516	4.1224	1.3531	2.0050	2.0560	8.2447	1.1251	0.0000	0
	8.0000	4.6019	35.1303	2.7629	4.0000	8.7826	70.2605	2.2996	0.0000	0

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 28.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Existing Cable Inside Pole	C	No	Yes	CaAa (Out Of Face)	28.50 - 0.00	1	No Ice	0.06	0.15

Steel Decorated Pole
Palo Alto
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	28.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.796	4.28
		D	0.000	0.000	0.000	0.000	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Light Luminarie	A	From Leg	6.50 0.00 0.00	0.0000	30.50	No Ice	2.36	2.36	55.00
Light Luminarie	C	From Leg	6.50 0.00 0.00	0.0000	30.50	No Ice	2.36	2.36	55.00
8' x 2.875" O.D. Light Pole Arm	A	From Leg	4.00 0.00 1.75	0.0000	29.50	No Ice	1.92	0.06	65.00
8' x 2.875" O.D. Light Pole Arm	C	From Leg	4.00 0.00 1.75	0.0000	29.50	No Ice	1.92	0.06	65.00
FCC RF Notice Signage	C	From Leg	0.00 0.00 0.00	0.0000	15.50	No Ice	0.33	0.01	0.20
*									
SM6701 w/ Mount	C	From Leg	0.50 0.25 0.00	0.0000	25.50	No Ice	1.44	0.96	46.00
SM6701 w/ Mount	B	From Leg	0.50 0.25 0.00	0.0000	25.50	No Ice	1.44	0.96	46.00
SM6701 w/ Mount	D	From Leg	0.50 0.25 0.00	0.0000	25.50	No Ice	1.44	0.96	46.00
*									
30"x30" Street Sign	C	From Leg	0.00 0.00 0.00	0.0000	9.00	No Ice	7.50	0.05	5.00
*									
Decorative Base	C	None		0.0000	1.42	No Ice	2.01	2.01	50.00
*									
12"Dia. x65" Shroud w/ Antenna	C	None		0.0000	31.00	No Ice	3.06	3.06	107.10

Steel Decorated Pole
Palo Alto
PALO ALTO_164

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Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 45 deg - No Ice
5	0.9 Dead+1.6 Wind 45 deg - No Ice
6	1.2 Dead+1.6 Wind 90 deg - No Ice
7	0.9 Dead+1.6 Wind 90 deg - No Ice
8	Dead+Wind 0 deg - Service
9	Dead+Wind 45 deg - Service
10	Dead+Wind 90 deg - Service
11	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
12	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
13	1.2 Dead+1.0 Ev+1.0 Eh 45 deg
14	0.9 Dead-1.0 Ev+1.0 Eh 45 deg
15	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
16	0.9 Dead-1.0 Ev+1.0 Eh 90 deg

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	28.5 - 0	Pole	Max Tension	10	0.00	0.00	0.00
			Max. Compression	11	-1052.28	-18.25	-37.83
			Max. Mx	6	-1050.54	-17984.67	-2478.27
			Max. My	2	-1050.55	2418.46	17924.87
			Max. Vy	6	930.73	-17984.67	-2478.27
			Max. Vx	2	-930.73	2418.46	17924.87
			Max. Torque	6			-20.80

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	11	1052.28	0.05	0.10
	Max. H_x	3	789.21	130.00	928.84
	Max. H_z	3	789.21	130.00	928.84
	Max. M_x	2	17924.87	129.99	928.80
	Max. M_z	6	17984.67	-928.80	-129.99
	Max. Torsion	11	0.00	0.05	0.10
	Min. Vert	5	789.21	-564.80	564.80
	Min. H_x	7	789.21	-928.84	-130.00
	Min. H_z	7	789.21	-928.84	-130.00
	Min. M_x	6	-2478.26	-928.80	-129.99
	Min. M_z	2	-2418.46	129.99	928.80
	Min. Torsion	6	-20.77	-928.80	-129.99

Steel Decorated Pole
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Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	876.90	-0.03	-0.07	31.48	-15.19	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	1052.28	-129.99	-928.80	-17924.87	2418.46	0.92
0.9 Dead+1.6 Wind 0 deg - No Ice	789.21	-130.00	-928.84	-17761.39	2400.60	0.91
1.2 Dead+1.6 Wind 45 deg - No Ice	1052.28	564.84	-564.85	-10940.95	-11000.80	15.35
0.9 Dead+1.6 Wind 45 deg - No Ice	789.21	564.80	-564.80	-10843.22	-10887.31	15.18
1.2 Dead+1.6 Wind 90 deg - No Ice	1052.28	928.80	129.99	2478.26	-17984.67	20.77
0.9 Dead+1.6 Wind 90 deg - No Ice	789.21	928.84	130.00	2444.66	-17805.44	20.53
Dead+Wind 0 deg - Service	876.90	-36.21	-280.25	-5219.90	658.99	1.06
Dead+Wind 45 deg - Service	876.90	172.56	-172.57	-3203.99	-3253.34	4.27
Dead+Wind 90 deg - Service	876.90	280.25	36.21	708.34	-5269.25	4.97
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	1052.28	-0.05	-0.10	37.83	-18.25	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	789.21	-0.02	-0.05	28.31	-13.66	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 45 deg	1052.28	-0.05	-0.10	37.83	-18.25	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 45 deg	789.21	-0.02	-0.05	28.31	-13.66	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	1052.28	-0.05	-0.10	37.83	-18.25	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	789.21	-0.02	-0.05	28.31	-13.66	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-876.90	0.00	0.03	876.90	0.07	0.008%
2	-130.01	-1052.28	-928.91	129.99	1052.28	928.80	0.007%
3	-130.01	-789.21	-928.91	130.00	789.21	928.84	0.006%
4	564.91	-1052.28	-564.91	-564.84	1052.28	564.85	0.007%
5	564.91	-789.21	-564.91	-564.80	789.21	564.80	0.013%
6	928.91	-1052.28	130.01	-928.80	1052.28	-129.99	0.008%
7	928.91	-789.21	130.01	-928.84	789.21	-130.00	0.006%
8	-36.22	-876.90	-280.39	36.21	876.90	280.25	0.014%
9	172.65	-876.90	-172.65	-172.56	876.90	172.57	0.013%
10	280.39	-876.90	36.22	-280.25	876.90	-36.21	0.015%
11	0.00	-1052.28	0.00	0.05	1052.28	0.10	0.011%
12	0.00	-789.21	0.00	0.02	789.21	0.05	0.007%
13	0.00	-1052.28	0.00	0.05	1052.28	0.10	0.011%
14	0.00	-789.21	0.00	0.02	789.21	0.05	0.007%
15	0.00	-1052.28	0.00	0.05	1052.28	0.10	0.011%
16	0.00	-789.21	0.00	0.02	789.21	0.05	0.007%

Steel Decorated Pole
Palo Alto
PALO ALTO_164

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Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	28.5 - 0 (1)	TP8x4.01x0.1875	28.50	28.50	123.8	4.6019	-1050.54	67853.00	0.015

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	28.5 - 0 (1)	TP8x4.01x0.1875	18154.58	45495.58	0.399	0.00	45495.58	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	28.5 - 0 (1)	TP8x4.01x0.1875	939.80	113898.00	0.008	20.77	72456.17	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	28.5 - 0 (1)	0.015	0.399	0.000	0.008	0.000	0.415 ✓	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	28.5 - 0	Pole	TP8x4.01x0.1875	1	-1050.54	67853.00	41.5	Pass
							Summary	
						Pole (L1)	41.5	Pass
						RATING =	41.5	Pass

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
CALCS WITHOUT SHROUD

SHEET NUMBER
C-6

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Company:	All State Eng. & Surveying	Page:	1
Address:	23675 Birtcher Dr. Lake Forest, CA 92630	Specifier:	
Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020 (1)	Date:	12/23/2020
Fastening point:			

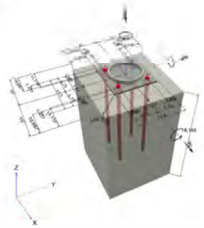
Specifier's comments:

1 Input data

Anchor type and diameter:	Heavy Hex Head ASTM F 1554 GR. 55 1
Item number:	not available
Effective embedment depth:	h_{ef} = 25.000 in.
Material:	ASTM F 1554
Evaluation Service Report:	Hilti Technical Data
Issued I Valid:	- | -
Proof:	Design Method ACI 318-08 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 1.00; e_b = 1.250 in.; t = 0.500 in.
Anchor plate[1]:	l_x x l_y x t = 11.500 in. x 11.500 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	Round HSS (AISC), HSS8-5/8X.188; (L x W x T) = 8.625 in. x 8.625 in. x 0.188 in.
Base material:	cracked concrete, 3000, f'c = 3,000 psi; h = 84.000 in.
Reinforcement:	tension: condition A, shear: condition B; anchor reinforcement: tension
	edge reinforcement: > No. 4 bar with stirrups
Seismic loads (cat. C, D, E, or F)	no

[1] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, ft-lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Phone I Fax:	9492730996 |	E-Mail:	
Design:	Concrete - Sep 9, 2020 (1)	Date:	12/23/2020
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [ft-lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -1,052; V_x = 0; V_y = -938; M_x = 18,155.000; M_y = 0.000; M_z = 0.000;	no	55

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Design:	Concrete - Sep 9, 2020 (1)	Date:	12/23/2020
Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	Proof	Load	Capacity	β_N / β_V [%]	Status
Tension	Pullout Strength	13,756	25,217	55 / -	OK
Shear	Steel failure (with lever arm)	235	1,079	- / 22	OK

Loading	β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
Combined tension and shear loads	0.546	0.217	5/3	45	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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Fastening point:			

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Zalzali & Associates, Inc
23675 Birtcher Drive
Lake Forest
CA
92630

Project Title: Lighht Pole Caisson Embedment Depth
Engineer:
Project ID: Palo Alto Light Pole
Project Descr:

File: Caisson Depth.ecd
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.27
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Pole Footing Embedded in Soil

DESCRIPTION: Proposed Caisson embedment (soil values From IBC Table 1806.2 with lateral bearing load increase from IBC 1806.3.4)

Code References

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Pole Footing Shape: Circular
Pole Footing Diameter: 36.0 in
Calculate Min. Depth for Allowable Pressures
No Lateral Restraint at Ground Surface
Allow Passive: 200.0 pcf
Max Passive: 1,500.0 psf

Controlling Values

Governing Load Combination : +D+W
Lateral Load: 1.019 k
Moment: 20.302 k-ft
NO Ground Surface Restraint
Pressures at 1/3 Depth
Actual: 465.497 psf
Allowable: 466.839 psf

Minimum Required Depth: 7.125 ft

Footing Base Area: 7.069 ft^2
Maximum Soil Pressure: 0.1504 ksf

Provide 36" Dia. x 7.5' Embed. Circular Caisson

Applied Loads

Lateral Concentrated Load (k)		Lateral Distributed Loads (k/ft)		Vertical Load (k)
D : Dead Load	k	k/ft		1.053 k
Lr : Roof Live	k	k/ft		k
L : Live	k	k/ft		k
S : Snow	k	k/ft		k
W : Wind	1.019 k	k/ft		k
E : Earthquake	k	k/ft		k
H : Lateral Earth	k	k/ft		k
Load distance above ground surface	19.023 ft	TOP of Load above ground surface	ft	
		BOTTOM of Load above ground surface	ft	

Load Combination Results

	Forces @ Ground Surface		Required	Pressure at 1/3 Depth		Soil Increase
Load Combination	Loads - (k)	Moments - (ft-k)	Depth - (ft)	Actual - (psf)	Allow - (psf)	Factor
+D+W	1.019	20.302	7.13	465.5	466.8	1.000

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Concrete Caisson

DESCRIPTION: Design Concrete Caisson

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

f'c : Concrete 28 day strength = 3.250 ksi
fy = 3,122.0 ksi
Density = 150.0 pcf
= 0.850
fy - Main Rebar = 60.0 ksi
E - Main Rebar = 29,000.0 ksi
Allow. Reinforcing Limits: ASTM A615 Bars Used
Min. Reinf. = 0.250 %
Max. Reinf. = 8.0 %

Overall Caisson Height: 7.50 ft
End Fixity: Top Free, Bottom Fixed
Brace condition for deflection (buckling) along Caisson :
X-X (width) axis :
Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis :
Fully braced against buckling ABOUT X-X Axis

Caisson Cross Section

Caisson Dimensions: 36.0in Diameter, Caisson Edge to Rebar Edge Cover = 3.0in

Caisson Reinforcing: 12 - #5 bars

Applied Loads

Entered loads are factored per load combinations specified by user.

