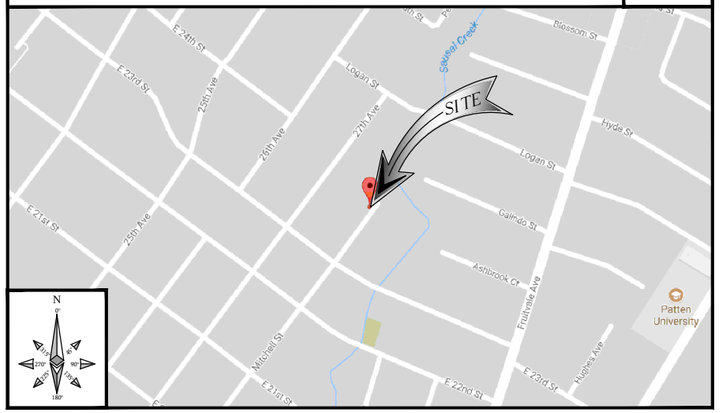
NW-CA-OASF07M1-TMO 07418A

POWER DESIGN: DC
POLE REPLACEMENT: YES
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

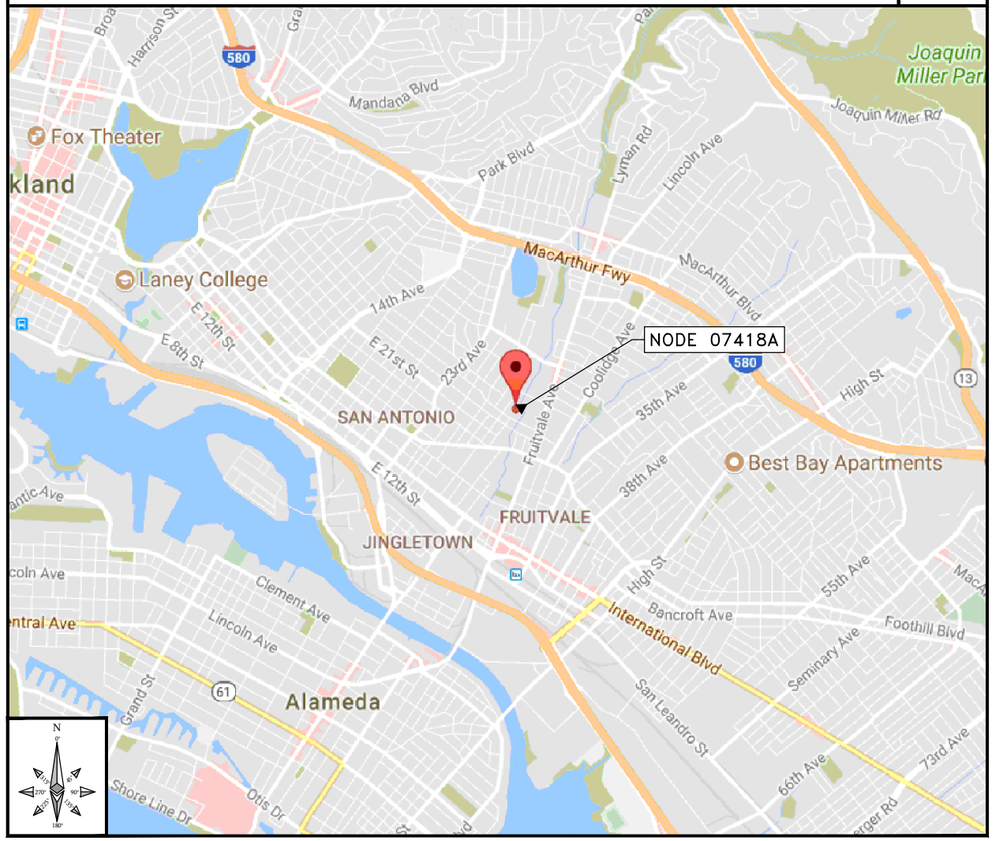
LOCAL MAP

NO SCALE



VICINITY MAP

NO SCALE



SHEET INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
GN-1	GENERAL NOTES AND LEGEND
Z-1	OVERALL SITE PLAN
Z-2	UTILITY POLE ELEVATIONS
Z-2.1	RISER DETAILS AND EQUIPMENT CLEARANCES
Z-3	EQUIPMENT DETAILS
Z-4	ELECTRICAL DETAILS

ASSOCIATED FILES, DOCUMENTS & APPLICATIONS

	WINDLOAD FILE	N/A
	JPA APPLICATION	N/A
	PGE APPLICATION	N/A
	PGE SLA	N/A
	MUNICIPAL PERMIT	N/A
	ELEC INSPECTION	N/A
	EXTENET CONTACT (NOC)	866-892-5327 noc@extenetsystems.com
	CUSTOMER CONTACT	N/A
	FIBER CONST PKG	N/A

IF USING 11"X17" PLOT, DRAWINGS WILL BE HALF SCALE

SUBCONTRACTOR SHALL VERIFY ALL PLANS & EXISTING 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

PROJECT INFORMATION

POLE OWNER

COMPANY: EXTENET JOINT POLE OWNERSHIP

ADDRESS: 2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

CONTACT: WENDY MUELLER

PHONE: 925-895-4614

APPLICANT

COMPANY: EXTENET SYSTEMS CALIFORNIA, LLC.

CONTACT: CHARLES LINDSAY

ADRESS: 2000 CROW CANYON PLACE,
SUITE 210
SAN RAMON, CA 94583

PHONE: (510) 910-7787

E-MAIL: CLINDSAY@EXTENETSYSTEMS.COM

AGENT

COMPANY: BLACK & VEATCH

CONTACT: ANA GOMEZ-ABARCA,
EXECUTION MANAGER, TELECOM

ADDRESS: 2999 OAK ROAD, SUITE 490
WALNUT CREEK, CA 94597

PHONE: (913) 458-9148 O
(925) 949-5902 F

EMAIL: GOMEZABARCAA@BV.COM

ENGINEER

COMPANY: BLACK & VEATCH

ENGINEER: LEE WRIGHT

PHONE: (913) 458-9793

E-MAIL: WRIGHTL@BV.COM

PROJECT DATA

LATITUDE:	37.787324697°
LONGITUDE:	-122.224220853°
POLE #:	110144476
ELEVATION:	103' AMSL
ZONING JURISDICTION:	CITY OF OAKLAND
ZONING DISTRICT:	RM-3
NEAREST A.P.N.:	26-763-8
OCCUPANCY:	U, UNMANNED
CONSTRUCTION TYPE:	ATTACHMENTS TO A WOOD UTILITY POLE
TITLE 24 REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. THIS PROJECT IS EXEMPT.

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 (AS APPLICABLE). NOTHING IN THESE PLANS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1: IBC – 2015
2: CALIFORNIA BUILDING STANDARDS CODE – 2016
3: CALIFORNIA GENERAL ORDER 95
4: CALIFORNIA MECHANICAL CODE 2016
5: CALIFORNIA PLUMBING CODE 2016
6: CALIFORNIA ELECTRICAL CODE 2016
7: CITY AND/OR COUNTY ORDINANCES
8: 2012 INTERNATIONAL FIRE CODE
9: BUILDING OFFICIALS AND CODE ADMINISTRATORS (BOCA)

PROJECT DESCRIPTION

THESE DRAWINGS DEPICT THE INSTALLATION OF A WIRELESS TELECOMMUNICATIONS NODE IN THE PUBLIC RIGHT OF WAY.

HARDWARE AND ANCILLARY EQUIPMENT TO BE INSTALLED AS DESCRIBED HEREIN.

GENERAL PROJECT NOTES

1. PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF/HERSELF WITH THE SCOPE OF WORK AND ALL CONDITIONS AFFECTING THE NEW PROJECT.
2. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS OF THE JOB SITE AND CONFIRM THAT WORK AS INDICATED ON THESE CONSTRUCTION DOCUMENTS CAN BE ACCOMPLISHED AS SHOWN PRIOR TO COMMENCEMENT OF ANY WORK.
3. ALL FIELD MODIFICATIONS BEFORE, DURING OR AFTER CONSTRUCTION SHALL BE APPROVED IN WRITING BY AN EXTENET SYSTEMS REPRESENTATIVE.
4. INSTALL ALL EQUIPMENT AND MATERIALS PER THE MANUFACTURER'S RECOMMENDATIONS, UNLESS INDICATED OTHERWISE.
5. NOTIFY EXTENET SYSTEMS, IN WRITING, OF ANY MAJOR DISCREPANCIES REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS, AND DESIGN INTENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATIONS FROM AN EXTENET SYSTEMS REPRESENTATIVE, AND ADJUSTING THE BID ACCORDINGLY.
6. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF THE WORK UNDER THE CONTRACT.
7. CONTRACTOR SHALL PROTECT ALL EXISTING IMPROVEMENTS AND FINISHES THAT ARE TO REMAIN. CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY OCCUR DURING THE CONSTRUCTION TO THE SATISFACTION OF AN EXTENET SYSTEMS REPRESENTATIVE.
8. CONTRACTOR PLANS TO ILLUSTRATE THE AS-BUILT CONDITION OF THE SITE. FOLLOWING THE FINAL INSPECTION BY EXTENET, THE CONTRACTOR SHALL PROVIDE EXTENET SYSTEMS WITH ONE COPY OF ALL RED-LINED DRAWINGS.
9. VERIFY ALL FINAL EQUIPMENT WITH AN EXTENET SYSTEMS REPRESENTATIVE. ALL EQUIPMENT LAYOUT, SPECS, PERFORMANCE INSTALLATION AND THEIR FINAL LOCATION ARE TO BE APPROVED BY EXTENET SYSTEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS/HER WORK WITH THE WORK AND CLEARANCES REQUIRED BY OTHERS RELATED TO SAID INSTALLATIONS.

UNDERGROUND SERVICE ALERT

UTILITIES PROTECTION CENTER, INC.
811

48 HOURS BEFORE YOU DIG

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH

BLACK & VEATCH CORPORATION
2999 OAK ROAD
SUITE 490
WALNUT CREEK, CA 94597

PROJECT NO.	DRAWN BY	CHECKED BY
192417.4164	KDA	LW

REV	DATE	DESCRIPTION
D	12/20/17	AMENDED PER COMMENTS
C	10/27/17	ISSUED FOR REVIEW
B	08/14/17	ISSUED FOR REVIEW
A	07/05/17	ISSUED FOR REVIEW

PRELIMINARY

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.

EXTENET SYSTEMS (CA) LLC
2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

SITE ADDRESS
07418A
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

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 EXTENET.
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 IDENTIFIED 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 EQUAL PRODUCT.
7. FURNISH : SUPPLY ONLY, OTHERS TO INSTALL. INSTALL: INSTALL ITEMS FURNISHED BY OTHERS. PROVIDE: FURNISH AND INSTALL.

