



SAN FRANCISCO PLANNING DEPARTMENT

Letter of Determination

June 28, 2017

Tony Phillips
Sac Wireless for Comcast
540 W. Madison – 17th Floor
Chicago, IL 60661

Record Number:	2017-006403ZAD
Site Address:	Various Addresses
Assessor's Block/Lot:	Various Blocks/Lots
Zoning District:	Varies
Staff Contact:	Ashley Lindsay (415) 575-9178 Ashley.Lindsay@sfgov.org

Dear Mr. Phillips:

This letter is in response to your request for a Letter of Determination (LOD) as to whether the installation of Comcast's latest technology, Machine Q, may be allowed on billboards and considered a Micro Wireless Telecommunication Service (WTS) Facility.

On August 2, 2016, the Board of Supervisors adopted Ordinance No. 16-166 (Planning Code - Wireless Telecommunications Services Facilities) which, among other things, amended the Planning Code to add "Micro WTS Facilities" as a use category which is principally permitted in all zoning districts subject to specific limitations. Micro WTS Facilities is defined as follows:

Wireless Telecommunications Services (WTS) Facility, Micro. The Zoning Administrator shall determine whether a proposed WTS Facility is a Micro WTS Facility. A Micro WTS Facility is generally characterized by

- (a) limited spatial effects;*
- (b) a small number of antennas (typically up to two);*
- (c) an absence of substantial cumulative effects on neighborhood character or aesthetics, when considered in conjunction with other WTS Facilities at the same project site; and*
- (d) a location that is not "disfavored" as specified in the Guidelines.*

After reviewing previous determinations, relevant Planning Code provisions, and the information submitted with your letter, it is my determination that the proposed installation as described below would not be consistent with the definition of Micro WTS Facilities based upon the following:

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

Tony Phillips
Sac Wireless for Comcast
540 W. Madison – 17th Floor
Chicago, IL 60661

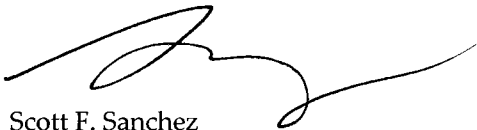
June 28, 2017
Letter of Determination
Comcast

- Billboards are regulated as General Advertising Signs pursuant to Article 6 of the Planning Code. An inventory is maintained for all General Advertising Signs. These signs are considered legal non-complying structures and non-conforming uses, and these signs, including billboards, shall not be expanded or intensified, pursuant to Section 181 of the Planning Code. The installation of a wireless facility and ancillary equipment on billboards is considered to be an intensification and therefore not permitted.
- Comcast can explore alternative siting locations on compliant structures, such as rooftop locations, in areas considered Location Preferences 1 through 6, as outlined by the Wireless Telecommunication Services Guidelines. Although the configuration submitted with the LOD request [Two (2) - 28" Omni Antennas, One (1) – 8" LTE Antenna, One (1) – 3" GPS Antenna, and One (1) – 8.74" x 10.43" x 3.81" Gateway unit] generally meets most guideline requirements of a Micro WTS Facility, the siting of the facility on existing billboards does not.
- This determination shall not apply to installations within the public right-of-way under the jurisdiction of the Department of Public Works (DPW).

Please note that a Letter of Determination is a determination regarding the classification of uses and interpretation and applicability of the provisions of the Planning Code. This Letter of Determination is not a permit to commence any work or change occupancy. Permits from appropriate Departments must be secured before work is started or occupancy is changed.

APPEAL: If you believe this determination represents an error in interpretation of the Planning Code or abuse in discretion by the Zoning Administrator, an appeal may be filed with the Board of Appeals within 15 days of the date of this letter. For information regarding the appeals process, please contact the Board of Appeals located at 1650 Mission Street, Room 304, San Francisco, or call (415) 575-6880.

Sincerely,



Scott F. Sanchez
Zoning Administrator

cc: Ashley Lindsay, Planner
Citywide Neighborhood Group Mailing List



May 15, 2017

Mr. Scott Sanchez
Zoning Administrator
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

R # 2017-006403ZAD
CK # 59816 \$ 664. -
A. WOODS

RE: Letter of Determination Request – Comcast Machine Q – 398 W. Portal Avenue

Dear Mr. Sanchez;

My firm is representing Comcast for the Leasing, Permitting and Installation of their latest technology called Machine Q. Machine Q is a low power network that is part of the Internet of Things (IoT). From Smart Communities and Infrastructure where Utilities, Waste Management, Temperature and Lighting can be monitored, to Transportation and Logistics. Machine Q is a flexible cost-effective solution suitable for a wide range of applications targeted towards Municipalities and Utilities.