Caisson self weight included: 7,952.16 lbs * Dead Load Factor
AXIAL LOADS...
* Reaction from Pole: Axial Load at 7.00 ft above base, D = 1.053 k
BENDING LOADS...
Reaction from Pole: Lat. Point Load at 7.0 ft creating Mx-x, W = 1.698 k
Reaction from Pole: Moment acting about X-X axis at 7.0 ft, W = 33.836 k-ft

DESIGN SUMMARY

Load Combination: +0.90D+1W+1.60H
Location of max.above base: 7.450 ft

Maximum Stress Ratio: 0.097 : 1
Ratio = (Pu^2+Mu^2)^0.5 / (PhiPn^2+PhiMn^2)^0.5
Pu = 8.114 k; Φ * Pn = 86.687 k
Mu x = 33.830 k-ft; Φ * Mn x = -350.890 k-ft
Mu y = 0.0 k-ft; Φ * Mn y = 0.0 k-ft
Mu Angle = 0.0 deg
Mu at Angle = 33.830 k-ft; φMn at Angle = 350.522 k-ft
Pn & Mn values located at Pu-Mu vector intersection with capacity curve

Caisson Capacities . . .
Pnmax : Nominal Max. Compressive Axial Capacity: 3,024.81 k
Pnmin : Nominal Min. Tension Axial Capacity: k
φ Pn, max : Usable Compressive Axial Capacity: 1,799.76 k
Φ Pn, min : Usable Tension Axial Capacity: k

Maximum SERVICE Load Reactions . .
Top along Y-Y: 0.0 k; Bottom along Y-Y: 0.0 k
Top along X-X: 0.0 k; Bottom along X-X: 1.019 k

Maximum SERVICE Load Deflections . . .
Along Y-Y: -0.004886 in @ 7.50 ft above base for load combination : W Only
Along X-X: 0.0 in @ 0.0 ft above base for load combination :

General Section Information : φ = 0.76, β = 0.650, Ø = 0.860
ρ % Reinforcing: 0.3655 %, Rebar % Ok
Reinforcing Area: 3.720 in^2
Concrete Area: 1,017.88 in^2

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Concrete Caisson

DESCRIPTION: Design Concrete Caisson

Governing Load Combination Results

Governing Factored Load Combination	Moment		Dist. from	Axial Load	Bending Analysis: k-ft						Utilization
	X-X	Y-Y	base ft	Pu	φ * Pn	δ x * Mux	δ y * Muy	Alpha (deg)	φ Mu	φ Mn	Ratio
+1.40D+1.60H			7.48	13.62	1,799.76			0.000			0.007
+1.20D+0.50Lr+L+W+1.60H	Actual		7.48	16.82	121.89	1.000	33.83	0.000	33.83	396.29	0.085
+0.90D+W+1.60H	Actual		7.45	8.11	86.69	1.000	33.83	0.000	33.83	350.52	0.097

Maximum Reactions — Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	Mx - End Moments @ Base	@ Top	My - End Moments k-ft @ Base	@ Top
+D+H					1.053				
+D+0.60W+H			1.019		0.615	13.189			
+0.60D+0.60W+0.60H			1.019		0.469	13.189			

Maximum Moment Reactions — Note: Only non-zero reactions are listed.

Load Combination	Moment About X-X Axis @ Base	@ Top	Moment About Y-Y Axis @ Base	@ Top
+D+H		k-ft		k-ft
+D+0.60W+H	13.189	k-ft		k-ft
+0.60D+0.60W+0.60H	13.189	k-ft		k-ft

verizon

2785 MITCHELL DRIVE, SUITE 9
WALNUT CREEK, CA 94598

Vinculums

575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY

23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

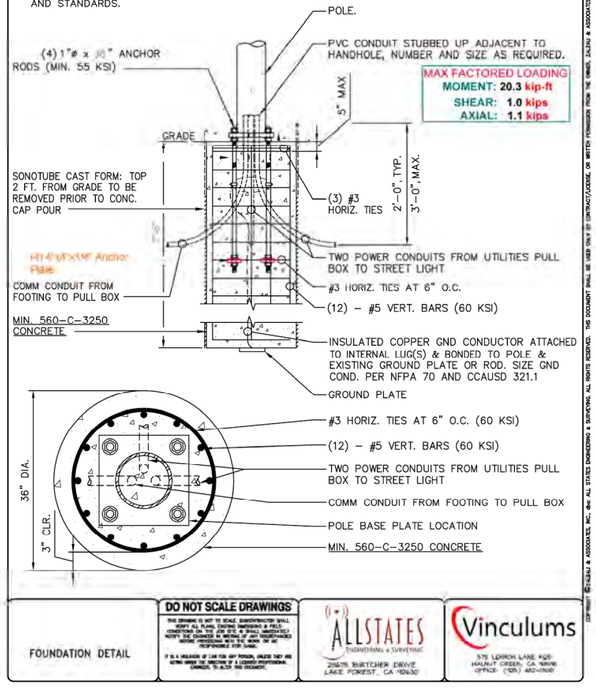
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
CALCS WITHOUT SHROUD

SHEET NUMBER
C-7

NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL DETAILS REQUIRED FOR CONSTRUCTION. APPROPRIATE MODIFICATION MAY BE REQUIRED TO ENSURE SUITABILITY OF THESE DRAWINGS FOR THE SPECIFIC APPLICATION. IT IS THE USER'S RESPONSIBILITY TO ENSURE INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN ACCORDANCE WITH BUILDING/PROJECT SPECIFICATIONS, APPLICABLE CODES AND STANDARDS.



FOUNDATION DETAIL

DO NOT SCALE DRAWINGS

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

Vinculums
575 LENNON LANE #125
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SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
CALCS WITHOUT SHROUD

SHEET NUMBER
C-8

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST EDITION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.

2. CONTRACTOR SHALL CONSTRUCT SITE IN ACCORDANCE WITH THESE DRAWINGS AND CONSTRUCTION SPECIFICATIONS 80-T1196-1 REV H. THE SPECIFICATION IS THE RULING DOCUMENT AND ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THESE DRAWINGS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION

3. CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK (ROOF FRAMING, ELECTRICAL SERVICE, LOCAL PLANNING CODES, ETC.) AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OF FIELD CONDITIONS

4. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS. OWNER PROVIDED MATERIALS WILL INCLUDE THE FOLLOWING, UNLESS NOTED OTHERWISE:
   A) TRANSMITTER
   B) RF FILTER
   C) MFTS RACK
   D) AUXILIARY EQUIPMENT IN MFTS RACK
   E) PUMP ASSEMBLY
   F) HEAT EXCHANGER
   G) HOSE AND HOSE MANIFOLDS (ANY COPPER OR STEEL SECTIONS PROVIDE BY CONTRACTOR)
   H) UHF ANTENNA AND MOUNTING BRACKETS, GPS ANTENNAS AND KU ANTENNAS
   I) UHF COAX AND HANGERS
   K) 480-208 & 208-400 ELECTRICAL TRANSFORMERS (RE: E-2 FOR SPECIALIZED TRANSFORMERS PROVIDED BY CONTRACTOR)
   L) AUTOMATIC TRANSFER SWITCH AND GENERATOR
   M) EQUIPMENT SHELTER (SHELTERS FURNISHED IN FACTORY W/ HVAC EQUIPMENT AND ELECTRICAL DISTRIBUTION PANEL)
   N) INTEGRATED LOAD CENTER

5. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE WORK.

6. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

7. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.

8. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.

9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.

10. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE SUPERINTENDENT OF BUILDINGS & GROUNDS AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.

12. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

13. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING ETC. AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.

14. IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC., MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES (UNLESS NOTED OTHERWISE). LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT.

15. REPAIR ALL EXISTING WALL SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACES.

16. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS.

17. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.

18. MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS.

19. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO APPLICABLE REGULATORY AUTHORITIES

20. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION SHALL BE IN CONFORMANCE WITH JURISDICTIONAL OR STATE AND LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL AND COORDINATED WITH LOCAL REGULATORY AUTHORITIES.

21. ALL CONSTRUCTION IS TO ADHERE TO VERIZON'S INTEGRATED CONSTRUCTION STANDARDS UNLESS CALIFORNIA CODE IS MORE STRINGENT.

22. THE INTENT OF THE PLANS AND SPECIFICATIONS IS TO PERFORM THE CONSTRUCTION IN ACCORDANCE WITH THE CALIFORNIA BUILDING STANDARDS CODE, TITLES 19 AND 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE APPROVED PLANS AND SPECIFICATIONS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE JURISDICTION BEFORE PROCEEDING WITH THE WORK.

SITE WORK NOTES

1. DO NOT EXCAVATE OR DISTURB BEYOND THE PROPERTY LINES OR LEASE LINES, UNLESS OTHERWISE NOTED.

2. DO NOT SCALE BUILDING DIMENSIONS FROM DRAWING.

3. SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILT DRAWINGS BY GENERAL CONTRACTOR AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.

4. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS AND THEIR DIMENSIONS SHOWN ON PLANS HAVE. BEEN PLOTTED FROM AVAILABLE RECORDS. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.

5. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS/HER OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL LOCAL DIGGER HOT LINE FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF CONSTRUCTION.

6. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS TO BE DISTURBED BY CONSTRUCTION SHALL BE ADJUSTED TO FINISH ELEVATIONS PRIOR TO FINAL INSPECTION OF WORK.

7. GRADING OF THE SITE WORK AREA IS TO BE SMOOTH AND CONTINUOUS IN SLOPE AND IS TO FEATHER INTO EXISTING GRADES AT THE GRADING LIMITS.

8. ALL TEMPORARY EXCAVATIONS FOR THE INSTALLATION OF FOUNDATIONS, UTILITIES, ETC., SHALL BE PROPERLY LAID BACK OR BRACED IN ACCORDANCE WITH CORRECT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.

9. STRUCTURAL FILLS SUPPORTING PAVEMENTS SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DRY DENSITY.

10. NEW GRADES NOT IN BUILDING AND DRIVEWAY IMPROVEMENT AREA TO BE ACHIEVED BY FILLING WITH APPROVED CLEAN FILL AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.

11. ALL FILL SHALL BE PLACED IN UNIFORM LIFTS. THE LIFTS THICKNESS SHOULD NOT EXCEED THAT WHICH CAN BE PROPERLY COMPACTED THROUGHOUT ITS ENTIRE DEPTH WITH THE EQUIPMENT AVAILABLE.