FIELD WELDING NOTES:

1. WELDING TO BE PERFORMED BY AWS CERTIFIED WELDER FOR THE TYPE OF AND POSITION INDICATED. ALL WORK MUST BE IN CONFORMANCE WITH LATEST EDITION OF AWS D1.1.
2. GRIND SURFACES TO BE WELDED WITH A SILICON CARBIDE WHEEL PRIOR TO WELDING TO REMOVE ALL GALVANIZING WHICH MAY OTHERWISE BE CONSUMED IN THE WELD METAL. APPLY ANTI-SPATTER COMPOUND AFTER GRINDING.
3. WELDING TECHNIQUE MUST MINIMIZE TEMPERATURE RISE ON THE INSIDE SURFACE OF THE POLE AND ALSO VOLATIZE ANY REMAINING ZINC WITHIN THE BASE METAL WITH MINIMUM SPATTER, USE AN E70 (LOW HYDROGEN) ELECTRODE. USE LARGEST DIAMETER ELECTRODE COMPATIBLE WITH WELDING POSITION AND MATERIAL THICKNESS. STRICTLY FOLLOW ALL MANUFACTURE'S INSTRUCTIONS FOR STORAGE AND USE OF ELECTRODES. AVOID REMOVING ELECTRODES FROM MANUFACTURE'S PACKAGING UNTIL READY FOR IMMEDIATE USE.
4. WELDING MAY PRODUCE TOXIC FUMES. REFER TO ANSI STANDARD Z49.1 "SAFETY IN WELDING AND CUTTING" FOR PROPER PRECAUTIONS.
5. UPON COMPLETION OF WELDING, APPLY GALV-A-STICK ZINC COATING TO ALL UNPROTECTED SURFACES. APPLY A SECOND LAYER OF COLD GALVANIZING SPRAY COMPOUND CONTAINING A MINIMUM ZINC CONTENT OF 95%. IF NECESSARY, APPLY A FINAL COAT OF COMPATIBLE PAINT TO MATCH SURROUNDING SURFACES.

ANTENNA MOUNTING

1. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
2. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
4. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
6. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
7. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS.

TORQUE REQUIREMENTS

1. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
2. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
   A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
   B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
3. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
4. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
5. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
6. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).
7. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM).

ROW UTILITY POLE CONSTRUCTION NOTES

1. NO BOLT THREADS TO PROTRUDE MORE THAN 1-1/2" [.038M].
2. FILL ALL HOLES LEFT IN POLE FROM REARRANGEMENT OF CLIMBERS.
3. ALL CLIMB STEPS NEXT TO CONDUIT SHALL HAVE EXTENDED STEPS.
4. CABLE NOT TO IMPEDE 15" [.381M] CLEAR SPACE OFF POLE FACE (12:00).
5. 90 SHORT SWEEPS UNDER ANTENNA ARM. ALL CABLES MUST ONLY TRANSITION ON THE INSIDE OR BOTTOM OF ARMS (NO CABLE ON TOP OF ARMS).
6. USE 90 CONNECTOR AT CABLE CONNECTION TO ANTENNAS.
7. USE 1/2" [.013M] CABLE ON ANTENNAS UNLESS OTHERWISE SPECIFIED.
8. FILL VOID AROUND CABLES AT CONDUIT OPENING WITH FOAM SEALANT TO PREVENT WATER INTRUSION.

NODE SITE POWER SHUT DOWN PROCEDURES

1. FOR NON EMERGENCY/SCHEDULED POWER SHUT DOWN
   A. CALL EXTENET SYSTEMS NOC (NETWORK OPERATIONS CENTER) (866)892-5327
   B. 24 HOURS PRIOR TO SCHEDULED POWER SHUT OFF
   C. PROVIDE THE FOLLOWING INFORMATION
      - NOC SITE NUMBER IDENTIFIED ON SITE NUMBERING STICKER
      - YOUR NAME AND REASON FOR POWER SHUTOFF
      - PROVIDE DURATION OF OUTAGE
   D. UNLOCK DISCONNECT BOX, FLIP BOTH BREAKERS TO THE OFF POSITION
   E. POWER SHUT OFF VERIFICATION WITH APPROVED PG&E PROCEDURES
   F. NOTIFY EXTENET NOC UPON COMPLETION OF WORK
   G. REINSTALL LOCK ON DISCONNECT BOX
2. EMERGENCY POWER SHUT OFF
   A. CALL EXTENET SYSTEMS NOC (NETWORK OPERATIONS CENTER) (866)892-5327
   B. PROVIDE THE FOLLOWING INFORMATION
      - NOC SITE NUMBER IDENTIFIED ON SITE NUMBERING STICKER
      - YOUR NAME AND REASON FOR POWER SHUTOFF
      - PROVIDE DURATION OF OUTAGE
   D. UNLOCK DISCONNECT BOX, FLIP BOTH BREAKERS TO THE OFF POSITION
   E. POWER SHUT OFF VERIFICATION WITH APPROVED PG&E PROCEDURES
   F. NOTIFY EXTENET NOC UPON COMPLETION OF WORK
   G. REINSTALL LOCK ON DISCONNECT BOX

LEGEND

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM (T)
EXOTHERMIC WITH INSPECTION SLEEVE
GROUNDING BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE (T)
CHAINLINK FENCE (X)
WOOD/WROUGHT IRON FENCE
WALL STRUCTURE
LEASE AREA
PROPERTY LINE (PL)
SETBACKS
WATER LINE (W)
UNDERGROUND POWER (UGP)
UNDERGROUND TELCO (UGT)
UNDERGROUND FIBER (UGF)
OVERHEAD POWER (OHP)
OVERHEAD TELCO (OHT)
UNDERGROUND TELCO/POWER (UGT/P)
ABOVE GROUND POWER (AGP)
ABOVE GROUND TELCO (AGT)
ABOVE GROUND TELCO/POWER (AGT/P)
SECTION REFERENCE (XX / X-X)
DETAIL REFERENCE (XX / X-X)

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH
BLACK & VEATCH CORPORATION
2999 OAK ROAD
SUITE 490
WALNUT CREEK, CA 94597

PROJECT NO.	DRAWN BY	CHECKED BY
192417.4164	KDA	LW

REV	DATE	DESCRIPTION
D	12/20/17	AMENDED PER COMMENTS
C	10/27/17	ISSUED FOR REVIEW
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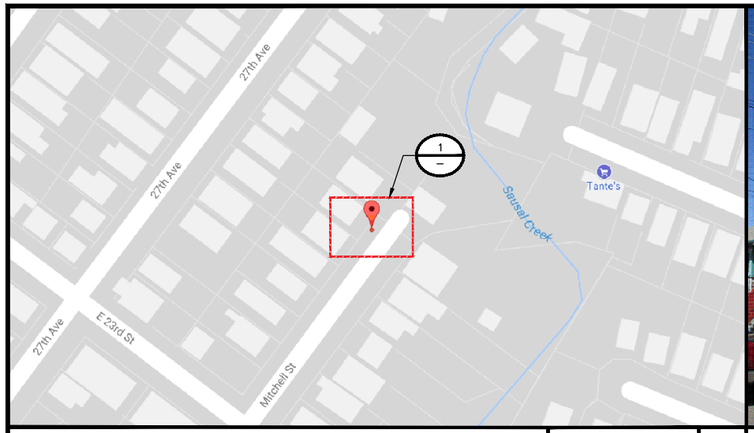
EXTENET SYSTEMS (CA) LLC
2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

SITE ADDRESS
07418A
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

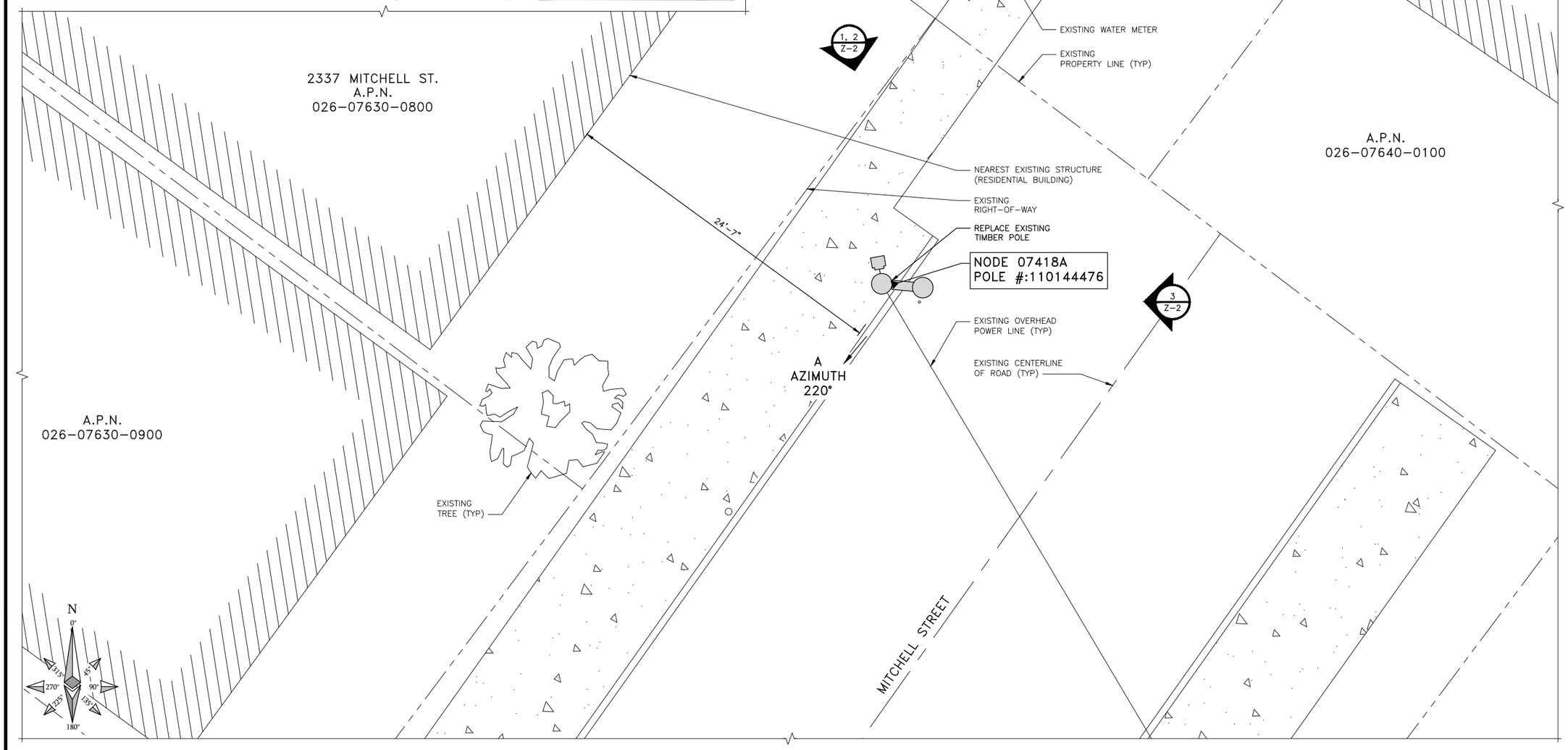
SHEET TITLE
GENERAL NOTES AND LEGEND

SHEET NUMBER
GN-1



SITE PLAN MAP | NO SCALE | A

SITE PHOTO | B



THIS DRAWING IS NOT A SITE SURVEY

THE PURPOSE OF THIS DRAWING IS TO SHOW HOW THE DEVELOPED SITE RELATES TO THE PARENT PARCEL AND ADJACENT PROPERTIES. R.O.W. MEASUREMENTS ARE APPROXIMATIONS.