We are currently seeking approval for the installation of Machine Q antennas on the existing Billboard at **398 W. Portal Avenue - Block 2483 Lot 013 – Planning District 14 – Inner Sunset.**

The installation consists of 2 – 28” Omni Antennas, an 8” LTE Antenna, a 3” GPS antenna and a small Gateway Unit. This is all powered by a Unit Called PoE (Power over Ethernet). The Total weight of these items without mounting brackets is less than 12lbs. There will be no ground disturbance and minimal visual impact. I’ve attached a copy of the proposed drawings, photo simulations, and spec sheets.

Hard copies of these documents along with a check for \$664.00 will be overnighted to your department.

We greatly appreciate you taking the time to review our request. I can be reached at 847-331-3659 should you have any questions.

Best Regards,

A handwritten signature in black ink, appearing to read 'Tony Phillips', written over a large, stylized circular flourish.

Tony Phillips
Zoning & Permitting Lead
SAC Wireless for Comcast
540 W. Madison – 17th Floor
Chicago, IL 60661
847-331-3659
tony.phillips@sacw.com



KONA Macro IoT Gateway

High Capacity LoRaWAN Gateway for Wide Area Deployments

TEKTELIC's KONA Macro IoT Gateway provides network operators with a carrier grade product for the deployment of LoRaWAN Internet of Things networks. The Gateway enables massive scalability in a compact form factor by supporting up to 12 million messages per day.

It is ideal for public and private network operators that require Full Duplex, multiple Rx and Tx Channels, cost effective and reliable LoRaWAN gateways to maximise their network investment for years to come.



Product Differentiators:

- High availability carrier grade design with support of in-service configuration and software updates.
- Environmentally hardened aluminum enclosure fully tested to withstand extreme temperature conditions.
- Full duplex operation making all receive and transmit channels available simultaneously.
- Excellent isolation between the Tx and Rx bands as well as out of band rejection of Cellular and Paging networks.
- Day-One scalability with support of up to 12 million received messages per day.
- Easy to deploy supporting different backhaul and power options.
- Fully integrated with the broader eco-system of LoRa™ network servers and sensors.

Key Features

NA, EU and other ISM Bands

Full Duplex 72 Rx and 4 Tx Channels (NA)

Up to 12 million messages per day

Precise Network Synchronization (GPS)

Localization Support

1 Watt (30 dBm) Tx Power

Hardened Carrier Grade Enclosure

Backhaul Connectivity (ETH / 3G / 4G)



TEKTELIC
communications

KONA Macro IoT Gateway

High Capacity LoRaWAN Gateway for Wide Area Deployments

Technical and Functional System Specifications

Mechanical Parameters

MTBF	15 years
DC Power Consumption	< 40 W (POE++)
Operational Temperature	-40°C to +55°C
Operational Humidity	10% to 100% Condensing
Ingress Protection	IP67
Size	222 x 265 x 97 mm
Weight	4 kg
Volume	5.5 L

Interfaces

Ethernet Backhaul	RJ-45 (POE Capable)
GPS	N-Type
Cellular Backhaul (3G/4G)	N-Type (Optional)
Hybrid Optical and DC Power	Harting Hybrid (Optional)
LoRa Antenna (2 ports)	N-Type (2nd Port Optional)
Power	-48VDC

Regulatory Compliance

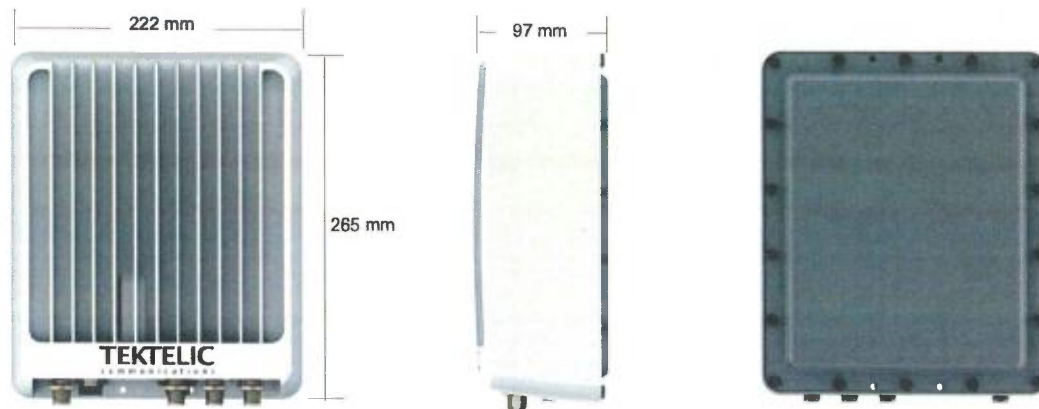
Safety	UL 60950-1 (US/C), IEC 60950-1 (CE)
Environmental	ETSI EN 300 019-2-1, 300 019-2-2 ETSI EN 300 019-2-3, 300 019-2-4
Regulatory	FCC Part 15 ETSI EN 300 489-1/4, ETSI EN 302 326