12. ANY FILLS PLACED ON EXISTING SLOPES THAT ARE STEEPER THAN 10 HORIZONTAL TO 1 VERTICAL SHALL BE PROPERLY BENCHED INTO THE EXISTING SLOPE AS DIRECTED BY A GEOTECHNICAL ENGINEER.

13. CONTRACTOR SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO PAPERS, TRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE GENERAL CONTRACTOR.

14. ALL TREES AND SHRUBS WHICH ARE NOT IN DIRECT CONFLICT WITH THE IMPROVEMENTS SHALL BE PROTECTED BY THE GENERAL CONTRACTOR.

15. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

ENVIRONMENTAL NOTES

1. ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH ISSUED PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF FINES AND PROPER CLEAN UP FOR AREAS IN VIOLATION.

2. CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS AND SHALL BE MAINTAINED IN PLACE THROUGH FINAL JURISDICTIONAL INSPECTION & RELEASE OF SITE.

3. CONTRACTOR SHALL INSTALL/CONSTRUCT ALL NECESSARY SEDIMENT/SILT CONTROL FENCING AND PROTECTIVE MEASURES WITHIN THE LIMITS OF SITE DISTURBANCE PRIOR TO CONSTRUCTION.

4. NO SEDIMENT SHALL BE ALLOWED TO EXIT THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ADEQUATE MEASURES FOR CONTROLLING EROSION. ADDITIONAL SEDIMENT CONTROL FENCING MAY BE REQUIRED IN ANY AREAS SUBJECT TO EROSION.

5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE ON THE SITE AT ALL TIMES WITH SILT AND EROSION CONTROL MEASURES MAINTAINED ON THE DOWNSTREAM SIDE OF SITE DRAINAGE. ANY DAMAGE TO ADJACENT PROPERTY AS A RESULT OF EROSION WILL BE CORRECTED AT THE CONTRACTORS EXPENSE.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS AND ANY REPAIRS OF ALL SEDIMENT CONTROL MEASURES INCLUDING SEDIMENT REMOVAL AS NECESSARY.

7. CLEARING OF VEGETATION AND TREE REMOVAL SHALL BE ONLY AS PERMITTED AND BE HELD TO A MINIMUM. ONLY TREES NECESSARY FOR CONSTRUCTION OF THE FACILITIES SHALL BE REMOVED.

8. SEEDING AND MULCHING AND/OR SODDING OF THE SITE WILL BE ACCOMPLISHED AS SOON AS POSSIBLE AFTER COMPLETION OF THE PROJECT FACILITIES AFFECTING LAND DISTURBANCE.

9. CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED BY LOCAL, COUNTY AND STATE CODES AND ORDINANCES TO PROTECT EMBANKMENTS FROM SOIL LOSS AND TO PREVENT ACCUMULATION OF SOIL AND SILT IN STREAMS AND DRAINAGE PATHS LEAVING THE CONSTRUCTION AREA. THIS MAY INCLUDE SUCH MEASURES AS SILT FENCES, STRAW BALE SEDIMENT BARRIERS, AND CHECK DAMS.

10. RIP RAP OF SIZES INDICATED SHALL CONSIST OF CLEAN, HARD, SOUND, DURABLE, UNIFORM IN QUALITY STONE FREE OF ANY DETRIMENTAL QUANTITY OF SOFT, FRIABLE, THIN, ELONGATED OR LAMINATED PIECES, DISINTEGRATED MATERIAL, ORGANIC MATTER, OIL, ALKALI, OR OTHER DELETERIOUS SUBSTANCES

GENERAL NOTES

1. THESE NOTES SHALL BE CONSIDERED A PART OF THE WRITTEN SPECIFICATIONS, CONTRACT AND CONSTRUCTION DOCUMENTS.

2. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THESE PLANS AND IN THE CONTRACT DOCUMENTS.

3. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR(S) SHALL VISIT THE JOB SITE(S) AND BE RESPONSIBLE FOR ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS, AND CONFIRM THAT THE WORK MAY BE ACCOMPLISHED PER THE CONTRACT DOCUMENTS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE IMPLEMENTATION ENGINEER AND ARCHITECT/ENGINEER PRIOR TO BID SUBMITTAL

4. THE CONTRACTOR SHALL RECEIVE WRITTEN AUTHORIZATION TO PROCEED ON ANY WORK NOT CLEARLY DEFINED OR IDENTIFIED IN THE CONTRACT AND CONSTRUCTION DOCUMENTS BEFORE STARTING ANY WORK.

5. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES, INCLUDING APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS.

6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. IF THESE RECOMMENDATIONS ARE IN CONFLICT WITH THE CONTRACT AND CONSTRUCTION DOCUMENTS AND/OR APPLICABLE CODES OR REGULATIONS, REVIEW AND RESOLVE THE CONFLICT WITH DIRECTION FROM THE IMPLEMENTATION ENGINEER AND ARCHITECT/ENGINEER PRIOR TO PROCEEDING.

7. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATION OF ALL PORTIONS OF THE WORK UNDER THE CONTRACT INCLUDING CONTACT AND COORDINATION WITH THE IMPLEMENTATION ENGINEER AND WITH THE AUTHORIZED REPRESENTATIVE OF ANY OUTSIDE POLE OR PROPERTY OWNER.

8. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO PAVING, CURBS, VEGETATION, GALVANIZED SURFACE OR OTHER EXISTING ELEMENTS AND UPON COMPLETION OF THE WORK, REPAIR ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION TO THE SATISFACTION OF VERIZON.

9. CONTRACTOR IS TO KEEP THE GENERAL AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH, AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION DAILY.

10. PLANS ARE INTENDED TO BE DIAGRAMMATIC ONLY AND SHOULD NOT BE SCALED UNLESS OTHERWISE NOTED. RELY ONLY ON ANNOTATED DIMENSIONS AND REQUEST INFORMATION IF ADDITIONAL DIMENSIONS ARE REQUIRED.

11. THE EXISTENCE AND LOCATION OF UTILITIES AND OTHER AGENCY'S FACILITIES WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. OTHER FACILITIES MAY EXIST. CONTRACTOR SHALL VERIFY LOCATIONS PRIOR TO START OF CONSTRUCTION AND USE EXTREME CARE AND PROTECTIVE MEASURES TO PREVENT DAMAGE TO THESE FACILITIES. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF UTILITIES OR OTHER AGENCY'S FACILITIES WITHIN THE LIMITS OF THE WORK, WHETHER THEY ARE INDENTIFIED IN THE CONTRACT DOCUMENTS OR NOT.

12. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (800) 227-2600, AT LEAST TWO WORKING DAYS PRIOR TO THE START OF ANY EXCAVATION.

DEFINITIONS

1. "TYPICAL" OR "TYP" MEANS THAT THIS ITEM IS SUBSTANTIALLY THE SAME ACROSS SIMILAR CONDITIONS. "TYP." SHALL BE UNDERSTOOD TO MEAN "TYPICAL WHERE OCCURS" AND SHALL NOT BE CONSIDERED AS WITHOUT EXCEPTION OR CONSIDERATION OF SPECIFIC CONDITIONS.

2. "SIMILAR" MEANS COMPARABLE TO CHARACTERISTICS FOR THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATION ON PLAN.

3. "AS REQUIRED" MEANS AS REQUIRED BY REGULATORY REQUIREMENTS, BY REFERENCED STANDARDS, BY EXISTING CONDITIONS, BY GENERALLY ACCEPTED CONSTRUCTION PRACTICE, OR BY THE CONTRACT DOCUMENTS.

4. "ALIGN" MEANS ACCURATELY LOCATE FINISH FACES OF MATERIALS IN THE SAME PLANE.

5. THE TERM "VERIFY" OR "V.I.F." SHALL BE UNDERSTOOD TO MEAN "VERIFY IN FIELD WITH ENGINEER" AND REQUIRES THAT THE CONTRACTOR CONFIRM INTENTION REGARDING NOTED CONDITION AND PROCEED ONLY AFTER RECEIVING DIRECTION.

6. WHERE THE WORDS "OR EQUAL" OR WORDS OF SIMILAR INTENT FOLLOW A MATERIAL SPECIFICATION, THEY SHALL BE UNDERSTOOD TO REQUIRE SIGNED APPROVAL OF ANY DEVIATION TO SAID SPECIFICATION PRIOR TO CONTRACTOR'S ORDERING OR INSTALLATION OF SUCH PROPOSED EQUAL PRODUCT.

7. FURNISH: SUPPLY ONLY, OTHERS TO INSTALL.
   INSTALL: INSTALL ITEMS FURNISHED BY OTHERS.
   PROVIDE: FURNISH AND INSTALL.

811 USA North
Know what's below. Call before you dig.
California and Nevada
Call Two Working Days Before You Dig!
811 / 800-227-2600

verizon
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LOCATION CODE: 425268

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

ELECTRICAL NOTES

1. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ANY/ALL ELECTRICAL WORK INDICATED. ANY/ALL CONSTRUCTION SHALL BE IN ACCORDANCE W/DRAWINGS AND ANY/ALL APPLICABLE SPECIFICATIONS. IF ANY PROBLEMS ARE ENCOUNTERED BY COMPLYING WITH THESE REQUIREMENTS, CONTRACTOR SHALL NOTIFY 'CONSTRUCTION MANAGER' AS SOON AS POSSIBLE, AFTER THE DISCOVERY OF THE PROBLEMS, AND SHALL NOT PROCEED WITH THAT PORTION OF WORK, UNTIL THE 'CONSTRUCTION MANAGER' HAS DIRECTED THE CORRECTIVE ACTIONS TO BE TAKEN.

2. ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ANY/ALL CONDITIONS AFFECTING ELECTRICAL AND COMMUNICATION INSTALLATION AND MAKE PROVISIONS AS TO THE COST THEREOF. ALL EXISTING CONDITIONS OF ELECTRICAL EQUIP., LIGHT FIXTURES, ETC., THAT ARE PART OF THE FINAL SYSTEM, SHALL BE VERIFIED BY THE CONTRACTOR, PRIOR TO THE SUBMITTING OF HIS BID. FAILURE TO COMPLY WITH THIS PARAGRAPH WILL IN NO WAY RELIEVE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM.

3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC AND ALL CODES AND LOCAL ORDINANCES OF THE LOCAL POWER & TELEPHONE COMPANIES HAVING JURISDICTION AND SHALL INCLUDE BUT NOT BE LIMITED TO:
   C - NATIONAL FIRE CODES
   A. UL - UNDERWRITERS LABORATORIES
   B. NEC - NATIONAL ELECTRICAL CODE
   C. NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
   D. OSHA - OCCUPATIONAL SAFETY AND HEALTH ACT
   E. SBC - STANDARD BUILDING CODE

4. DO NOT SCALE ELECTRICAL DRAWINGS, REFER TO SITE PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, AND CONFIRM WITH 'CONSTRUCTION MANAGER' ANY SIZES AND LOCATIONS WHEN NEEDED.

5. EXISTING SERVICES: CONTRACTOR SHALL NOT INTERRUPT EXISTING SERVICES WITHOUT WRITTEN PERMISSION OF THE OWNER.

6. CONTRACTOR SHALL PAY FOR ANY/ALL PERMITS, FEES, INSPECTIONS AND TESTING. CONTRACTOR IS TO OBTAIN PERMITS AND APPROVED SUBMITTALS PRIOR TO THE WORK BEGINNING OR ORDERING EQUIPMENT.