OVERALL SITE PLAN

4' 2' 0 4' 8'
1/4"=1'-0"

1

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH

BLACK & VEATCH CORPORATION
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2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

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ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

SHEET TITLE
OVERALL SITE PLAN

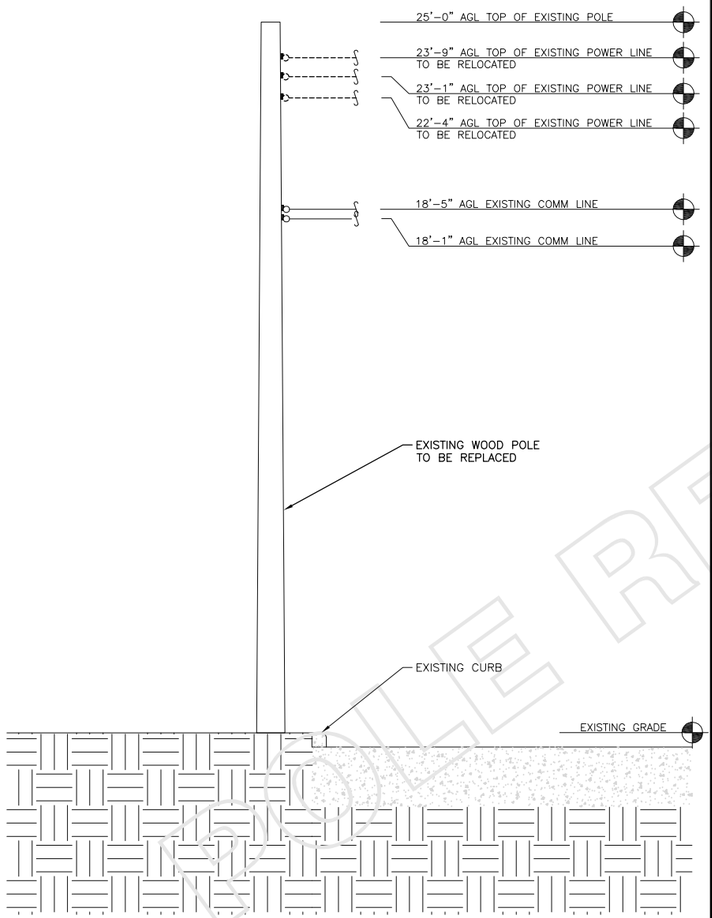
SHEET NUMBER
Z-1

NOTE

THESE DRAWINGS HAVE BEEN CREATED BASED ON THE ASSUMPTION THAT THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING. IT IS THE RESPONSIBILITY OF THE POLE OWNER TO CONFIRM THAT THE PROPOSED LOADING IS WITHIN THE ORIGINAL DESIGN CAPACITY OF THE STRUCTURE.

CARRIER MAKE-READY

1. CONTRACTOR SHALL REMOVE EXISTING WOOD POLE AND INSTALL NEW 45'-0" WOOD POLE WITH 6'-6" EMBEDMENT.
2. CONTRACTOR TO INSTALL PANEL ANTENNA w/ ANCILLARY ELECTRONICS AND HARDWARE ON PROPOSED ANTENNA BRACKET MOUNT, WITH AN ELECTRICAL DOWN TILT OF 0°.
3. CONTRACTOR TO INSTALL ERICSSON (3) RADIOS EQUIPMENT ASSEMBLY w/ ANCILLARY ELECTRONICS AND HARDWARE ON PROPOSED 56" CHANNEL MOUNT.
4. CONTRACTOR TO INSTALL (1)-2" SCH. 80 PVC CONDUIT FOR COAX AND FIBER CABLES.
5. CONTRACTOR TO INSTALL (1) RF SHUTDOWN ON PROPOSED 60" CHANNEL MOUNT.
6. EXTENET APPROVED CONTRACTOR TO RELOCATE EXISTING POWER LINES FROM 22'-4" TO 23'-5", 23'-5" TO 24'-2", AND 23'-9" TO 24'-10" ON RELOCATED POWER RACK.
7. EXTENET APPROVED CONTRACTOR TO INSTALL (1) NEW FIBER OPTIC CABLE AT 19'-5".
8. CONTRACTOR TO INSTALL REQUIRED RF SIGNAGE 3'-0" BELOW PROPOSED ANTENNA MOUNT.
9. CONTRACTOR TO INSTALL PROPOSED GUARD ARM AT 20'-0".



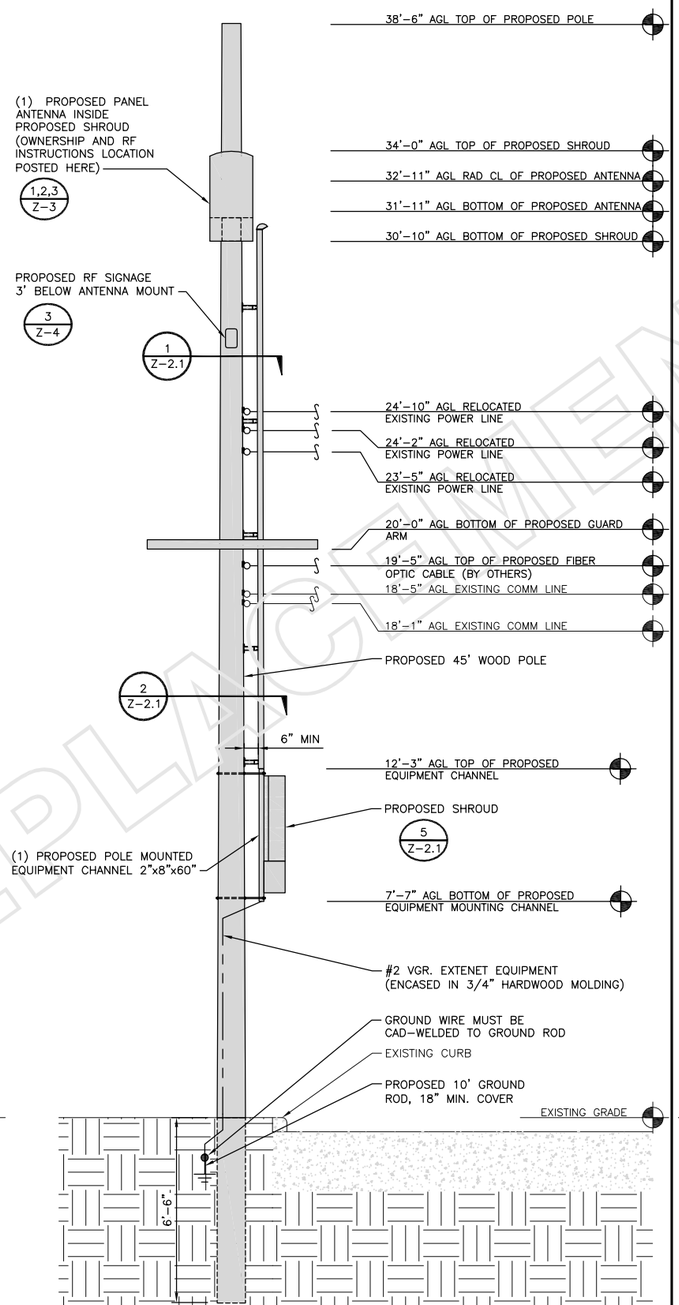
EXISTING SOUTH ELEVATION

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

1

NOTES

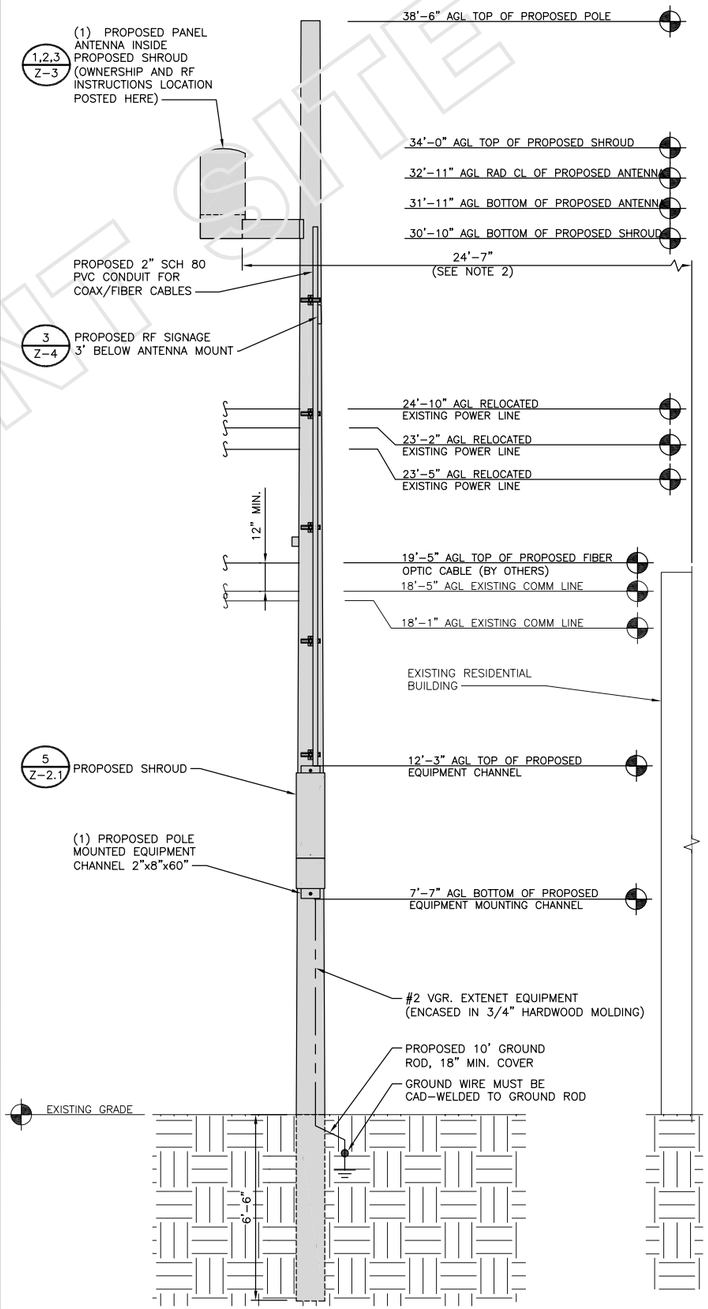
1. ALL PROPOSED/ANCILLARY EQUIPMENT TO BE PAINTED MESA BROWN TO MATCH EXISTING UTILITY POLE.
2. DISTANCE FROM ANTENNA FACE TO NEAREST BUILDING (2337 MITCHELL STREET). SEE SHEET Z-1 FOR ORIENTATION.
3. ANTENNA SHROUD NOT ENTIRELY SHOWN FOR CLARITY.
4. AN ELECTROMAGNETIC EMITTANCE (EME) PLACECARD SHALL BE AFFIXED TO THE POLE WHERE VISIBLE TO CRAFT WORKERS AND BETWEEN THE EQUIPMENT AND ANTENNA.