LoRa Radio Parameters

ISM NA Band	902 - 915 MHz (Rx) 923 - 928 MHz (Tx)
Tx Power	2 x 1W (2 x 30 dBm)
Rx Sensitivity	-142 dBm (SF12, 293 bits/sec)
Rx Noise Figure	4 dB
Rx Linearity	-10 dBm
Rx Dynamic Range	70 dB Analog, 100+ dB Digital
Tx to Rx Isolation	75 dB

Software and Management

GUI	Embedded Management Webpage Auto-discoverable over IP
Tools	Access Control List management 3G/4G Parameter Configuration System Health Monitor Flight Recorder Radio Configuration and Control Remote Software Upgrade Active and Passive image management
Networking	DHCPv4 client TFTP server HTTP server Firewall and Access Lists



Specifications subject to change without notice.

At TEKTELIC Communications we develop and build high performance wireless products including Small Cell Base Stations, Wireless Backhaul Systems, High Power Radios, Amplifiers and IOT Gateways.

For more information please visit www.tektelic.com



7553xxx

Single Band | Omni-Directional | Colinear | V-Pol | 360° | 5.1 dBi | Fixed Electrical Tilt

- Rugged and durable UHF colinear antenna designed for Telemetry, Paging and Trunked Radio applications
- Housed inside a high-strength glass fibre shroud
- Includes an integrated mounting clamp allowing easy installation on poles or horizontal rails
- Robust antenna design insures reliable operation in harsh environmental conditions

Ordering Options

Replace "xxx" in the model number with one of the options below to signify the desired frequency band

	Model Number	Frequency Band
Model Number Options (xxx)	7553865	840-890 MHz
	7553893	860-925 MHz

Electrical Characteristics

Frequency Band	See Options Listed Above	
Polarization	Vertical	
Horizontal Beamwidth	360°	
Vertical Beamwidth	35°	
Gain	3.0 dBd (5.1 dBi)	
Impedance	50Ω	
VSWR	< 1.5:1	
Power Rating	150 W	
Connector Type	N Female + 0.5 m RG213 cable	
Lightning Protection	DC Grounded	

Mechanical Characteristics

Shroud Material / Color	Glass Fibre (Ø21mm) / White	
Mounting Section Material	Aluminium	
Dimensions (Length)	730 mm	28.7 in
Weight without Mounting Brackets	0.5 kg	1.1 lbs
Wind Load @ 160 km/hr (100 mph)	35 N	7.9 lbf

Mounting Options

Mounting Bracket Kit	Integral mounting clamp and V bolts for pipe or horizontal rail	
Fits Pipe/Rail Diameter	38-50 mm	1.5-2.0 in

See pages 3 & 4 for additional mounting information.

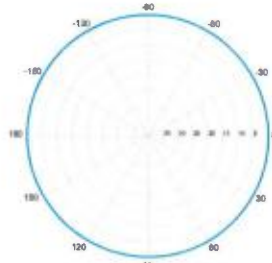


Quoted performance parameters are provided to offer typical, peak or range values only and may vary as a result of normal testing, manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to products may be made without notice.

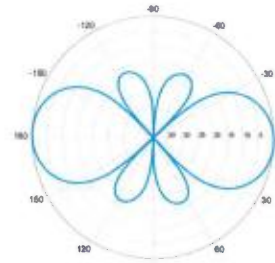
7553xxx

Single Band | Omni-Directional | Colinear | V-Pol | 360° | 5.1 dBi | Fixed Electrical Tilt