7. THE TERM "PROVIDE" USED IN CONSTRUCTION DOCUMENTS AND SPECIFICATIONS, INDICATES THAT THE CONTRACTOR SHALL FURNISH AND INSTALL.

8. CONTRACTOR SHALL CONFIRM WITH LOCAL UTILITY COMPANY ANY/ALL REQUIREMENTS SUCH AS THE: LUG SIZE RESTRICTIONS, CONDUIT ENTRY, SIZE OF TRANSFORMERS, SCHEDULED DOWNTIME FOR THE OWNERS' CONFIRMATION, ETC... ANY/ALL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER, PRIOR TO BEGINNING ANY WORK.

9. MINIMUM WIRE SIZE SHALL BE #12 AWG, NOT INCLUDING CONTROL WIRING, UNLESS NOTED OTHERWISE. ALL CONDUCTORS SHALL BE COPPER WITH THWN INSULATION.

10. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET/DAMP LOCATIONS AND SPECIAL ENCLOSURES FOR OTHER CLASSIFIED AREAS.

11. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF THE CONSTRUCTION. CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM AND PROVIDE ALL REQUIREMENTS FOR THE EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER.

12. ELECTRICAL SYSTEM SHALL BE AS COMPLETELY AND EFFECTIVELY GROUNDED, AS REQUIRED BY SPECIFICATIONS, SET FORTH BY VERIZON.

13. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST CLASS, WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND SUBJECT TO REGULATORY INSPECTION AND APPROVAL BY CONSTRUCTION MANAGER.

14. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.

15. CONTRACTOR SHALL GUARANTEE ANY/ALL MATERIALS AND WORK FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.

16. THE CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ANY ADDITIONAL CHARGE AND SHALL INCLUDE THE REPLACEMENT OR THE REPAIR OF ANY OTHER PHASE OF THE INSTALLATION, WHICH MAY HAVE BEEN DAMAGED THEREIN.

17. ADEQUATE AND REQUIRED LIABILITY INSURANCE SHALL BE PROVIDED FOR PROTECTION AGAINST PUBLIC LOSS AND ANY/ALL PROPERTY DAMAGE FOR THE DURATION OF WORK.

18. PROVIDE AND INSTALL CONDUIT, CONDUCTORS, PULL WIRES, BOXES, COVER PLATES AND DEVICES FOR ALL OUTLETS AS INDICATED.

19. DITCHING AND BACK FILL: CONTRACTOR SHALL PROVIDE FOR ALL UNDERGROUND INSTALLED CONDUIT AND/OR CABLES INCLUDING EXCAVATION AND BACKFILLING AND COMPACTION. REFER TO NOTES AND REQUIREMENTS 'EXCAVATION, AND BACKFILLING.

20. MATERIALS, PRODUCTS AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW AND SHALL APPEAR ON THE LIST OF U.L. APPROVED ITEMS AND SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NEC, NEMA AND IECE.

21. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OR MANUFACTURES CATALOG INFORMATION OF ANY/ALL LIGHTING FIXTURES, SWITCHES AND ALL OTHER ELECTRICAL ITEMS FOR APPROVAL BY THE CONSTRUCTION MANAGER PRIOR TO INSTALLATION.

22. ANY CUTTING OR PATCHING DEEMED NECESSARY FOR ELECTRICAL WORK IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY AND SHALL BE INCLUDED IN THE COST FOR WORK AND PERFORMED TO THE SATISFACTION OF THE 'CONSTRUCTION MANAGER' UPON FINAL ACCEPTANCE.

23. THE ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS WITH ONLY TYPEWRITTEN DIRECTORIES. ALL ELECTRICAL WIRING SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

24. DISCONNECT SWITCHES SHALL BE H.P. RATED HEAVY-DUTY, QUICK-MAKE AND QUICK-BREAK ENCLOSURES, AS REQUIRED BY EXPOSURE TYPE.

25. ALL CONNECTIONS SHALL BE MADE WITH A PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO-OXIDE A" BY DEARBORNE CHEMICAL CO. COAT ALL WIRE SURFACES BEFORE CONNECTING. EXPOSED COPPER SURFACES, INCLUDING GROUND BARS, SHALL BE TREATED - NO SUBSTITUTIONS.

26. RACEWAYS: CONDUIT SHALL BE SCHEDULE 40 PVC MEETING OR EXCEEDING NEMA TC2 - 1990. CONTRACTOR SHALL PLUG AND CAP EACH END OF SPARE AND EMPTY CONDUITS AND PROVIDE TWO SEPARATE PULL STRINGS - 200 LBS TEST POLYETHYLENE CORD. ALL CONDUIT BENDS SHALL BE A MINIMUM OF 2 FT. RADIUS. RGS CONDUITS WHEN SPECIFIED, SHALL MEET UL-6 FOR GALVANIZED STEEL. ALL FITTINGS SHALL BE SUITABLE FOR USE WITH THREADED RIGID CONDUIT. COAT ALL THREADS WITH 'BRITE ZINC' OR 'GOLD GALV'.

27. SUPPORT OF ALL ELECTRICAL WORK SHALL BE AS REQUIRED BY NEC.

28. CONDUCTORS: CONTRACTOR SHALL USE 98% CONDUCTIVITY COPPER WITH TYPE THWN INSULATION, 800 VOLT, COLOR CODED. USE SOLID CONDUCTORS FOR WIRE UP TO AND INCLUDING NO. 8 AWG. USE STRANDED CONDUCTORS FOR WIRE ABOVE NO. 8 AWG.

29. CONNECTORS FOR POWER CONDUCTORS: CONTRACTOR SHALL USE PRESSURE TYPE INSULATED TWIST-ON CONNECTORS FOR NO. 10 AWG AND SMALLER. USE SOLDERLESS MECHANICAL TERMINAL LUGS FOR NO. 8 AWG AND LARGER.

30. SERVICE: 240/120V, SINGLE PHASE, 3 WIRE CONNECTION AVAILABLE FROM UTILITY COMPANY. OWNER OR OWNERS AGENT WILL APPLY FOR POWER.

31. TELEPHONE SERVICE: CONTRACTOR SHALL PROVIDE EMPTY CONDUITS WITH PULL STRINGS AS INDICATED ON DRAWINGS.

32. ELECTRICAL AND TELCO RACEWAYS TO BE BURIED A MINIMUM OF 2' DEPTH.

33. CONTRACTOR SHALL PLACE TWO LENGTHS OF WARNING TAPE AT A DEPTH OF 12" BELOW GROUND AND DIRECTLY ABOVE ELECTRICAL AND TELCO SERVICE CONDUITS. CAUTIONS TAPE TO READ "CAUTION BURIED ELECTRIC" OR "BURIED TELECOMM".

34. ALL BOLTS SHALL BE STAINLESS STEEL

GROUNDING NOTES

1. COMPRESSION CONNECTIONS (2), 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.

2. EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.

3. ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.

4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.

5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE.

6. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

7. WHEN THE SCOPE OF WORK REQUIRES THE ADDITION OF A GROUNDING BAR TO AN EXISTING TOWER,THE SUBCONTRACTOR SHALL OBTAIN APPROVAL FROM THE TOWER OWNER PRIOR TO MOUNTING THE GROUNDING BAR TO THE TOWER.

8. ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), AND MANUFACTURER.

ADDITIONAL NOTES:

9. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL GROUNDING INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.

10. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING #2 GROUND WIRES AND CONNECT TO SURFACE MOUNTED GROUND BUS BARS AS SHOWN. FOLLOW ANTENNA AND BTS MANUFACTURER'S PRACTICES FOR GROUNDING REQUIREMENTS. GROUND COAX SHIELD AT BOTH ENDS USING MANUFACTURERS PRACTICES. ALL UNDERGROUND WATER PIPES, METAL CONDUITS AND GROUNDS THAT ARE A PART OF THIS SYSTEM SHALL BE BONDED TOGETHER.

11. ALL GROUND CONNECTIONS SHALL BE #2 AWG U.N.O. ALL WIRES SHALL BE COPPER THHN/THWN. ALL GROUND WIRE SHALL BE SOLID TIN COATED OR STRANDED GREEN INSULATED WIRE.

12. CONTRACTOR TO VERIFY AND TEST GROUND TO SOURCE, 5 OHMS MAXIMUM. PROVIDE SUPPLEMENT GROUNDING RODS AS REQUIRED TO ACHIEVE SPECIFIED OHMS READING. GROUNDING AND OTHER OPTIONAL TESTING WILL BE WITNESSED BY THE VERIZON REPRESENTATIVE.

13. NOTIFY ARCHITECT/ENGINEER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.

14. BARE GROUNDING CONDUCTOR SHALL BE HARD DRAWN TINNED COPPER SIZES AS NOTED ON PLAN.

15. ALL HORIZONTALLY RUN GROUNDING CONDUCTORS SHALL BE INSTALLED MINIMUM 12" BELOW GRADE/FROST-LINE IN TRENCH, U.N.O., AND BACK FILL SHALL BE COMPACTED AS REQUIRED BY ARCHITECT.

16. ALL GROUND CONDUCTORS SHALL BE RUN AS STRAIGHT AND SHORT AS POSSIBLE, WITH A MINIMUM 12" BENDING RADIUS NOT LESS THAN 90 DEGREES.

17. ALL SUPPORT STRUCTURES, CABLE CHANNEL WAYS OR WIRE GUIDES SHALL BE BONDED TO GROUND SYSTEM AT A POINT NEAREST THE MAIN GROUNDING BUS "MGB" (OR DIRECTLY TO GROUND-RING).

18. ACCEPTABLE CONNECTIONS FOR GROUNDING SYSTEM SHALL BE:
   a. BURNDY, HY-GRADE U.L. LISTED CONNECTORS FOR INDOOR USE OR AS APPROVED BY VERIZON PROJECT MANAGER.
   b. CADWELD, EXOTHERMIC WELDS (WELDED CONNECTIONS).
   c. TWO -(2) HOLE TINNED COPPER COMPRESSION (LONG BARREL) FITTINGS (BUS BAR CONNECTIONS).

19. ALL CRIMPED CONNECTIONS SHALL HAVE EMBOSSED MANUFACTURER'S DIEMARK VISIBLE AT THE CRIMP (RESULTING FROM USE OF PROPER CRIMPING DEVICES).

20. PRIOR TO ANY LUG-BUSSBAR CONNECTIONS, THE BUSSBAR SHALL BE CLEANED BY USE OF "SCOTCH-BRITE' OR PLAIN STEEL WOOL AS TO REMOVE ALL SURFACE OXIDATION AND CONTAMINANTS. A COATING OF "NO-OX-ID" SHALL BE APPLIED TO THE CONNECTION SURFACES.

21. ALL CONNECTION HARDWARE SHALL BE TYPE 316 SS (NOT ATTRACTED TO MAGNETS).

22. THE GROUND RING SHALL BE INSTALLED 24" MINIMUM BEYOND ANY BUILDING DRIP LINE.

23. ELECTRICAL SERVICE EQUIPMENT GROUNDING SHALL COMPLY WITH NEC, ARTICLE 250-82 AND SHALL BOND ALL EXISTING AND NEW GROUNDING ELECTRODES. NEW GROUNDING ELECTRODE SHALL INCLUDE BUT NOT LIMITED TO GROUND RODS, GROUND RING IF SERVICE IS WITHIN THE RADIO EQUIPMENT LOCATION, BUILDING STEEL IF APPLICABLE, COLD WATER CONNECTIONS MUST BE MADE ON THE STREET SIDE OF MAIN SHUT-OFF VALVE.