PROPOSED EAST ELEVATION

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2



PROPOSED NORTHWEST ELEVATION

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

3

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH

BLACK & VEATCH CORPORATION
2999 OAK ROAD
SUITE 490
WALNUT CREEK, CA 94597

PROJECT NO.	DRAWN BY	CHECKED BY
192417.4164	KDA	LW

REV	DATE	DESCRIPTION
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PRELIMINARY

EXTENET SYSTEMS (CA) LLC
2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

SITE ADDRESS
07418A
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

SHEET TITLE

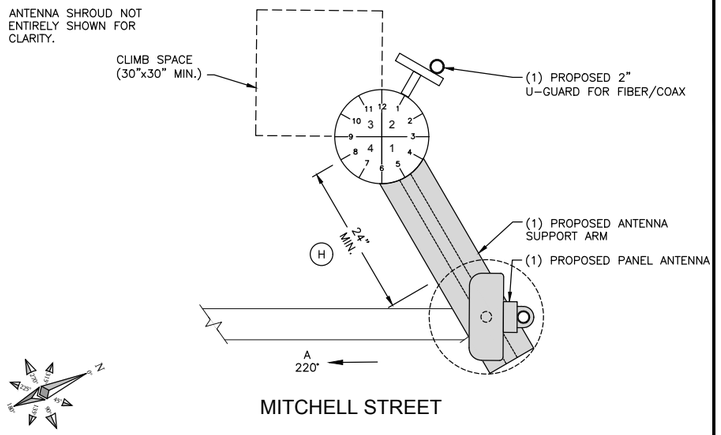
UTILITY POLE ELEVATIONS

SHEET NUMBER

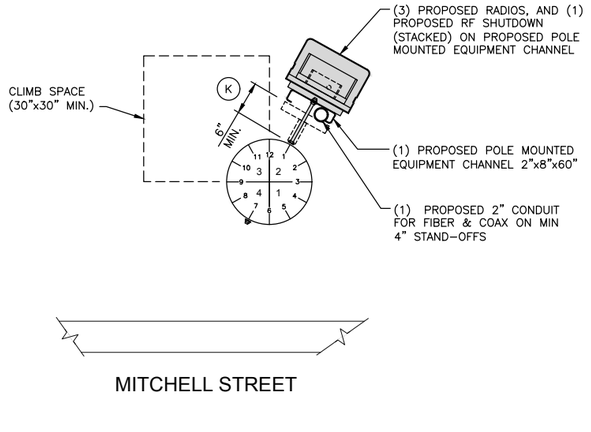
Z-2

NOTE

ANTENNA SHROUD NOT ENTIRELY SHOWN FOR CLARITY.



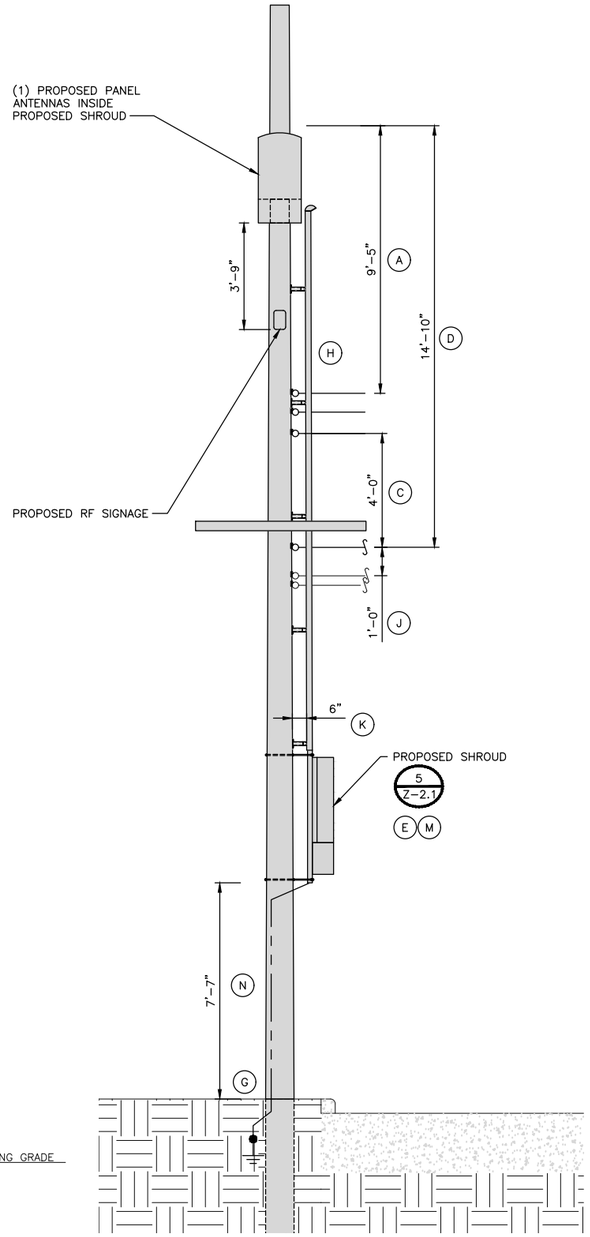
ANTENNA PLAN VIEW — NO SCALE — 1



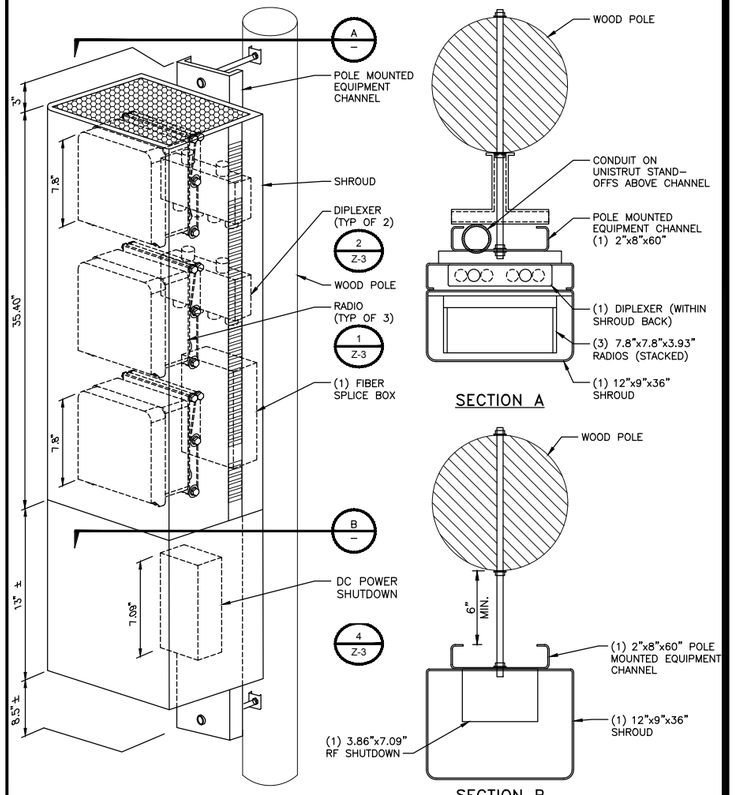
RADIO PLAN VIEW — NO SCALE — 2

- (A) 72" MIN. CLEARANCE BETWEEN SECONDARY POWER AND CLOSEST LEVEL OF ANTENNA ASSEMBLY
- (B) 72" MIN. CLEARANCE REQUIRED
- (C) 48" MIN. CLEARANCE REQUIRED FROM SECONDARY POWER
- (D) 24" MIN. CLEARANCE REQUIRED
- (E) 12" MIN. SPACING FOR EQUIPMENT TO CURB
- (F) 15' MIN. (MAY BE REDUCED TO 9' WHEN NOT EXPOSED TO TRAFFIC)
- (G) GROUND INSTALLED BY COMM. COMPANY (INCLUDES 10' COPPER ROD)
- (H) 24" MIN. FROM CENTER OF POLE
- (J) 12" MIN. CLEARANCE REQUIRED
- (K) 6" MIN. SPACING BETWEEN POLE/RISERS AND EQUIPMENT
- (L) PROTECTIVE COVERING MUST EXTEND 3'-0" BEYOND ENERGIZED 0-750 VOLT LINES
- (M) POLE STEPS TO BE INSTALLED FROM 8'-6" ABOVE GRADE TO EXTENET ATTACHMENT
- (N) 7' MIN. / 8' MAX. REQUIRED

KEY — NO SCALE — 3



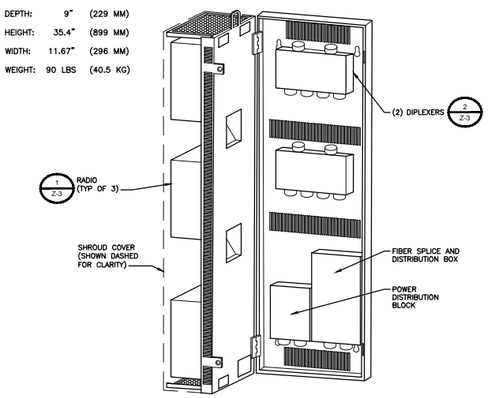
EQUIPMENT CLEARANCES — 12" 6" 0 1' 2' 3' 4' 5' 6' 7" — 3/8"=1'-0" — 4