Antenna Patterns

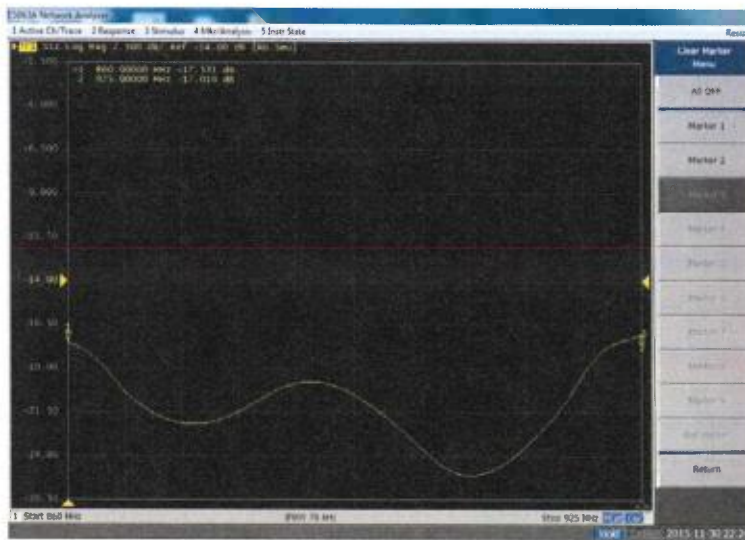


Horizontal

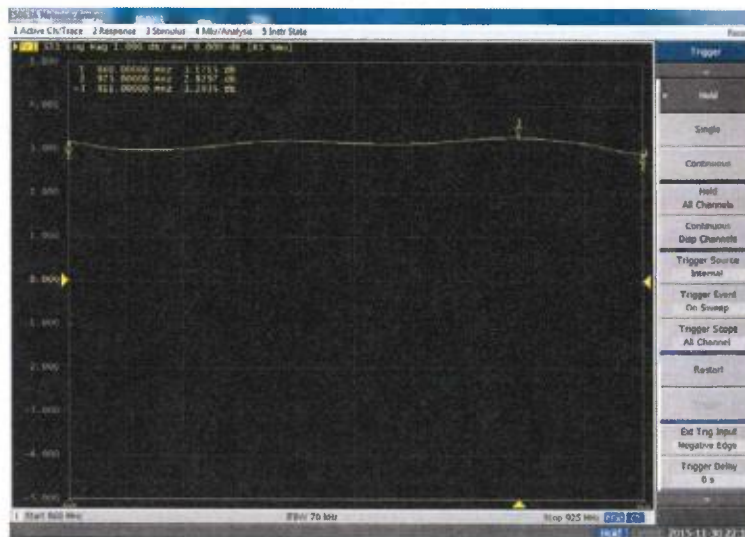


Vertical

Return Loss



Gain Chart



Note: Return loss, gain and patterns are for the 860-925 MHz model

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7553xxx

Single Band | Omni-Directional | Colinear | V-Pol | 360° | 5.1 dBi | Fixed Electrical Tilt

Assembly & Mounting Instructions

Please read these instructions fully before commencing

Tools Required	13 mm A/F Spanner
Mounting (see mounting variations section)	Securely fix mast clamp to vertical or horizontal mounting rail as required. Tighten fixings to required torque (M8 = 20Nm). Ensure adequate lightning protection. Envelope is provided by installation.
Connection	Ensure connector is clean and dry. Mate with feeder cable connector. Cover with plastic sleeve and seal in customer approved manner. Ensure cable routing is not stressed. Cable minimum bend radius is 51.5 mm.

Maintenance

Annual VSWR and visual inspection for loose or missing parts should ensure stated performance is maintained.

Mounting Variations

Standard Mounting (Included)			
	Parts Identification	Vertical Mounting Tube (Connector passes through middle of tube)	Horizontal Mounting Tube
		Deck Mounting (With connector passing to below deck)	Deck Mounting (With connector remaining above deck)

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7553xxx

Single Band | Omni-Directional | Colinear | V-Pol | 360° | 5.1 dBi | Fixed Electrical Tilt

Mounting Variations	Model Number	Orientation	Assembly																									
Optional Mounting Arrangement (ordered separately)	XSL9256087	Horizontal																										
		Vertical																										
		Parts List	<table border="1"> <thead> <tr> <th>Item Number</th> <th>Description</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Mounting Bracket Clamp</td> <td>2</td> </tr> <tr> <td>2</td> <td>Universal V & H Bracket</td> <td>1</td> </tr> <tr> <td>3</td> <td>V Clamp</td> <td>2</td> </tr> <tr> <td>4</td> <td>Galvanized, M10 Full Nut</td> <td>24</td> </tr> <tr> <td>5</td> <td>Galvanized, M10 Plain Washer</td> <td>16</td> </tr> <tr> <td>6</td> <td>Galvanized, M10 S/Coil Spring Washer</td> <td>4</td> </tr> <tr> <td>7</td> <td>Galvanized, M10 x 260 mm Studding</td> <td>4</td> </tr> <tr> <td>8</td> <td>Aluminium Tube, Ø1-29/32" x 7SWG x 1000 mm</td> <td>1</td> </tr> </tbody> </table>	Item Number	Description	Quantity	1	Mounting Bracket Clamp	2	2	Universal V & H Bracket	1	3	V Clamp	2	4	Galvanized, M10 Full Nut	24	5	Galvanized, M10 Plain Washer	16	6	Galvanized, M10 S/Coil Spring Washer	4	7	Galvanized, M10 x 260 mm Studding	4	8
Item Number	Description	Quantity																										
1	Mounting Bracket Clamp	2																										
2	Universal V & H Bracket	1																										
3	V Clamp	2																										
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5	Galvanized, M10 Plain Washer	16																										
6	Galvanized, M10 S/Coil Spring Washer	4																										
7	Galvanized, M10 x 260 mm Studding	4																										
8	Aluminium Tube, Ø1-29/32" x 7SWG x 1000 mm	1																										

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VICINITY MAP

PHOTOSIMULATION VIEWPOINTS

machineQ
A COMCAST SERVICE

SFO-CA-M-N-0000005-K16
01121.000648.000648A
398 WEST PORTAL AVENUE
SAN FRANCISCO, CA 94127



5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
OFFICE: (619) 736-3766



DISCLAIMER:

THIS PHOTOSIMULATION IS INTENDED AS A GRAPHICAL REPRESENTATION OF EXISTING AND PROPOSED SITE CONDITIONS BASED ON THE PROJECT / DRAWING PLANS. IT IS NOT INTENDED FOR CONSTRUCTION. ACTUAL, FINAL CONSTRUCTION MAY VARY

PHOTOSIMULATION VIEW 1
LOOKING SOUTHWEST

machineQ
A COMCAST SERVICE

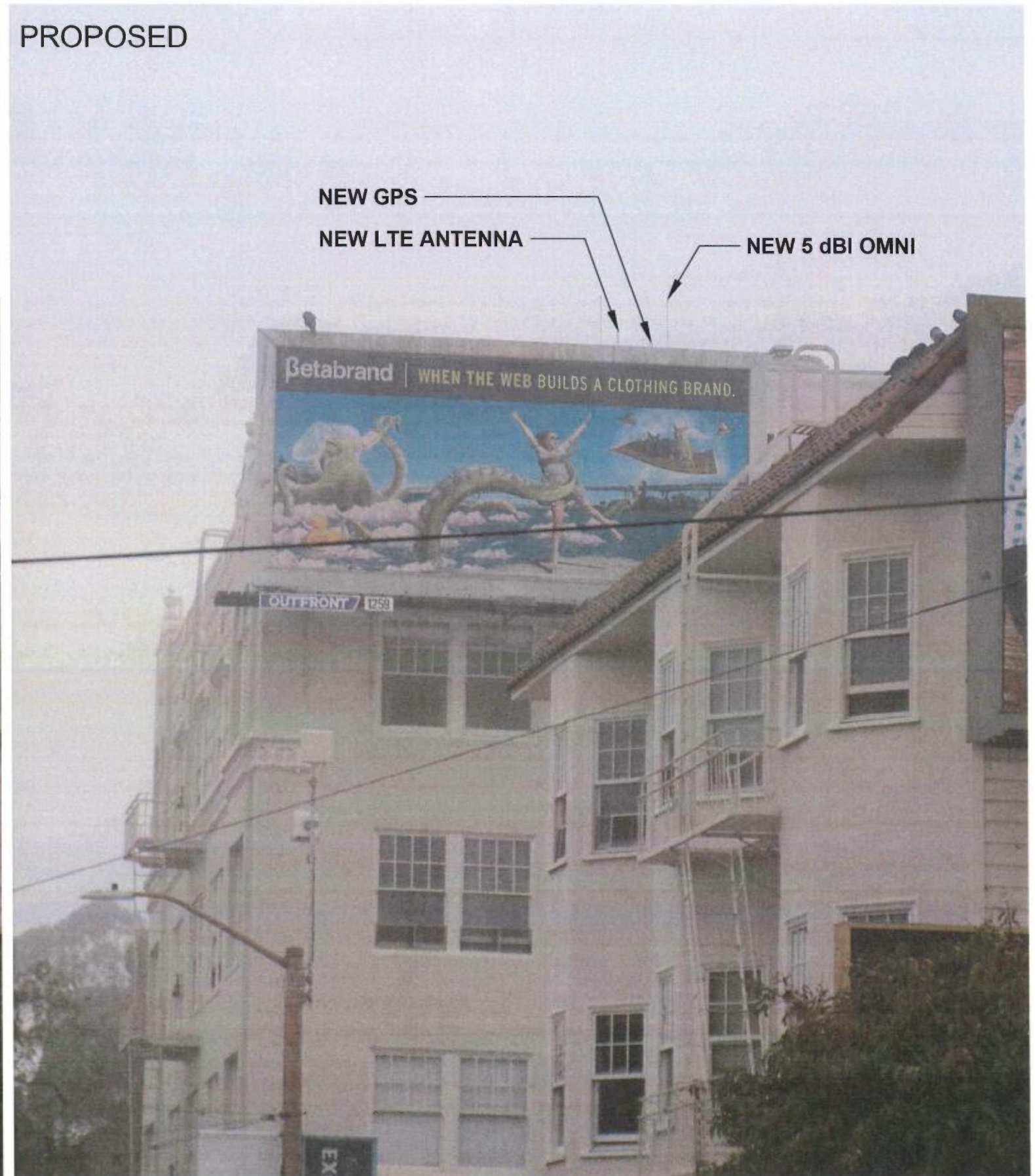
SFO-CA-M-N-0000005-K16
01121.000648.000648A
398 WEST PORTAL AVENUE
SAN FRANCISCO, CA 94127

SOC
WIRELESS
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
OFFICE: (619) 736-3766