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Vinculums

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WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY

23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
NISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

"Hands On Tree Care"

ANDERSON'S Tree Care Specialists, Inc.

P.O. Box 26 • San Jose, CA 95109-0002

Tel. (408) 226-TREE (8733) • Fax (408) 281-8733 • Lic #708171

12/27/2020

Jeremy Stroup
Real Estate Specialist III
Vinculums Services, LLC
10 Pasteur, Suite 100
Irvine, CA 92618
jstroup@vinculums.com
925-202-8654

Re: Tree Protection Measures at SF PALO ALTO 164 (Median at 313-331 Arboretum Rd., dual pole #13/14)

Dear Jeremy,

Cellular equipment will be mounted on a new metal light pole, #13/14, in the median adjacent to the above address. The new pole will be in approximately the same location as the existing pole, with one new handhole northwest of the pole, connected to the pole by conduits installed via trenching. Excavation for the handhole will measure about 35"x22"x12". I visually estimated distances between trees and project features onsite.

Two Street Trees, both Mexican fan palms (*Washingtonia robusta*) overhang the construction area. Type II Tree Protection is required for both: the planting strip shall be enclosed from the light pole, to the outside edge of the tree's dripline. Install 5-6' high chain link fencing mounted on 2-inch diameter galvanized iron posts, driven into the ground to a depth of at least 2 feet at no more than 10-foot spacing. Trenching must be performed by hand. If any live roots are encountered during excavation, the recommendations in section 2.20 C apply:

C. Trenching, Excavation and Equipment Use

Trenching, excavation or boring activity within the TPZ is restricted to the following activities, conditions and requirements if approved by the *City Arborist. (See Restriction Zones for Excavation, Trenching or Boring Near Regulated Trees, image 2.20-1 through 2.20-3).* Mitigating measures shall include prior notification to and direct supervision by the *project arborist.*

1. Notification. Contractor shall notify the *project arborist* a minimum of 24 hours in advance of the activity in the TPZ.
2. Root Severance. Roots that are encountered shall be cut to sound wood and repaired (*see Root Injury, Section 2.25 A-1*). Roots 2-inches and greater must remain injury free.
3. Excavation. Any approved excavation, demolition or extraction of material shall be performed with equipment sitting outside the TPZ. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology. Avoid excavation within the TPZ during hot, dry weather.
   - If excavation or *trenching* for drainage, utilities, irrigation lines, etc., it is the duty of the contractor to tunnel under any roots 2-inches in diameter and greater.
   - Prior to excavation for foundation/footings/walls, grading or *trenching* within the TPZ, roots shall first be severed cleanly 1-foot outside the TPZ and to the depth of the future excavation. The trench must then be hand dug and roots pruned with a saw, sawzall, narrow trencher with sharp blades or other approved root pruning equipment.
4. Heavy Equipment. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited unless approved by the *City Arborist.* If allowed, a protective *root buffer (see Root Buffer and Damage to Trees, Section 2.25.A-1)* is required. The protective buffer shall consist of a base course of tree chips spread over the root area to a minimum of 6-inch depth, layered by 3/4-inch quarry gravel to stabilize 3/4-inch plywood on top. This buffer within the TPZ shall be maintained throughout the entire construction process.
   - Structural design. If injurious activity or interference with roots greater than 2-inches will occur within the TPZ, plans shall specify a design of special foundation, footing, walls, concrete slab or pavement designs subject to *City Arborist* approval. Discontinuous foundations such as concrete pier and structural grade beam must maintain natural grade (not to exceed a 4-inch cut), to minimize root loss and allow the tree to use the existing soil.

No amenity trees are recommended at this site, as they would conflict aesthetically with the existing palms.

Tree Map

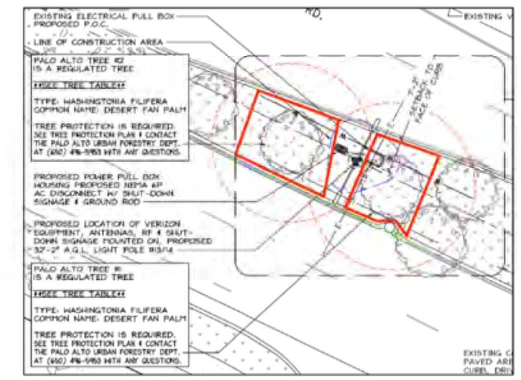

Image 1: area around existing light pole

ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other government regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.
4. The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
5. Loss, alteration, or reproduction of any part of this report invalidates the entire report.
6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.
7. Neither all nor any part of this report, nor any copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant/appraiser particularly as to value conclusions, identity of the consultant/appraiser, or any reference to any professional society or initialed designation conferred upon the consultant/appraiser as stated in his qualification.
8. This report and the values expressed herein represent the opinion of the consult/appraiser, and the consult/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
10. Unless expressed otherwise: 1) information in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in future.

Respectfully submitted,

Katherine Naegele
Consulting Arborist
Anderson's Tree Care Specialists, Inc.
A TCIA Accredited Company
Master of Forestry, UC Berkeley
ISA Certified Arborist #WE-9658A
ISA Tree Risk Assessment Qualified
American Society of Consulting Arborists, Member
Office: 408 226-8733
Cell: 408 590-5976

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ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY

23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WISSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

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.

SF PALO ALTO 164

LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE

TREE PROTECTION REPORT

SHEET NUMBER

TPR-1

NOTE:
ANY CONSTRUCTION WITHIN THE CITY'S PUBLIC ROAD RIGHT-OF-WAY SHALL HAVE AN APPROVED PERMIT FOR CONSTRUCTION IN THE PUBLIC STREET PRIOR TO CEMMENCEMENT OF THIS WORK

City of Palo Alto

Tree Protection - It's Part of the Plan!

Make sure your crews and subs do the job right!

Fenced enclosures around trees are essential to protect them by keeping the foliage canopy and branching structure clear from contact by equipment, materials and activities, preserving roots and soil conditions in an intact and non-compacted state, and identifying the Tree Protection Zone (TPZ) in which no soil disturbance is permitted and activities are restricted, unless otherwise approved. **An approved tree protection report must be added to this sheet when project activity occurs within the TPZ of a regulated tree.**
For detailed information on Palo Alto's regulated trees and protection during development, review the **City Tree Technical Manual** (TTM) found at www.cityofpaloalto.org/trees/.

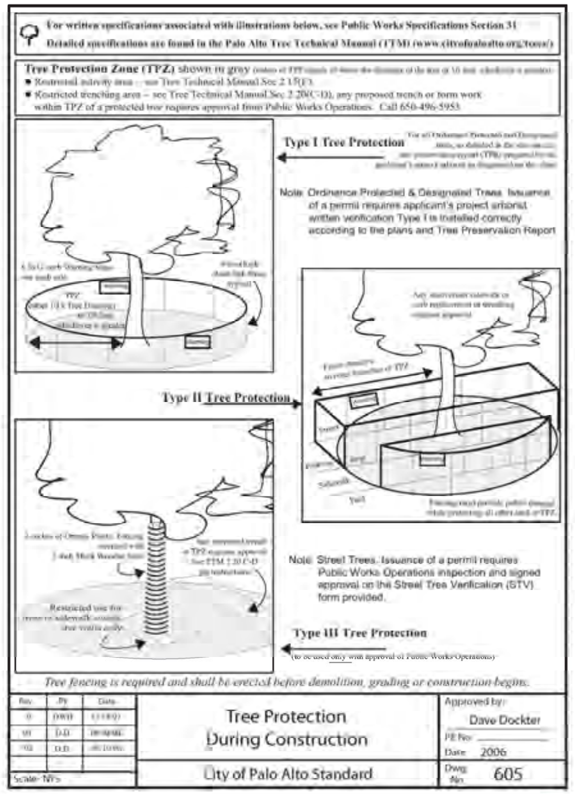

Table 2-2 Palo Alto Tree Technical Manual

CONTRACTOR & ARBORIST INSPECTION SCHEDULE

ADDENDUM 11

Monthly Tree Activity Report- *Construction Site*

City of Palo Alto

Tree Technical Manual

To purchase the Tree Technical Manual

June, 2001 First Edition

APPENDIX J

PALO ALTO
STREET TREE PROTECTION INSTRUCTIONS
–SECTION 31–

City of Palo Alto
Tree Department
Public Works Operations
PO Box 10250 Palo Alto, CA 94303
650/496-5953 FAX: 650/852-9289

Verification of Street Tree Protection

Applicant Instructions: Complete upper portion of this form. Mail or FAX this form along with signed Tree Disclosure Statement to Public Works Dept. Public Works Tree Staff will inspect and notify applicant.

APPLICATION DATE:	
ADDRESS/LOCATION OF STREET TREES TO BE PROTECTED:	
APPLICANT'S NAME:	
APPLICANT'S ADDRESS:	
APPLICANT'S TELEPHONE & FAX NUMBERS:	

This section to be filled out by City Tree Staff

1. The Street Trees at the above address(es) are adequately protected. The type of protection used is:	YES ☐ NO* ☐ * If NO, go to #2 below
Inspected by:	
Date of Inspection:	
2. The Street Trees at the above address are NOT adequately protected. The following modifications are required: Indicate how the required modifications were communicated to the applicant.	
Subsequent Inspection	
Street trees at above address were found to be adequately protected:	YES ☐ NO* ☐
Inspected by:	
Date of Inspection:	
Notes:	

Return approved sheet to Applicant for demolition or building permit issuance.

---WARNING---
Tree Protection Zone

This fencing shall not be removed without City Arborist approval (650-496-5953)

Removal without permission is subject to a $500 fine per day*

***Palo Alto Municipal Code Section 8.10.110**

City of Palo Alto Tree Protection Instructions are located at http://www.city.palo-alto.ca.us/trees/technical-manual.html

SPECIAL INSPECTIONS — PLANNING DEPARTMENT

TREE PROTECTION INSPECTIONS MANDATORY

PAMC 8.10 PROTECTED TREES. CONTRACTOR SHALL ENSURE PROJECT SITE ARBORIST IS PERFORMING REQUIRED TREE INSPECTION AND SITE MONITORING. PROVIDE WRITTEN MONTHLY TREE ACTIVITY REPORTS TO THE PLANNING DEPARTMENT LANDSCAPE REVIEW STAFF BEGINNING 14 DAYS AFTER BUILDING PERMIT ISSUANCE.

BUILDING PERMIT DATE: ____________

DATE OF 1ST TREE ACTIVITY REPORT: ____________

CITY STAFF: ____________

REPORTING DETAILS OF THE MONTHLY TREE ACTIVITY REPORT SHALL CONFORM TO SHEET T-1 FORMAT. VERIFY THAT ALL TREE PROTECTION MEASURES ARE IMPLIMENTED AND WILL INCLUDE ALL CONTRACTOR ACTIVITY, SCHEDULED OR UNSCHEDULED, WITHIN A TREE PROTECTION ROOT ZONE. NON-COMPLIANCE IS SUBJECT TO VIOLATION OF PAMC 8.10.080. REFERENCE: PALO ALTO TREE TECHNICAL MANUAL, SECTION 2.00 AND ADDENDUM 11

Apply Tree Protection Report on sheet(s) T-2

Use addtional "T" sheets as needed

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23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
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SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
PALO ALTO TREE PROTECTION

SHEET NUMBER
L-1

POLLUTION PREVENTION — IT'S PART OF THE PLAN

Construction projects are required to implement year-round stormwater BMPs, as they apply to your project.