EQUIPMENT MOUNTING DETAIL — NO SCALE — 5

ERICSSON SMALL CELL SHROUD

DEPTH: 9" (229 MM)
HEIGHT: 35.4" (899 MM)
WIDTH: 11.67" (296 MM)
WEIGHT: 90 LBS (40.5 KG)



RADIO SHROUD SPECIFICATION — 6

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH

BLACK & VEATCH CORPORATION
2999 OAK ROAD
SUITE 490
WALNUT CREEK, CA 94597

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192417.4164	KDA	LW

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PRELIMINARY

EXTENET SYSTEMS (CA) LLC
2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

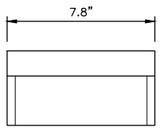
SITE ADDRESS
07418A
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

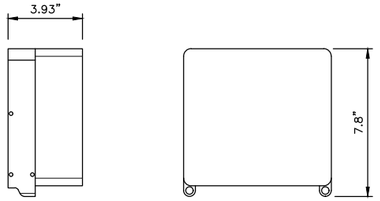
SHEET TITLE
RISER DETAILS

SHEET NUMBER
Z-2.1

ERICSSON RRUS-2203/5

LENGTH:	7.8" (200MM)
WIDTH:	7.8" (200MM)
DEPTH:	3.93" (100MM)
TOTAL WEIGHT (WITHOUT BRACKETS):	<9.9 LBS (4.5 Kg)





RADIO UNIT SPECIFICATION | NO SCALE | 1

COMMSCOPE®

CBC1923-4310 | E11F13P20

Diplexer PCS/AWS+WCS, DC block, 4.3-10

Mechanical Specifications

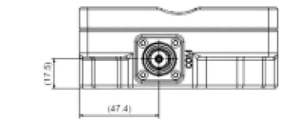
RF Connector Interface	4.3-10 Female
RF Connector Interface Body Style	Long neck
Color	Gray
Finish	Painted

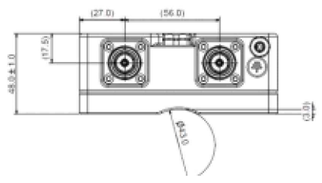
Dimensions

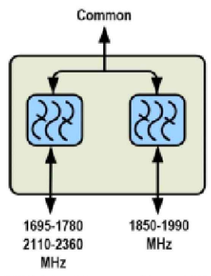
Height	117.6 mm | 4.6 in
Width	116.0 mm | 4.6 in
Depth	48.0 mm | 1.9 in
Weight	1.1 kg | 2.4 lb

Environmental Specifications

Operating Temperature	-40 °C to +65 °C (-40 °F to +149 °F)
Relative Humidity	Up to 100%
Ingress Protection Test Method	IEC 60529:2001, IP67

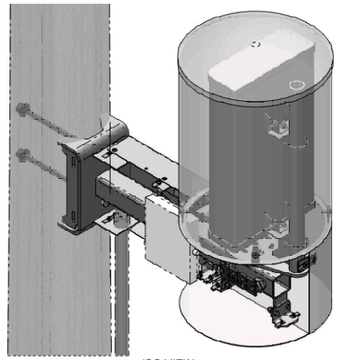




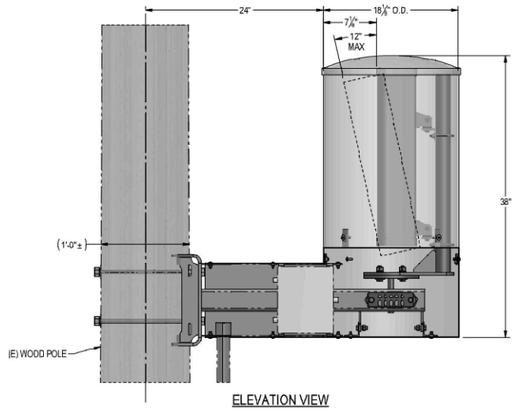


DC/AISG blocking on all ports(DC Grounded)

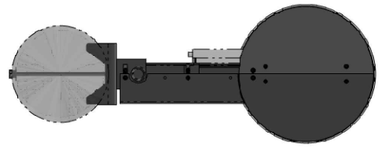
DIPLEXER SPECIFICATIONS | NO SCALE | 2



ISO VIEW



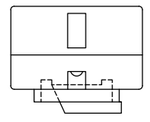
ELEVATION VIEW

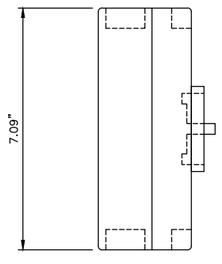


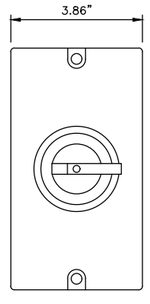
BOTTOM VIEW

SIDE ARM ANTENNA MOUNT | NO SCALE | 3

IMO DC DISCONNECT
MODEL SI16-PEL64R-2
ENCLOSED DC SWITCH
NEMA 4X
16A
800VDC
2 POLE
GREY
3.86" [98mm] x 7.09" [180mm]







RF SHUTDOWN SPECIFICATIONS | NO SCALE | 4

ITEM #	PART #	DESCRIPTION	QTY.	UNIT WT. (lbs)
		STANDOFF ARM ASSEMBLY PARTS/HDWR		
1	WA-714	3"x3"x3/16"x3'-2" STANDOFF ARM WLDMNT	1	43
2	SS-514	2"x2"x1/4"x2" A36, ANGLE	2	0.5
3	SS-516	2"x2"x1/8"x3" A36, ANGLE	2	0.4
4	15230	3/8Øx1" A307 FULLY THD'D BOLT/NUT/LW, GALV.	4	0.1
5	41010	3/8Øx1" A563-A HEX NUT, GALV.	2	0.01
6	51000	3/8Øx1" A563-A HEX NUT, GALV.	2	0.01
7	80326	3/8Øx6" A36 THRD ROD, GALV.	1	0.19
		BUS BAR ASSEMBLY PARTS / HDWR		
8	PL-718	1/4"x2"x6" COPPER, BUS BAR	1	0.8
9	43010	3/8"Ø LOCK COPPER, BUS BAR	4	0.01
10	71017	3/8"Øx5/8" FULLY THD'D S.S. BOLT	4	0.04
11	90060	3/8" STANDOFF INSULATOR (559640)	2	0.1
		ANTENNA / EQUIPMENT MOUNT PARTS / HDWR		
12	MAST	PANEL ANTENNA PIPE MAST	1	2.2
13	16250F	3/8"Øx1 1/2" A307 FULLY THD'D BOLT, GALV.	2	0.1
14	41010	3/8"Ø LOCK WASHER, GALV.	2	0.01
15	51000	3/8"Ø A563 HEX NUT, GALV.	2	0.02
		SHROUD ASSEMBLY PARTS / HDWR		
14	WA-715L	14GA.x13 1/16"x14 5/8" I.D. E.G., FORMED PLATE WLDMNT	1	8
15	WA-715R	14GA.x13 1/16"x14 5/8" I.D. E.G., FORMED PLATE WLDMNT	1	8
16	PL-1264	14GA.x17 5/8"x2'-0 7/8" E.G., FORMED COVER	1	9.9
17	PL-1267	14GA.X17 5/8"X2'-0 15/16" E.G., FORMED COVER	1	9.9
18	PL-1581	1/2"x1"x2" A36, PLATE	4	0.3
19	14209-4	11GA.x1 1 1/2"x2 15/16" A36, FORMED PLATE	2	0.1
20	55500	1/4-20 U-STYLE SPEED NUT, BLACK PHOSPHATE	16	0.02
21	70217	1/4"Øx1" SS FLGD BUTTON-HD SCKT CAP SCRW	18	0.02
22	70218	1/4"Øx1 1/4" SS FLGD BUTTON-HD SCKT CAP SCRW	18	0.003

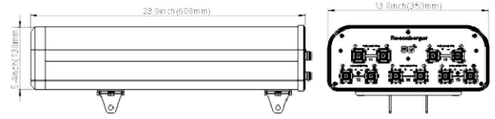
TOTAL GALV. WT. = 89lbs

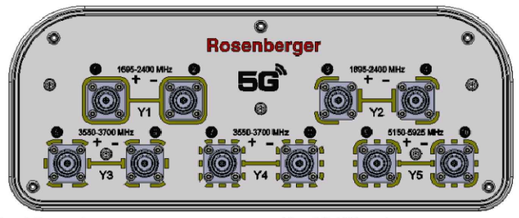
ANTENNA SHROUD PARTS TABLE | NO SCALE | 5

Data Sheet | **Rosenberger**

Small/Micro Cell Panel Antenna (3G/4G/5G) | BA-O3O3T3T3VFX65F-06

Antenna Profile & Bottom View





Input Connectors	10 x 4.3-10Female
Connector Position	Bottom
Lightning Protection	DC Ground
Dimensions	608 x 350 x 138 mm | 23.9 x 13.8 x 5.4 in
Weight	6.6kg | 14.6 lbs
Maximum Wind Velocity	241km/h| 150 mph
Maximum Wind Loading @150 km/h	211 N | 47.5 lbf
Reflector Material	Aluminum Alloy
Radome Material	ASA
Radome Color	Gray
Mounting Kit	Included
Mechanical Tilt Range	0°~20°

ANTENNA UNIT SPECIFICATION | NO SCALE | 6

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH

BLACK & VEATCH CORPORATION
2999 OAK ROAD
SUITE 490
WALNUT CREEK, CA 94597

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EXTENET SYSTEMS (CA) LLC
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SUITE 210
SAN RAMON, CA 94583