EXISTING



PROPOSED



PHOTOSIMULATION VIEW 2
LOOKING SOUTHEAST

machineQ
A COMCAST SERVICE

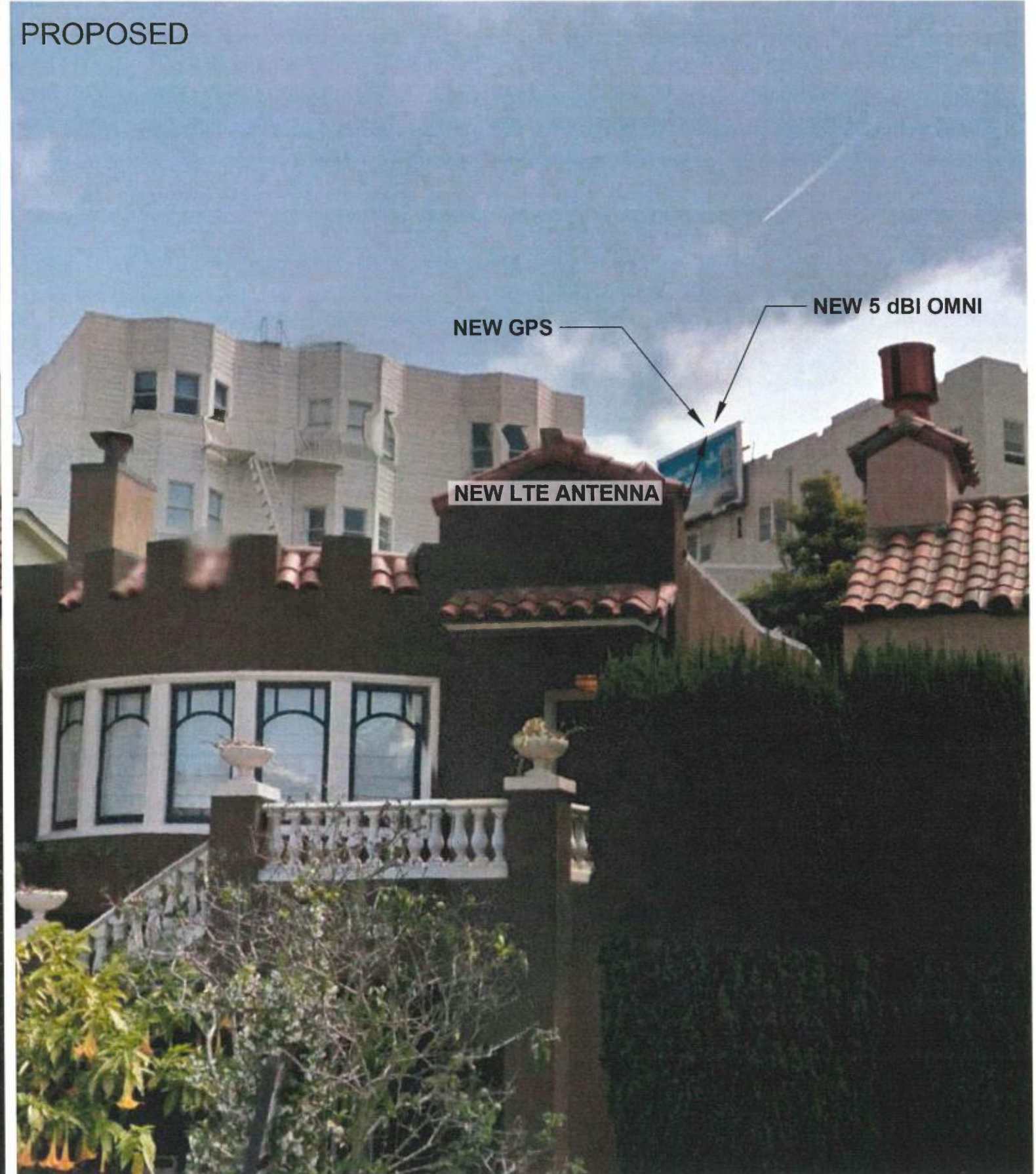
SFO-CA-M-N-0000005-K16
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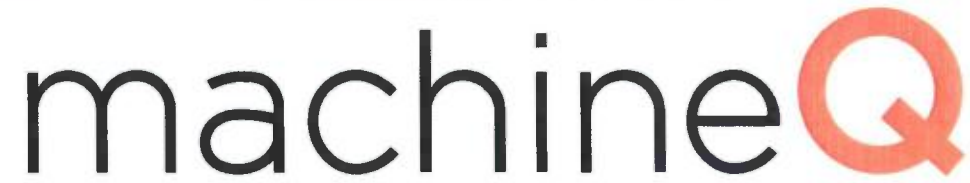
SOC
WIRELESS
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
OFFICE: (619) 736-3766