Runoff from streets and other paved areas is a major source of pollution to San Francisco Bay. Construction activities can directly affect the health of the Bay unless contractors and crews plan ahead to keep construction dirt, debris, and other pollutants out of storm drains and local creeks. Following these guidelines will ensure your compliance with City of Palo Alto Ordinance requirements.






MATERIALS & WASTE MANAGEMENT

Non-Hazardous Materials

- ☐ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or when they are not in use.
- ☐ Use (but don't overuse) reclaimed water for dust control.
- ☐ Ensure dust control water doesn't leave site or discharge to storm drains.

Hazardous Materials

- ☐ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ☐ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ☐ Follow manufacturer's application instructions for hazardous materials and do not use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ☐ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ☐ Cover and maintain dumpsters. Check frequently for leaks. Place dumpsters under roofs or cover with tarps or plastic sheeting secured around the outside of the dumpster. A plastic liner is recommended to prevent leaks. Never clean out a dumpster by hosing it down on the construction site.
- ☐ Place portable toilets away from storm drains. Make sure they are in good working order. Check frequently for leaks.
- ☐ Dispose of all wastes and demolition debris properly. Recycle materials and wastes that can be recycled, including solvents, water-based paints, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation.
- ☐ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.
- ☐ Keep site clear of litter (e.g. lunch items, cigarette butts).
- ☐ Prevent litter from uncovered loads by covering loads that are being transported to and from site.

Construction Entrances and Perimeter

- ☐ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ☐ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

EQUIPMENT MANAGEMENT & SPILL CONTROL

Maintenance and Parking

- ☐ Designate an area of the construction site, well away from streams or storm drain inlets and fitted with appropriate BMPs, for auto and equipment parking, and storage.
- ☐ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ☐ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ☐ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ☐ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment, and do not use diesel oil to lubricate equipment or parts onsite.

Spill Prevention and Control

- ☐ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ☐ Maintain all vehicles and heavy equipment. Inspect frequently for and repair leaks. Use drip pans to catch leaks until repairs are made.
- ☐ Clean up leaks, drips and other spills immediately and dispose of cleanup materials properly.
- ☐ Use dry cleanup methods whenever possible (absorbent materials, cat litter and/or rags).
- ☐ Sweep up spilled dry materials immediately. Never attempt to "wash them away" with water, or bury them.
- ☐ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ☐ Report any hazardous materials spills immediately! Call City of Palo Alto Communications, **(650) 329-2413**. If the spill poses a significant hazard to human health and safety, property or the environment, you must report it to the State Office of Emergency Services, **(800) 852-7550 (24 hours)**.

EARTHMOVING

Grading and Earthwork

- ☐ Schedule grading and excavation work during dry weather.
- ☐ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ☐ Remove existing vegetation only when absolutely necessary, plant temporary vegetation for erosion control on slopes or where construction is not immediately planned.
- ☐ Prevent sediment from migrating offsite and protect storm drain inlets, drainage courses and streams by installing and maintaining appropriate BMPs (e.g., silt fences, gravel bags, fiber rolls, temporary swales, etc.).
- ☐ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ☐ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells.
  - Buried barrels, debris, or trash.
- ☐ If the above conditions are observed, document any signs of potential contamination and clearly mark them so they are not disturbed by construction activities.

Landscaping

- ☐ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ☐ Stack bagged material on pallets and under cover.
- ☐ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

CONCRETE MANAGEMENT & DEWATERING

Concrete Management

- ☐ Store both dry and wet materials under cover, protected from rainfall and runoff and away from storm drains or waterways. Store materials off the ground, on pallets. Protect dry materials from wind.
- ☐ Wash down exposed aggregate concrete only when the wash water can (1) flow onto a dirt area; (2) drain onto a bermed surface from which it can be pumped and disposed of properly; or (3) block any storm drain inlets and vacuum washwater from the gutter. If possible, sweep first.
- ☐ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and make sure wash water does not leach into the underlying soil. (See CASQA Construction BMP Handbook for properly designed concrete washouts.)

Dewatering

- ☐ Reuse water for dust control, irrigation or another on-site purpose to the greatest extent possible.
- ☐ Be sure to obtain a Permit for Construction in the Public Street from Public Works Engineering before discharging water to a street, gutter, or storm drain. Call the Regional Water Quality Control Plant (RWQCP) at **(650) 329-2598** for an inspection prior to commencing discharge. Use filtration or diversion through a basin, tank, or sediment trap as required by the approved dewatering plan. Dewatering is not permitted from October to April.
- ☐ In areas of known contamination, testing is required prior to reuse or discharge of groundwater. Consult with the City inspector to determine what testing to do and to interpret results. Contaminated groundwater must be treated or hauled off-site for proper disposal.

PAVING/ASPHALT WORK

Paving

- ☐ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ☐ Cover storm drain inlets and manholes when applying seal coat, slurry seal, fog seal, or similar materials.
- ☐ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.

Sawcutting & Asphalt/Concrete Removal

- ☐ Protect storm drain inlets during saw cutting.
- ☐ If saw cut slurry enters a catch basin, clean it up immediately.
- ☐ Shovel or vacuum saw cut slurry deposits and remove from the site. When making saw cuts, use as little water as possible. Sweep up, and properly dispose of all residues.

PAINTING & PAINT REMOVAL

Painting Cleanup and Removal

- ☐ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ☐ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ☐ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ☐ Sweep up or collect paint chips and dust from non-hazardous dry stripping and sand blasting into plastic drop cloths and dispose of as trash.
- ☐ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state certified contractor.

STORM DRAIN POLLUTERS MAY BE LIABLE FOR FINES OF UP TO $10,000 PER DAY!

250 Hamilton Avenue
Palo Alto, CA 94301
650.329.2211
cityofpaloalto.org

CITY OF PALO ALTO

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
PALO ALTO POLLUTION PREVENTION CHECKLIST

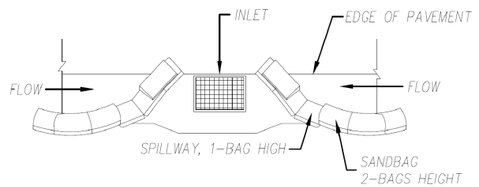
SHEET NUMBER
L-2

EROSION AND SEDIMENT CONTROL NOTES:

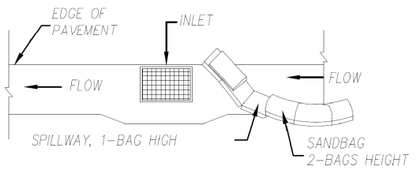
TEMPORARY EROSION/SEDIMENT CONTROL, PRIOR TO COMPLETION OF FINAL IMPROVEMENTS, SHALL BE PERFORMED BY THE CONTRACTOR OR QUALIFIED PERSON AS INDICATED BELOW:

1. ALL REQUIREMENTS OF THE CITY "LAND DEVELOPMENT MANUAL, STORM WATER STANDARDS" MUST BE INCORPORATED INTO THE DESIGN AND CONSTRUCTION OF THE PROPOSED PUBLIC IMPROVEMENTS CONSISTENT WITH THE EROSION CONTROL PLAN AND/OR WATER POLLUTION CONTROL PLAN (WPCP), IF APPLICABLE.
2. FOR STORM DRAIN INLETS, PROVIDE A GRAVEL BAG SILT BASIN IMMEDIATELY UPSTREAM OF INLET AS INDICATED ON DETAILS.
3. THE CONTRACTOR OR QUALIFIED PERSON SHALL BE RESPONSIBLE FOR CLEANUP OF SILT AND MUD ON ADJACENT STREET(S) AND STORM DRAIN SYSTEM DUE TO CONSTRUCTION ACTIVITY.
4. THE CONTRACTOR SHALL REMOVE SILT AND DEBRIS AFTER EACH MAJOR RAINFALL.
5. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON.
6. THE CONTRACTOR SHALL RESTORE ALL EROSION/SEDIMENT CONTROL DEVICES TO WORKING ORDER TO THE SATISFACTION OF THE CITY ENGINEER OR RESIDENT ENGINEER AFTER EACH RUN-OFF PRODUCING RAINFALL.
7. THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION/SEDIMENT CONTROL MEASURES AS MAY THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION/SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED BY THE RESIDENT ENGINEER DUE TO UNFORESEEN CIRCUMSTANCES, WHICH MAY ARISE.
8. EROSION/SEDIMENT CONTROL MEASURES PROVIDED PER THE APPROVED IMPROVEMENT PLAN SHALL BE INCORPORATED HEREON. ALL EROSION/SEDIMENT CONTROL FOR INTERIM CONDITIONS SHALL BE DONE TO THE SATISFACTION OF THE RESIDENT ENGINEER.
9. ALL REMOVABLE PROTECTIVE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS IMMINENT.
10. THE CONTRACTOR SHALL ARRANGE FOR WEEKLY MEETINGS DURING OCTOBER 1ST TO APRIL 30TH FOR PROJECT TEAM (GENERAL CONTRACTOR, QUALIFIED PERSON, EROSION CONTROL SUBCONTRACTOR IF ANY, ENGINEER OF WORK, OWNER/DEVELOPER AND THE RESIDENT ENGINEER) TO EVALUATE THE ADEQUACY OF THE EROSION/SEDIMENT CONTROL MEASURES AND OTHER RELATED CONSTRUCTION ACTIVITIES.

STORM DRAIN INLET PROTECTION



TYPICAL PROTECTION FOR INLET WITH OPPOSING FLOW DIRECTIONS



TYPICAL PROTECTION FOR INLET WITH SINGLE FLOW DIRECTION

NOTES:

1. INTENDED FOR SHORT-TERM USE.
2. USE TO INHIBIT NON-STORM WATER FLOW.
3. ALLOW FOR PROPER MAINTENANCE AND CLEANUP.
4. BAGS MUST BE REMOVED AFTER ADJACENT OPERATION IS COMPLETED.
5. NOT APPLICABLE IN AREAS WITH HIGH SILTS AND CLAYS WITHOUT FILTER FABRIC.

NOTES:

1. CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS.
2. CONTRACTOR TO PLACE SANDBAGS AROUND ANY/ALL STORM DRAIN INLETS TO PREVENT CONTAMINATED WATER.
3. SPOILS PILE WILL BE COVERED AND CONTAINED AND STREET WILL BE SWEPT AND CLEANED AS NEEDED.
4. CONTRACTOR TO REPAIR DAMAGED PUBLIC IMPROVEMENTS TO THE CONTRACTOR TO REPAIR DAMAGED PUBLIC IMPROVEMENTS TO THE SATISFACTION OF THE CITY ENGINEER.
5. SIDEWALK TO BE REPLACED CURB & GUTTER TO BE PROTECTED IN PLACE. SIDEWALK TO BE REPLACED TO THE SATISFACTION OF THE CITY ENGINEER.
6. THE CONTRACTOR SHALL RESTORE THE ROADWAY BACK TO ITS ORIGINAL CONDITION SATISFACTORY TO THE CITY ENGINEER INCLUDING, BUT NOT LIMITED TO PAVING, STRIPING, BIKE LANES, PAVEMENT LEGENDS, SIGNS, AND TRAFFIC LOOP DETECTORS.
7. SIDEWALK SHALL BE RESTORED/REPLACED PER CITY STANDARD DRAWINGS.
8. PEDESTRIAN RAMP WILL NOT BE DISTURBED.PEDESTRIAN RAMP WILL NOT BE DISTURBED.