SITE ADDRESS
07418A
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

SHEET TITLE
EQUIPMENT DETAILS

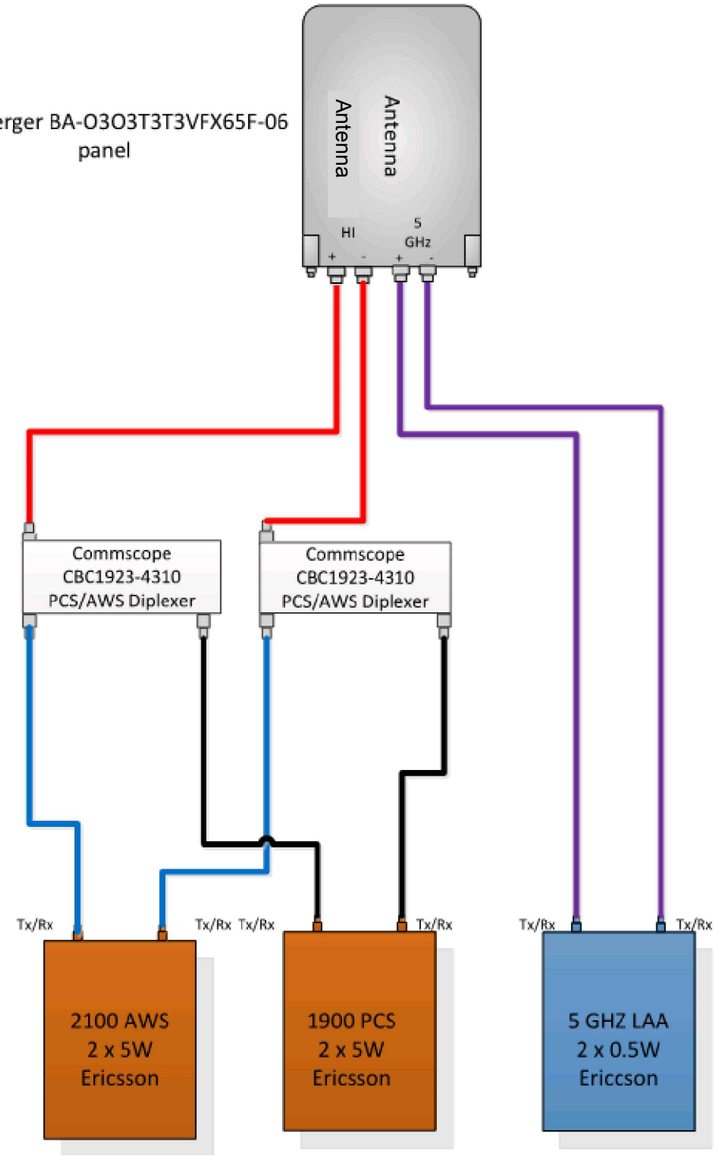
SHEET NUMBER
Z-3

TMO 360

Option 4B

SINGLE PANEL

Rosenberger BA-O3O3T3T3VFX65F-06
panel



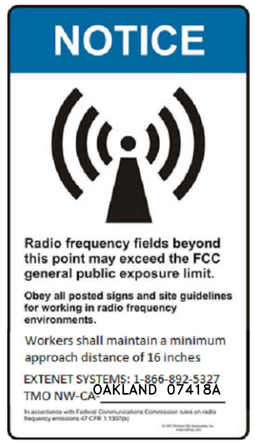
ANTENNA CONFIGURATION | NO SCALE | 1

NOT USED | NO SCALE | 2

NOT USED | NO SCALE | 3

NOTES

1. EXTENET TO INSTALL SIGNS PER G095 RULE 94.5 APPENDIX H, EXHIBIT A: AT NODE/ANTENNA POLE.
2. SPECIFIC EME PLACARD WILL BE PLACED AFTER EME REPORT.