EXISTING



PROPOSED





A COMCAST SERVICE

PROJECT NAME: SFO-CA-M-N-0000005-K16 398 WEST PORTAL AVENUE

COMCAST NUMBER: SFO-CA-M-N-0000005-K16
OUTFRONTBB NUMBER: 01121.000648.000648A

398 WEST PORTAL AVENUE
SAN FRANCISCO, CA 94127

811 CALL 811 WWW.CALL811.COM
Know what's below. Call before you dig.

ISSUE STATUS

Table with columns: REV, DATE, DESCRIPTION, BY. Row 1: A, 05/05/17, 90% CONSTRUCTION, AS



SAC AE DESIGN GROUP, INC.
5015 SHOREHAM PLACE, STE. 150
SAN DIEGO, CA 92122

PROPRIETARY INFORMATION
THE INFORMATION CONTAINED IN THIS SET OF DRAWINGS IS PROPRIETARY & CONFIDENTIAL TO VERIZON WIRELESS

ANY USE OR DISCLOSURE OTHER THAN AS IT RELATES TO VERIZON WIRELESS IS STRICTLY PROHIBITED



COMCAST CENTER
1701 JFK BLVD., PHILADELPHIA, PA 19103

PROJECT TEAM
PROJECT MANAGEMENT: SAC WIRELESS, MATTHEW NICKEL
SITE ACQUISITION: SAC WIRELESS, STEVE BARICH
ARCHITECT: SAC WIRELESS, NESTOR POPOWYCH, A.L.A.
CONSTRUCTION: TBD.
ENGINEER: SAC WIRELESS, TAHZAY RAMIREZ, P.E.



DRIVING DIRECTIONS
FROM: SAN FRANCISCO INTERNATIONAL AIRPORT TO: 398 WEST PORTAL AVENUE SAN FRANCISCO, CA 94127
1. HEAD SOUTH
2. CONTINUE ONTO AIRPORT ACCESS RD
3. KEEP LEFT TO STAY ON AIRPORT ACCESS RD
4. MAKE A U-TURN
5. CONTINUE STRAIGHT TO STAY ON AIRPORT ACCESS RD
6. USE THE 2ND FROM THE RIGHT LANE TO KEEP RIGHT AT THE FORK AND CONTINUE TOWARD US-101 N
7. KEEP LEFT AT THE FORK. FOLLOW SIGNS FOR SAN BRUNO/U.S. 101 N AND MERGE ONTO US-101 N
8. MERGE ONTO US-101 N
9. USE THE RIGHT 2 LANES TO TAKE EXIT 430A TOWARD DALY CITY
10. MERGE ONTO I-280 S
11. TAKE EXIT 52 FOR MONTEREY BLVD
12. CONTINUE ONTO MOTEREY BLVD
13. CONTINUE ONTO SANTA CLARA AVE
14. TURN LEFT ONTO SAN ANSELMO AVE
15. CONTINUE ONTO 14TH AVE
16. TURN LEFT ONTO W PORTAL AVE
17. DESTINATION AT THE RIGHT: 398 W PORTAL AVE, SAN FRANCISCO, CA 94127

PROJECT SUMMARY
APPLICANT/LESSEE: machineQ A COMCAST SERVICE
COMCAST CENTER 1701 JFK BLVD, PHILADELPHIA, PA 19103
ASSESSOR'S PARCEL NUMBER: 2483/013
PLANNING DISTRICT: DISTRICT 14: INNER SUNSET
APPLICANT'S REPRESENTATIVE: SAC WIRELESS 540 W. MADISON ST, 16TH FLOOR CHICAGO, ILLINOIS 60661
PROPERTY OWNER: OUTFRONTBB 405 LEXINGTON AVENUE, 14TH FLOOR NEW YORK, NY 10174
TOWER OWNER: OUTFRONTBB
PROPERTY INFORMATION: PROJECT NAME: SFO-CA-M-N-0000005-K16 398 WEST PORTAL AVENUE
COMCAST NUMBER: SFO-CA-M-N-0000005-K16
OUTFRONTBB NUMBER: 01121.000648.000648A
SITE ADDRESS: 398 WEST PORTAL AVENUE SAN FRANCISCO, CA 94127
GEODETIC COORDINATES: LAT. 37.7369° N (NAD83) LONG. -122.4705° W (NAD83) ELEV. 293' AMSL
CONSTRUCTION INFORMATION: AREA OF CONSTRUCTION: N/A JURISDICTION: SAN FRANCISCO OCCUPANCY: UNMANNED TYPE OF CONSTRUCTION: BILLBOARD ACCESSIBILITY REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ACCESSIBILITY NOT REQUIRED.

Table with columns: SHEET, DESCRIPTION, REV. Rows include T-1 (TITLE SHEET), T-2 (GENERAL NOTES & SPECIFICATIONS), A-1 (SITE PLAN), A-2 (ENLARGED SITE PLAN & ANTENNA & EQUIPMENT PLAN), A-3 (NORTHEAST & SOUTHEAST ELEVATIONS), A-4 (EQUIPMENT DETAILS & SPECIFICATIONS), A-4.1 (EQUIPMENT DETAILS & SPECIFICATIONS), E-1 (I-LINE DIAGRAM & NOTES), G-1 (SCHEMATIC GROUNDING PLAN & DETAILS).