GENERAL CONTRACTOR NOTES:

1. STREET USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. ALL WORK TO BE CONDUCTED IN THE RIGHT OF WAY.
3. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
4. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNING WILL BE PLACED.
5. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
6. CLEANUP OF SITE WILL BE COMPLETED EACH EVENING AND THE SITE WILL BE RETURNED TO EXISTING CONDITIONS AT THE COMPLETION OF CONSTRUCTION AT EACH SITE.

** CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR RESPONSIBLE FOR SAME.

R.O.W. GROUND CONSTRUCTION NOTES:

1. GROUND CONSTRUCTION TO REMOVE/CLEAN ALL DEBRIS, NAILS, STAPLES, GROUND CONSTRUCTION TO REMOVE/CLEAN ALL DEBRIS, NAILS, STAPLES, OR NON-USED VERTICALS OFF THE POLE.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH MUNICIPAL, COUNTY, STATE, FEDERAL, G095 AND G0128 STANDARDS AND REGULATIONS.
3. CALL USA 48 HOURS PRIOR TO EXCAVATING AT (800) 227-2600 OR 811.
4. ALL LANDSCAPING TO BE RESTORED TO ORIGINAL CONDITION OR BETTER.
5. ALL EQUIPMENT TO BE BONDED. ALL EQUIPMENT TO BE BONDED.
6. METERING CABINET REQUIRES 36" CLEARANCE AT DOOR OPENING.
7. CAULK CABINET BASE AT PAD.

CALIFORNIA STATE CODE COMPLIANCE:

ALL WORK AND MATERIALS SHALL BE PREFORMED 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 CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

- CALIFORNIA ADMINISTRATIVE CODE (INCLUDING TITLES 24 & 25) 2016
- 2016 CALIFORNIA BUILDING CODES WHICH ADOPTS THE 2015 IBC, 2015 IMC, 2015 IPC AND THE 2014 NEC,AND SHALL INCLUDE 2016 CBC, CFC, CMC, CEC, CPC, CGBSC.
- BUILDING OFFICIALS & CODE ADMINISTRATORS (BOCA) CURRENT NATIONAL CODES
- ANSI/EIA-222-G (2009 - 2ND EDITION)
- NFPA-101 - LIFE SAFETY CODE / CAL-OSHA - TITLE 8 / FCR - TITLE 29
- LOCAL BUILDING CODE
- CITY/COUNTY ORDINANCES
- ACCESSIBILITY REQUIREMENTS:

** FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS REQUIREMENTS DO NOT APPLY IN ACCORDANCE WITH THE 2016 CALIFORNIA BUILDING CODE.

- FCC RF/EMF EXPOSURE/EMITTANCE COMPLIANCE:

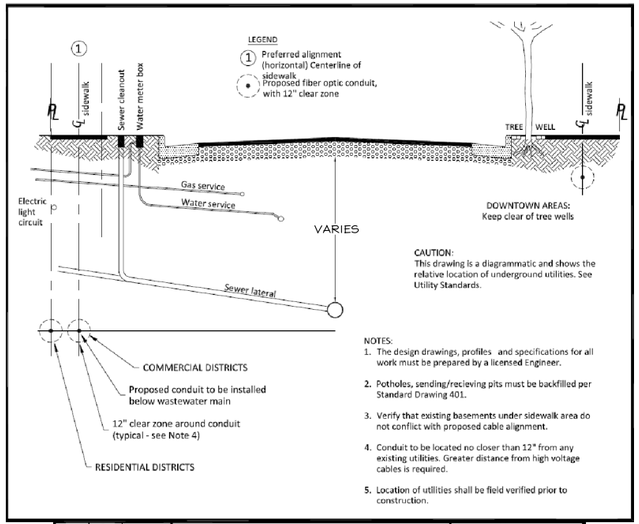
**FCC NOTE: THIS WIRELESS COMMUNICATION FACILITY COMPLIES WITH FEDERAL STANDARDS FOR RADIO FREQUENCY IN ACCORDANCE WITH THE TELECOMMUNICATION ACT OF 1996 AND SUBSEQUENT AMENDMENTS AND ANY OTHER REQUIREMENTS IMPOSED BY STATE OR FEDERAL REGULATORY AGENCIES.

CITY OF PALO ALTO UTILITIES ENGINEERING NOTES:

1. APPLICANT SHALL TAP ELECTRIC SERVICE TO THE SMALL CELL DISTRIBUTED ANTENNA SYSTEM FROM THE LOCATIONS JOINTLY IDENTIFIED DURING THE FIELD INVESTIGATION.
2. SERVICE VOLTAGE TO ALL THE PROPOSED LOCATIONS MAY NOT BE THE SAME. APPLICANT SHALL DESIGN THEIR SYSTEM TO OPERATE AT THE AVAILABLE VOLTAGE IN THE VICINITY.
3. IF BRAND NEW POLES NEED TO BE INSTALLED FOR APPLICANT'S SYSTEM THEN THE POLES MUST MATCH EXISTING POLES IN THE DOWN TOWN AREA.
4. AFTER EXCAVATION IS COMPLETED ON THE PUBLIC RIGHT OF WAY, EXISTING STREETS INCLUDING SIDEWALKS/ CURB/ GUTTER OR ANY DECORATIVE PATHS MUST BE BROUGHT TO ITS ORIGINAL CONDITION AND MUST BE APPROVED BY PUBLIC WORKS ENGINEERING DEPARTMENT'S INSPECTOR. POTHOLING MUST BE DONE AND ALL THE UTILITIES MUST BE IDENTIFIED PRIOR TO COMMENCING EXCAVATION.
5. EXCAVATION AND RESTORATION WORK MUST BE IN COMPLIANCE WITH PUBLIC WORKS ENGINEERING STANDARDS AND SPECIFICATIONS THAT ARE AVAILABLE ON THE FOLLOWING WEBSITE: http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=1834&TargetID=145
6. APPLICANTS SHALL BE RESPONSIBLE FOR MAINTAINING THEIR SYSTEM INCLUDING SUBSTRUCTURE. IN CASE OF KNOCK DOWNS, THE CITY WILL RE-INSTALL ITS STREET LIGHTING POLES BUT NOT APPLICANT'S EQUIPMENT ON OR OFF THE POLE.
7. A FIELD MEETING IS RECOMMENDED WITH UTILITIES ENGINEERING PRIOR TO COMMENCING THE WORK.
8. PLANS SHALL INCLUDE A NOTE: CONTRACTOR TREE INSPECTION REQUIREMENTS: MODIFIED TYPE III TRUNK WRAPPING SHALL BE VERIFIED BY URBAN FORESTRY PRIOR TO ANY WORK IN THE VICINITY. FOR EACH TREE SITE WRAPPED FOR PROTECTION WITHIN 15' OF ANY WORK ZONE OR CONCRETE FORM SECTION, A BILLABLE TREE INSPECTION BY URBAN FORESTRY (650-496-5953, 24-HOUR ADVANCE IS REQUIRED) SHALL BE COMPLETED PRIOR TO DEMOLITION, DRILLING, EXCAVATING,FORMING OR STREET LIGHT ACTIVITY. CONTRACTOR SHALL ARRANGE PAYMENTS AT THE DEVELOPMENT CENTER, 285 HAMILTON AVE, PALO ALTO, CA.
9. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITIES DEPARTMENT 650/329-2413 OR 650/496-6982 IF THE EXISTING WATER, WASTEWATER OR GAS MAINS ARE DISTURBED OR DAMAGED. A QUALIFIED CONTRACTOR MAY PERFORM REPAIRS ON CITY WATER AND WASTEWATER MAINS UNDER THE DIRECT SUPERVISION OF THE WGW UTILITIES INSPECTOR. FOR WATER REPAIRSALL THE DISINFECTION REQUIREMENTS OF THE WGW UTILITY STANDARDS AND THESE CONDITIONS SHALL BE ADHERED TO. ALL REPAIRS TO THE CITY GAS SYSTEM MUST BE PERFORMED BY THE CITY OF PALO ALTO UTILITIES.
10. NO WATER VALVES OR OTHER FACILITIES OWNED BY UTILITIES DEPARTMENT SHALL BE OPERATED FOR ANY PURPOSE BY THE APPLICANT'S CONTRACTOR. ALL REQUIRED OPERATION WILL ONLY BE PERFORMED BY AUTHORIZED UTILITIES DEPARTMENT PERSONNEL. WATER VALVES MAY BE OPERATED BY THE CONTRACTOR UNDER THE DIRECT SUPERVISION OF THE WGW UTILITIES INSPECTOR. THE APPLICANT'S CONTRACTOR SHALL NOTIFY THE UTILITIES DEPARTMENT NOT LESS THAN FORTY-EIGHT (48) HOURS IN ADVANCE OF THE TIME THAT SUCH OPERATION IS REQUIRED.

NORMAL LOCATION OF UNDERGROUND UTILITIES NOTES:

1. LOCATION AND DEPTH OF EXISTING AND PROPOSED UTILITIES MUST BE PROVIDED BY THE SUBDIVIDER AND SHOWN ON ANY PLANS SUBMITTED TO THE DEPT. OF PUBLIC WORKS FOR APPROVAL.
2. CHANGES MAY BE PERMITTED BY THE DEPT. OF PUBLIC WORKS IN CASES OF CONFLICTING FACILITIES.
3. CONFLICTS BETWEEN UTILITY COMPANIES FACILITIES, EXISTING AND PROPOSED, MUST BE MUTUALLY RESOLVED BY THE UTILITY COMPANIES.
4. FOR COMMERCIAL SIDEWALKS, THE FIRE HYDRANT SHALL BE PLACED WITHIN THE SIDEWALK 1'-6" BEHIND FACE OF CURB.
5. MAXIMUM 2" DIAMETER GAS MAINS MAY BE PLACED IN JOINT UTILITIES TRENCH SUBJECT TO APPROVAL OF CITY ENGINEER (IN TRACTS).



Rev	By	Date
0	DWH	7/16/98
1	MMN	7/20/04

Scale: NTS

Conduit Location Detail
Telecommunications

City of Palo Alto Standard

Approved by:
PE No. 72158
Date 01/10/18
Dwg No. 402

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

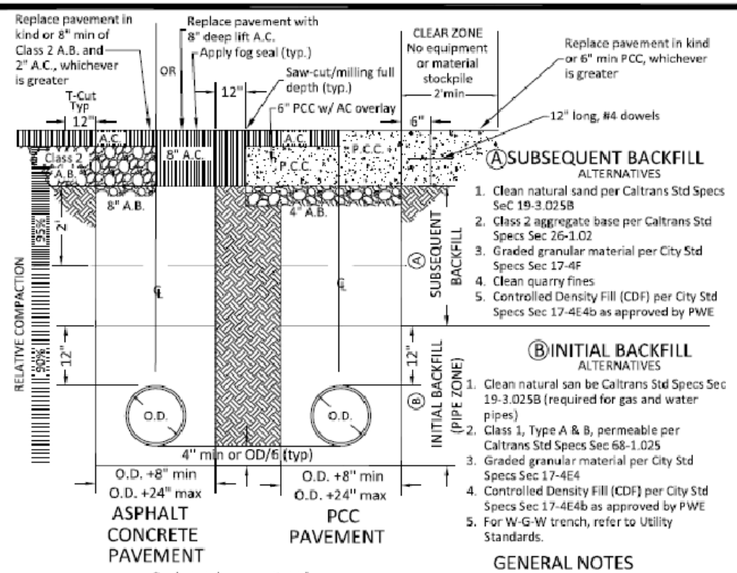
REGISTERED PROFESSIONAL ENGINEER
WASAM ZALZALI
71655
STATE OF CALIFORNIA
CIVIL

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.