RF SIGNAGE DETAIL | NO SCALE | 4

extenet SYSTEMS mConnectivity Everywhere

INTERNAL REVIEW	
CONSTRUCTION SIGNATURE	DATE
RF SIGNATURE	DATE
REAL ESTATE SIGNATURE	DATE

BLACK & VEATCH

BLACK & VEATCH CORPORATION
2999 OAK ROAD
SUITE 490
WALNUT CREEK, CA 94597

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PRELIMINARY

EXTENET SYSTEMS (CA) LLC
2000 CROW CANYON PLACE
SUITE 210
SAN RAMON, CA 94583

SITE ADDRESS
07418A
ADJACENT TO (IN PROW)
2337 MITCHELL STREET
OAKLAND, CA 94601

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
Z-4


1


2


1
2
N
W
E
S

extenet SYSTEMS

NW-CA-OASF07M1-TMO 07418A

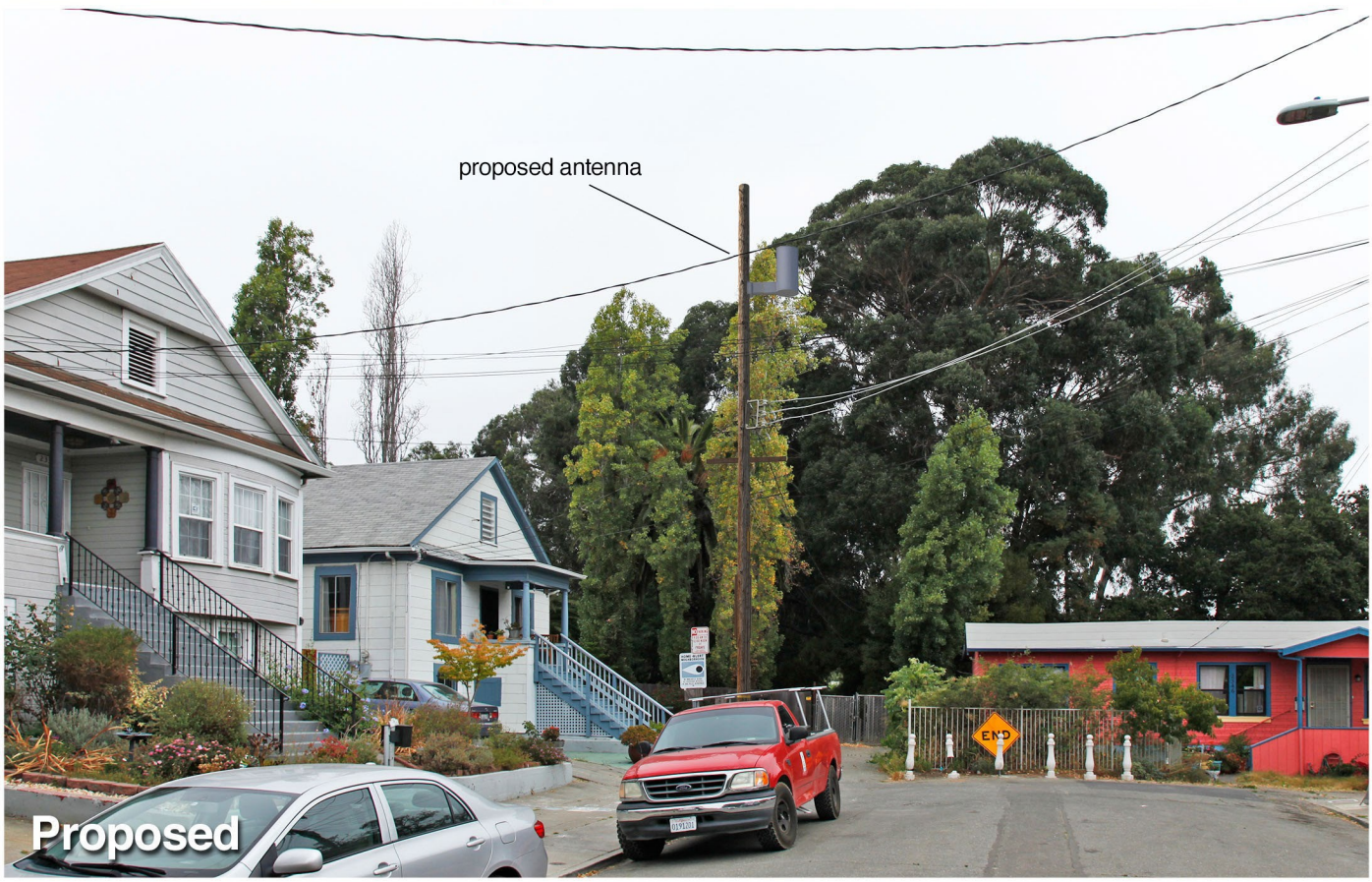
2337 Mitchell Street
Oakland, CA

Looking Northwest from Mitchell Street

View #1

3/4/18

Applied Imagination 510 914-0500



extenet SYSTEMS

NW-CA-OASF07M1-TMO 07418A

2337 Mitchell Street
Oakland, CA

Looking Northeast from Mitchell Street

View #2

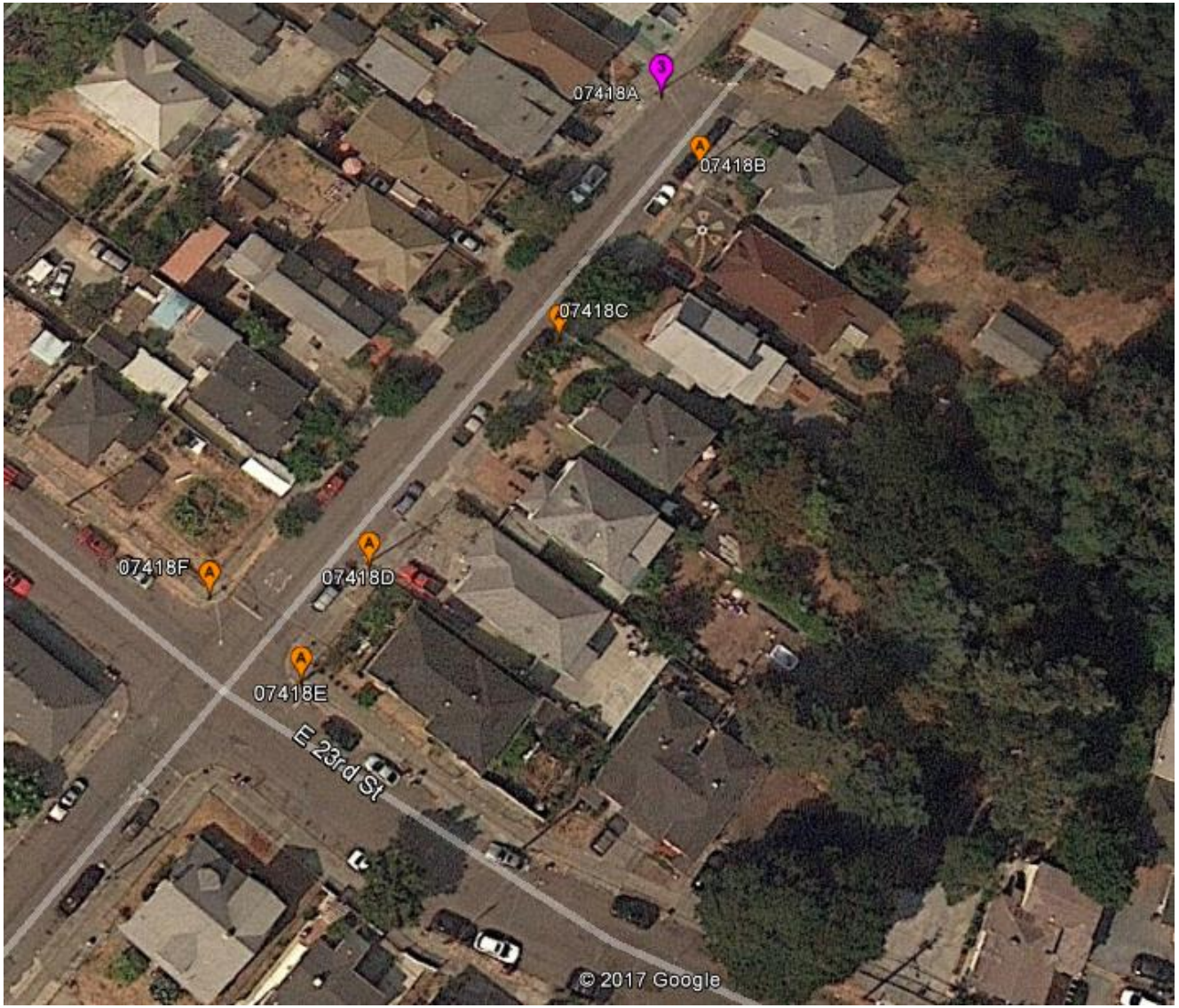
3/4/18

Applied Imagination 510 914-0500

extenet SYSTEMS mConnectivity Everywhere

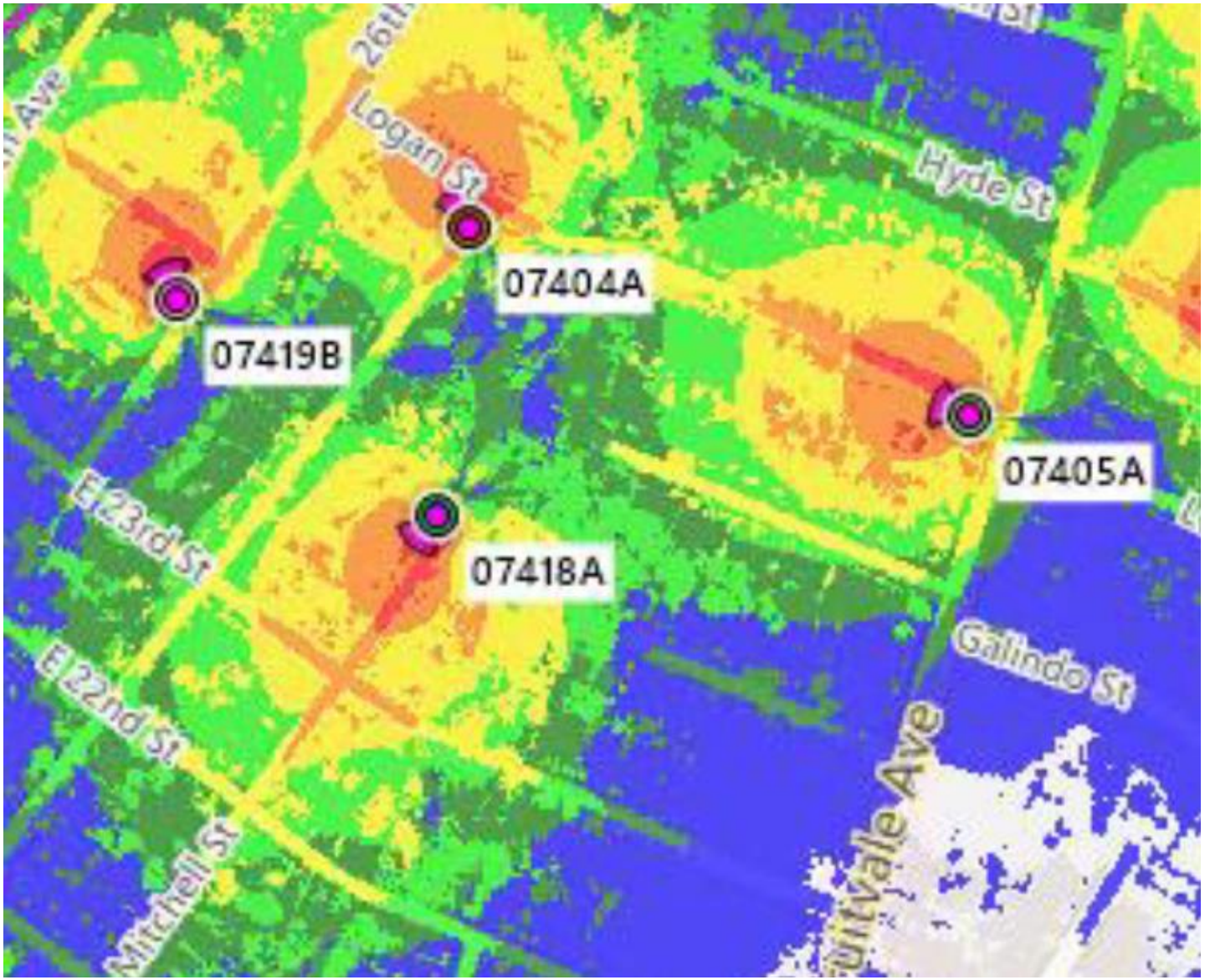
ExteNet Oakland
Node 07418A
Alternative Site Analysis

Map of Alternative Poles Evaluated for Node 07418A



- The above maps depict ExteNet's proposed Node 07418A in relation to other poles in the area that were evaluated as possibly being viable alternative candidates.
- The following is an analysis of each of those 5 alternative locations.

Propagation Map of Nodes 07418A



This propagation map depicts the ExteNet proposed Node 07418A in relation to surrounding proposed ExteNet small cell nodes.

07418A - Proposed Location

- **The location for ExteNet's proposed Node 07418A is a wood utility pole located adjacent to PROW at 2337 Mitchell Street (37.787329, -122.224210).**
- **ExteNet's objective is to provide T-Mobile 5G wireless coverage and capacity as well as high speed wireless internet to the Oakland area.**
- **ExteNet evaluated this site and nearby alternatives to verify that the selected site is the least intrusive means to close T-Mobile's significant service coverage gap.**

ALTERNATIVE NODE 07418B

- **Node 07418B wood utility pole located adjacent to PROW at 2340 Mitchell Street (37.787237, -122.224156).**
- **This pole is not a viable alternative candidate because placing equipment on this pole would likely violate CPUC General Order 95 regulations because all four quadrants of the pole appear occupied.**

ALTERNATIVE NODE 07418C

- **Node 07418C wood utility pole located adjacent to PROW at 2322 Mitchell Street (37.787031, -122.224349).**
- **This pole is not a viable alternative candidate because this pole is located too far from the primary candidate to satisfy the service coverage gap.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07404A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07405A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07419B.**

ALTERNATIVE NODE 07418D

- **Node 07418D wood utility pole located adjacent to PROW at 2302 Mitchell Street (37.786776, -122.224589).**
- **This pole is not a viable alternative candidate because this pole is located too far from the primary candidate to satisfy the service coverage gap.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07404A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07405A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07419B.**

ALTERNATIVE NODE 07418E

- **Node 07418E wood utility pole located adjacent to PROW at 2300 Mitchell Street (37.786656, -122.224667).**
- **This pole is not a viable alternative candidate because the existing conduit on the pole occupies the quadrant available for our proposed equipment.**
- **This pole is not a viable alternative candidate because the existing meters on the pole occupies the quadrant available for our proposed equipment.**
- **This pole is not a viable alternative candidate because placing equipment on this pole would likely violate CPUC General Order 95 regulations because all four quadrants of the pole appear occupied.**
- **This pole is not a viable alternative candidate because this pole is located too far from the primary candidate to satisfy the service coverage gap.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07404A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07405A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07419B.**

ALTERNATIVE NODE 07418F

- **Node 07418F metal light pole located adjacent to PROW at 2716 E 23rd Street (37.786745, -122.224792).**
- **This pole is not a viable alternative candidate because this pole is located too far from the primary candidate to satisfy the service coverage gap.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07404A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07405A.**
- **This pole is not a viable alternative candidate because this pole is located too far from primary Node 07419B.**

Alternative Site Analysis Conclusion

Based on ExteNet's analysis of alternative sites, the currently proposed Node 07418A is the least intrusive location from which to fill the surrounding significant wireless coverage gaps.


extenet
SM
SYSTEMS
Thank You!

ExteNet Systems CA, LLC • Proposed DAS Node (Site No. 07418A)
2337 Mitchell Street • Oakland, California

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of ExteNet Systems CA, LLC, a wireless telecommunications facilities provider, to evaluate the addition of Node No. 07418A to be added to the ExteNet distributed antenna system ("DAS") in Oakland, California, for compliance with appropriate guidelines limiting human exposure to radio frequency ("RF") electromagnetic fields.

Executive Summary

ExteNet proposes to install a directional panel antenna on a new utility pole to be sited in the public right-of-way near 2337 Mitchell Street in Oakland. 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 FCC limit for exposures of unlimited duration to radio frequency energy for several personal wireless services are as follows:

Wireless Service	Frequency Band	Occupational Limit	Public Limit
Microwave (Point-to-Point)	5–80 GHz	5.00 mW/cm^2	1.00 mW/cm^2
WiFi (and unlicensed uses)	2–6	5.00	1.00
BRS (Broadband Radio)	2,600 MHz	5.00	1.00
WCS (Wireless Communication)	2,300	5.00	1.00
AWS (Advanced Wireless)	2,100	5.00	1.00
PCS (Personal Communication)	1,950	5.00	1.00
Cellular	870	2.90	0.58
SMR (Specialized Mobile Radio)	855	2.85	0.57
700 MHz	700	2.40	0.48
[most restrictive frequency range]	30–300	1.00	0.20

Power line frequencies (60 Hz) are well below the applicable range of these standards, and there is considered to be no compounding effect from simultaneous exposure to power line and radio frequency fields.

General Facility Requirements

Wireless nodes typically consist of two distinct parts: the electronic transceivers (also called "radios" or "channels") that are connected to a central "hub" (which in turn are connected to the traditional

wired telephone lines), and the passive antenna(s) that send the wireless signals created by the radios out to be received by individual subscriber units. The radios are often located on the same pole as the antennas and are connected to the antennas by coaxial cables. Because of the short wavelength of the frequencies assigned by the FCC for wireless services, the antennas require line-of-sight paths for their signals to propagate well and so are installed at some height above ground. The antennas are designed to concentrate their energy toward the horizon, with very little energy wasted toward the sky or the ground. This means that it is generally not possible for exposure conditions to approach the maximum permissible exposure limits without being physically very near the antennas.

Computer Modeling Method

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

Site and Facility Description

Based upon information provided by ExteNet, including drawings by Black & Veatch Corporation, dated December 20, 2017, it is proposed to install one Rosenberger Model BA-O3O3T3T3VFX65F-06 2-foot tall, directional panel antenna on a cross-arm to be added to a new 38½-foot utility pole to replace the existing utility pole sited in the public right-of-way in front of the residence located at 2337 Mitchell Street in Oakland. The antenna would employ up to 2° downtilt, would be mounted at an effective height of about 33 feet above ground, and would be oriented toward 220°T. T-Mobile proposes to operate from this facility with a maximum effective radiated power in any direction of 212 watts, representing simultaneous operation at 2 watts for 5 GHz WiFi, 110 watts for AWS, and 100 watts for PCS service. There are reported no other wireless telecommunications base stations at this site or nearby.

Study Results

For a person anywhere at ground, the maximum RF exposure level due to the proposed T-Mobile operation is calculated to be 0.0021 mW/cm^2, which is 0.21% of the applicable public exposure limit. The maximum calculated level at the second-floor elevation of any nearby building is 0.48% 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

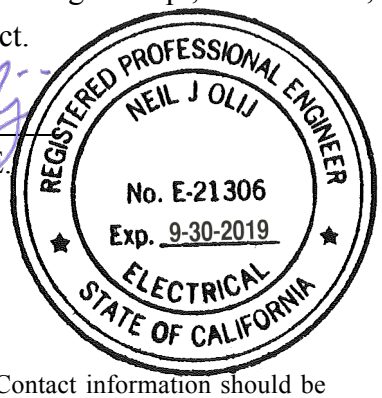
Due to its mounting location and height, the ExteNet antenna would not be accessible to the general public, and so no mitigation measures are necessary to comply with the FCC public exposure guidelines. To prevent occupational exposures in excess of the FCC guidelines, it is recommended that appropriate RF safety training be provided to all authorized personnel who have access to the antenna. No access within 2 feet directly in front of the antenna itself, such as might occur during certain maintenance activities, should be allowed while the node is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. Posting explanatory signs* on the pole at or below the antenna, such that the signs would be readily visible from any angle of approach to persons who might need to work within that distance, would be sufficient to meet FCC-adopted guidelines.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that operation of the node proposed by ExteNet Systems CA, LLC, near 2337 Mitchell Street in Oakland, 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 nodes. Training personnel and posting signs is recommended to establish compliance with occupational exposure limitations.

Authorship

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



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

January 12, 2018

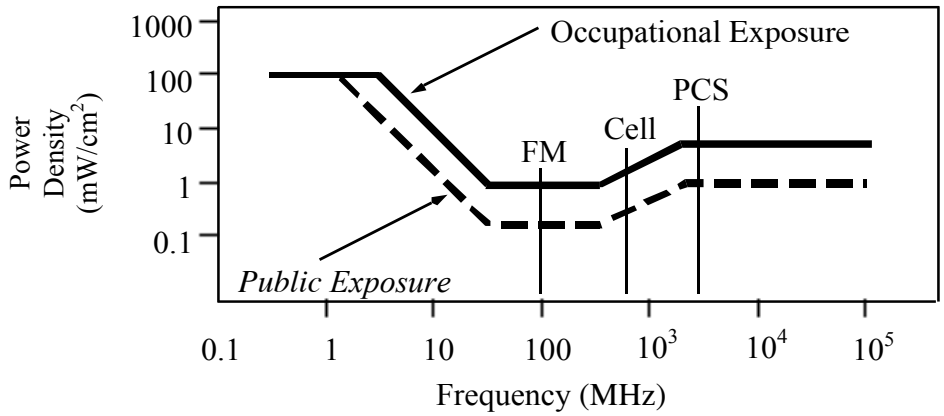
* Signs should comply with OET-65 color, symbol, and content recommendations. Contact information should be provided (*e.g.*, a telephone number) to arrange for access to restricted areas. The selection of language(s) is not an engineering matter, and guidance from the landlord, local zoning or health authority, or appropriate professionals may be required. Signage may also need to comply with the requirements of California Public Utilities Commission General Order No. 95.

FCC Radio Frequency Protection Guide

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

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

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



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

RFR.CALC™ Calculation Methodology

Assessment by Calculation of Compliance with FCC Exposure Guidelines

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

Near Field.

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

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

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

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

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

where ERP = total ERP (all polarizations), in kilowatts,
RFF = relative field factor at the direction to the actual point of calculation, and
D = distance from the center of radiation to the 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 has been built into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radiation sources. The program also allows for the description of uneven terrain in the vicinity, to obtain more accurate projections.

January 4, 2018

City Planner
Planning Department
City of Oakland
250 Frank H. Ogawa Plaza, 2nd Floor
Oakland, CA 94612

Re: GO 95 Required Two Feet Clearance Between Antenna and Pole

Applicant:	**ExteNet Systems (California) LLC**
Nearest Site Address:	**Public Right of Way near 2337 Mitchell Street**
Site ID:	**NW-CA-OASF07M1-TMO Node 07418A**
Latitude/Longitude:	**787324697122.22422085337., -122.**
Planning Application:	**PLN18001**

Dear City Planner,

This letter is in response to discussions with City of Oakland Planning Department seeking clarification on the proposed antenna placement on the utility pole.

Wireless facility attachments to utility poles must comply with CPUC General Order 95 design, safety and clearance standards. Specifically, Rule 94.4(E) states: *Antennas shall maintain a 2 ft horizontal clearance from centerline of pole when affixed between supply and communication lines or below communication lines*. This rule precludes ExteNet from placing the antennas flush mounted to the utility pole when there is a power source attached to the pole. ExteNet minimized the clearance as much as possible by placing the antenna shroud just over two feet from the centerline of the utility pole.

Feel free to contact me if you have any questions. Thank you.

Thank you.

Best Regards,

Ana Gomez/BV for ExteNet

Ana Gomez
ExteNet Permitting Contractor


NOTICE
OAKLAND
CITY OF OAKLAND
BUREAU OF PLANNING
250 Frank H. Ogawa Plaza, Suite 2114, Oakland, CA 94612-2031
Phone: 510-238-3911 Fax: 510-238-4730
PLANNING COMMISSION PUBLIC NOTICE
Locations: Utility pole in public right-of-way adjacent to:
• 1500 50th Avenue (PLN17501, APN 035-2362-042-00)
Zone RM-3, Land Use: Mixed Housing Type Residential
• 2337 Mitchell Street (PLN18001, APN 026-0763-008-00)
Zone: RM-3, Land Use: Mixed Housing Type Residential
Proposal: To consider requests for (2) applications to install new "small cell site" Telecommunications Facilities on existing utility poles to improve services. The project consists of attaching an antenna within a shroud and minimal equipment mounted on the side of the pole.
Applicant / Phone Number: Ana Gomez/Black & Veatch & Extenet (for: T-Mobile) (913) 458-9148
Owner: Extenet Systems CA, LLC
Planning Permits Required: Major Design Review with additional findings for Macro Telecommunications Facility in Residential Zone
Environmental Determination: Exempt, Section 15301 of the State CEQA Guidelines: Existing Facilities; Exempt, Section 15302: Replacement or Reconstruction; Exempt, Section 15303: New Construction of Small Structures; Section 15183: Projects Consistent with a Community Plan, General Plan or Zoning
Historic Status: Non-historic poles
City Council District: 5
Date Filed: December 27, 2017
Action to be Taken: Decision based on staff report
Finality of Decision: Appealable to City Council
For Further Information: Contact case planner Marilu Garcia at (510) 238-5217 or by email at mgarcia2@oaklandnet.com.
Your comments and questions, if any, should be directed to the Bureau of Planning, 250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, California 94612-2031 at or prior to the public hearing to be held on January 24, 2018, at Oakland City Hall, Sgt. Mark Dunakin Hearing Room 1, 1 Frank H. Ogawa Plaza, Oakland, California 94612. The public hearing will start at 6:00 p.m.
If you challenge the Planning Commission decision on appeal and/or in court, you will be limited to issues raised at the public hearing or in correspondence delivered to the Bureau of Planning, at, or prior to, the public hearing on this case. If you wish to be notified of the decision of any of these cases, please provide the case planner with a regular mail or email address.
Please note that the description of the application found above is preliminary in nature and that the project and/or such description may change prior to a decision being made. Except where noted, once a decision is reached by the Planning Commission on these cases, they are appealable to the City Council. Such appeals must be filed within ten (10) calendar days of the date of decision by the Planning Commission and by 4:00p.m. An appeal shall be on a form provided by the Bureau of Planning, and submitted to the Bureau of Planning, at 250 Frank H. Ogawa Plaza, Suite 2114, to the attention of the Case Planner. The appeal shall state specifically wherein it is claimed there was error or abuse of discretion by the City of Oakland or wherein the decision is not supported by substantial evidence and must include payment in accordance with the City of Oakland Master Fee Schedule. Failure to file a timely appeal will preclude you from challenging the City's decision in court. The appeal itself must raise every issue that is contested along with all the argument and evidence previously entered into the record prior to or at the public hearing mentioned above. Failure to do so will preclude you from raising such issues during the appeal hearing and/or in court.
POSTING DATE: January 5, 2018
IT IS UNLAWFUL TO ALTER OR REMOVE THIS NOTICE WHEN POSTED ON SITE
PLEASE CALL ZONING AT (510) 238-3911. FOR BLIGHT NOTICES, PLEASE CALL (510) 238-6402
ATTACHMENT H

January 4, 2018

City Planner
Planning Department
City of Oakland
250 Frank H. Ogawa Plaza, 2nd Floor
Oakland, CA 94612

Re: Public Outreach Summary

Applicant:	**ExteNet Systems (California) LLC**
Nearest Site Address:	**Public Right of Way near 2337 Mitchell Street**
Site ID:	**NW-CA-OASF07M1-TMO Node 07418A**
Latitude/Longitude:	**37.787324697, -122.224220853**
Planning Application:	**PLN18001**

Dear City Planner,

This week we notified the following groups by sending them the attached project flier:

- Pueblo

Feel free to contact me if you have any questions. Thank you.

Best Regards,

Ana Gomez/BV for ExteNet

Ana Gomez
ExteNet Permitting Contractor

ExteNet is improving wireless service in Oakland!

July 4, 2017

ExteNet Systems is a neutral host telecommunications infrastructure provider that is working to improve wireless service in Oakland.

We will soon be proposing to install fiberoptic cables and state-of-the-art small cell wireless facilities at existing telephone pole and light pole locations in the Oakland public right-of-way.

Telecommunications carriers transmit their signal through ExteNet's facilities to improve wireless voice, data, and public safety connectivity.

Although experiences with wireless services vary based on specific location and usage times, the wireless service proposed by this infrastructure will help meet existing, fluctuating and future demands.

Please see attached examples of actual ExteNet facilities like the ones we will be proposing in Oakland.

Want to learn more?

Please visit http://www.extenetsystems.com/ or email clindsay@extenetsystems.com.


DAVIS