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
PALO ALTO EROSION CONTROL AND CONDUIT LOCATION DETAILS & NOTES

SHEET NUMBER
L-3



Ⓐ SUBSEQUENT BACKFILL ALTERNATIVES

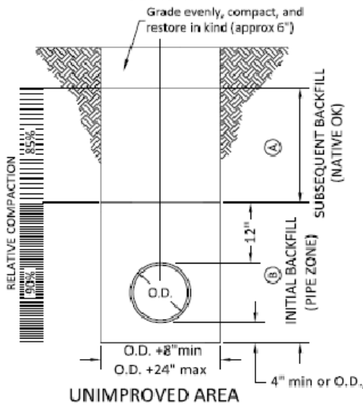
1. Clean natural sand per Caltrans Std Specs SeC 19-3.025B
2. Class 2 aggregate base per Caltrans Std Specs Sec 26-1.02
3. Graded granular material per City Std Specs Sec 17-4F
4. Clean quarry fines
5. Controlled Density Fill (CDF) per City Std Specs Sec 17-4E4b as approved by PWE

Ⓑ INITIAL BACKFILL ALTERNATIVES

1. Clean natural san be Caltrans Std Specs Sec 19-3.025B (required for gas and water pipes)
2. Class 1, Type A & B, permeable per Caltrans Std Specs Sec 68-1.025
3. Graded granular material per City Std Specs Sec 17-4E4
4. Controlled Density Fill (CDF) per City Std Specs Sec 17-4E4b as approved by PWE
5. For W-G-W trench, refer to Utility Standards.

GENERAL NOTES

1. PCC shall contain a minimum of 6 sacks concrete with a desired 28-day strength of 3,500 PSI
2. Extend T-cut to lip gutter per City Std Specs Sec 17-4G
3. Refer to City Std Dwg 403 for trench limits of restoration
4. Match existing AC thickness on PCC overlays



UNIMPROVED AREA

JETTING NOTES

1. IMPROVED AREAS
   a. INITIAL BACKFILL - jetting of sand OK
   b. SUBSEQUENT BACKFILL - jetting of sand subject to approval of City Engineer, except for top 2 ft, which must be mechanically compacted
2. UNIMPROVED AREAS: jetting of sand OK
3. WHEN JETTING IS PERMITTED:
   a. Excess water shall be collected at low points and removed by pumping
   b. San to be jetted shall be placed in lifts no thicker than 4 ft
   c. Jetting shall be performed at intervals along the trench not to exceed 6 ft

Rev	By	Date
1	MN	03/10/05
2	JT	08/18/06
3	HQN	10/04/06
4	RTN	06/08/17

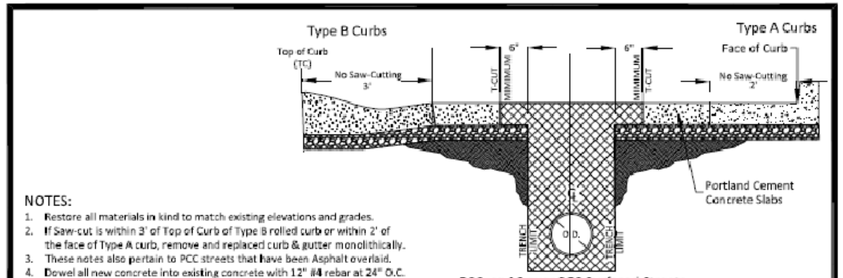
Scale: NTS

Trenches
Typical Cross-Sections

Approved by:
PE No. 72158
Date 01/10/18

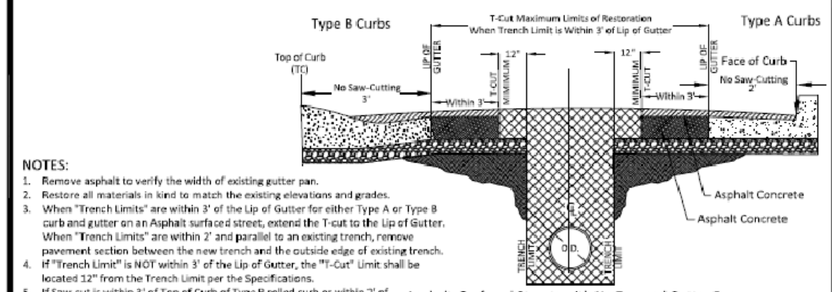
City of Palo Alto Standard

Dwg No. 401



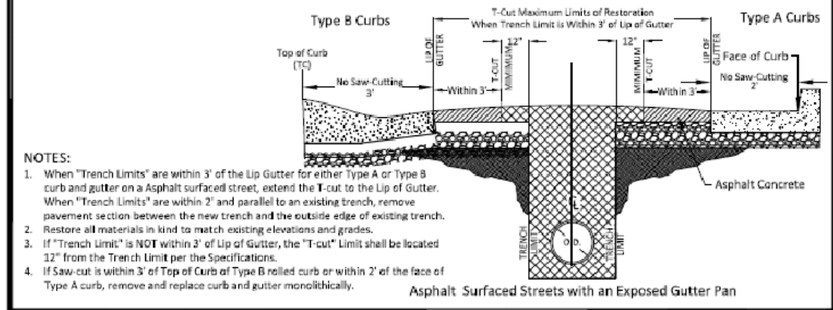
NOTES:
1. Restore all materials in kind to match existing elevations and grades.
2. If Saw-cut is within 3' of Top of Curb of Type B rolled curb or within 2' of the face of Type A curb, remove and replaced curb & gutter monolithically.
3. These notes also pertain to PCC streets that have been Asphalt overlaid.
4. Dowel all new concrete into existing concrete with 12" #4 rebar at 24" O.C.

PCC or AC over PCC Surfaced Streets



NOTES:
1. Remove asphalt to verify the width of existing gutter pan.
2. Restore all materials in kind to match the existing elevations and grades.
3. When "Trench Limits" are within 3' of the Lip of Gutter for either Type A or Type B curb and gutter on an Asphalt surfaced street, extend the T-cut to the Lip of Gutter. When "Trench Limits" are within 2' and parallel to an existing trench, remove pavement section between the new trench and the outside edge of existing trench.
4. If "Trench Limit" is NOT within 3' of the Lip of Gutter, the "T-Cut" Limit shall be located 12" from the Trench Limit per the Specifications.
5. If Saw-cut is within 3' of Top of Curb of Type B rolled curb or within 2' of the face of Type A curb, remove and replace curb & gutter monolithically.

Asphalt Surfaced Streets with No Exposed Gutter Pan



NOTES:
1. When "Trench Limits" are within 3' of the Lip Gutter for either Type A or Type B curb and gutter on a Asphalt surfaced street, extend the T-cut to the Lip of Gutter. When "Trench Limits" are within 2' and parallel to an existing trench, remove pavement section between the new trench and the outside edge of existing trench.
2. Restore all materials in kind to match existing elevations and grades.
3. If "Trench Limit" is NOT within 3' of Lip of Gutter, the "T-cut" Limit shall be located 12" from the Trench Limit per the Specifications.
4. If Saw-cut is within 3' of Top of Curb of Type B rolled curb or within 2' of the face of Type A curb, remove and replace curb and gutter monolithically.

Asphalt Surfaced Streets with an Exposed Gutter Pan

Rev	By	Date
1	MN	2/30/05
2	JT	8/14/06
3	HQN	10/16/06
4	RTN	06/11/17

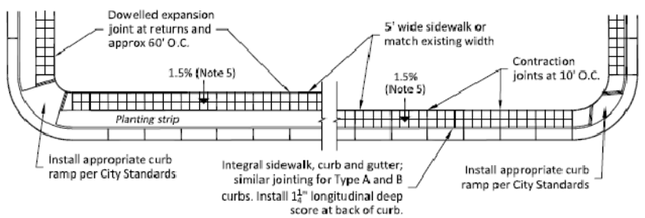
Scale: NTS

Trenches
Limits of Restoration

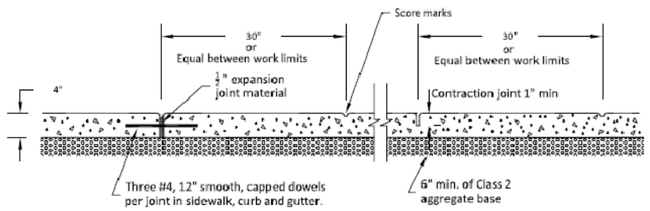
Approved by:
PE No. 72158
Date 01/10/18

City of Palo Alto Standard

Dwg No. 403



TYPICAL CITY BLOCK PLAN



Expansion joint Contraction joint

LONGITUDINAL SECTIONS

SIDEWALK CONSTRUCTION NOTES:

1. SIDEWALKS TO BE MARKED IN 30" SQUARES.
2. EDGES TO HAVE 3/4" RADIUS.
3. SCORE MARKS SHALL NOT BE LESS THAN 3/8" DEEP; CONTRACTION JOINTS SHALL BE 1" IN MINIMUM DEPTH @ 10' O.C.
4. CONTRACTION JOINTS MAY BE SAW-CUT.
5. SIDEWALKS TO HAVE 1.5% SLOPE TO STREET.
6. ALL NEW SIDEWALKS SHALL BE DOWELED AT 2'-0" O.C. INTO EXISTING CONCRETE WITH #4 12" LONG DOWELS AND EMBEDDED 6".
7. SAW CUT WALK FULL DEPTH AND FULL WIDTH ON SCORE MARKS PERPENDICULAR TO THE CURB. NO SAWCUTTING ON LONGITUDINAL SCORE MARKS.
8. INSTALL LONGITUDINAL DEEP SCORE ALONG ENTIRE BACK OF CURB THAT IS MONOLITHIC WITH SIDEWALK.

Rev	By	Date
0	DWH	12/14/92
1	MN	01/29/02
2	HQN	01/04/07
3	RTN	08/10/17

Scale: NTS

Sidewalk Construction

Approved by:
PE No. 72158
Date 01/10/18

City of Palo Alto Standard

Dwg No. 141

City of Palo Alto Standard | Dwg No. 141

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

Vinculums
575 LENNON LANE #125
WALNUT CREEK, CA 94598
OFFICE: (925) 482-8500

ALL STATES ENGINEERING & SURVEYING
A ZALZALI & ASSOCIATES COMPANY
23675 BIRTCHER DRIVE
LAKE FOREST, CA 92630
PHONE: (949) 273-0996

PROJECT ID:	P-334942
DRAWN BY:	LS
CHECKED BY:	DW

REV	DATE	DESCRIPTION	
0	01/19/2020	100% CD'S FOR SUBMITTAL	MG
B	06/09/2020	95% CD'S FOR REDLINE	RF
A	12/11/2017	90% CD'S FOR REDLINE	LS

REGISTERED PROFESSIONAL ENGINEER
WASSAM ZALZALI
71655
CIVIL
STATE OF CALIFORNIA

SF PALO ALTO 164
LIC R.O.W. ADJACENT TO:
ARBORETUM RD.,
PALO ALTO, 94304
LOCATION CODE: 425268

SHEET TITLE
PALO ALTO TRENCHING & SIDEWALK STD. DWGS.

SHEET NUMBER
L-4