GENERAL CONTRACTOR NOTES
DO NOT SCALE DRAWINGS IF NOT FULL SIZE (24 X 36)
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

DISCLAIMER
THESE DRAWINGS REPRESENT AN EXISTING TELECOMMUNICATIONS COMPOUND AND WERE PRODUCED WITHOUT THE BENEFIT OF A LAND SURVEY. ALL PROPERTY LINES, EASEMENTS, AND SETBACKS SHALL BE VERIFIED PRIOR TO START OF CONSTRUCTION. SAC WIRELESS DOES NOT GUARANTEE THE ACCURACY OF SAID PROPERTY LINES, EASEMENTS AND SETBACKS.

PROJECT DESCRIPTION
THIS PROJECT IS A COMCAST FACILITY. IT CONSISTS OF THE FOLLOWING:
(2) NEW COMCAST 5dBI OMNI ANTENNAS
(1) NEW COMCAST LTE OMNI ANTENNA
(1) NEW COMCAST GPS ANTENNA
(1) NEW COMCAST MACRO GATEWAY RADIO
(1) NEW COMCAST OUTDOOR PoE INJECTOR
(1) NEW COMCAST GROUND BAR
(1) NEW VERTICAL UNISTRUT
(2) NEW HORIZONTAL UNISTRUTS

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. ALL WORK SHALL CONFORM TO 2013 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.
1. 2016 CALIFORNIA ADMINISTRATIVE CODE 3. 2016 CALIFORNIA ELECTRICAL CODE
2. 2016 CALIFORNIA BUILDING CODE 4. 2016 CALIFORNIA FIRE CODE 2.06

SFO-CA-M-N-0000005-K16 398 WEST PORTAL AVENUE
COMCAST NUMBER: SFO-CA-M-N-0000005-K16
OUTFRONTBB: 01121.000648.000648A
398 WEST PORTAL AVENUE SAN FRANCISCO, CA 94127

SHEET TITLE: TITLE SHEET
T-1
CONSTRUCTION DRAWINGS

GENERAL NOTES:

1. THIS FACILITY IS AN UNMANNED CELLULAR TELEPHONE EQUIPMENT FACILITY. THE OCCUPANCY CLASSIFICATION IS U [2016 CBC, TITLE 24, PART 2, VOLUME 1, SECTION 312, AND SECTION 307.1.1 EXCEPTION #9].
2. THIS FACILITY IS EXEMPT FROM ACCESSIBILITY REQUIREMENTS PER 2016 CBC SECTION 11B-203.5 THIS FACILITY IS NON-OCCUPIABLE SPACE AND ENTERED ONLY BY SERVICE PERSONNEL. THIS SPACE IS NOT FOR HUMAN OCCUPANCY.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING HIS BID. ANY DISCREPANCIES, CONFLICTS OR OMISSIONS SHALL BE REPORTED TO THE ARCHITECT / ENGINEER PRIOR TO SUBMITTING BIDS, AND PROCEEDING WITH ANY WORK.
4. THE CONTRACTOR SHALL NOTIFY ARCHITECT / ENGINEER OF ANY ERRORS, OMISSIONS, OR DISCREPANCIES AS THEY MAY BE DISCOVERED IN THE PLANS, SPECIFICATIONS, & NOTES PRIOR TO STARTING CONSTRUCTION. INCLUDING BUT NOT LIMITED BY DEMOLITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY ERRORS, OMISSION, OR INCONSISTENCY AFTER THE START OF CONSTRUCTION WHICH HAS NOT BEEN BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER AND SHALL INCUR ANY EXPENSES TO RECTIFY THE SITUATION. THE METHOD OF CORRECTION SHALL BE APPROVED BY THE ARCHITECT / ENGINEER RESPONSIBLE OF THE PROJECT.
5. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR HAS THE RESPONSIBILITY TO LOCATE ALL EXISTING UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR OR SUBCONTRACTOR SHALL BEAR THE EXPENSE OF REPAIRING OR REPLACING ANY DAMAGE TO THE UTILITIES CAUSED DURING THE EXECUTION OF THE WORK. CONTACT USA DIG ALERT @ 800-227-2600
6. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL PROTECT ALL AREAS FROM DAMAGE WHICH MAY OCCUR DURING CONSTRUCTION. ANY DAMAGE TO NEW OR EXISTING SURFACES, STRUCTURES OR EQUIPMENT SHALL BE IMMEDIATELY REPAIRED OR REPLACED TO THE SATISFACTION OF THE PROPERTY OWNER. THE CONTRACTOR SHALL BEAR THE EXPENSE OF REPAIRING OR REPLACING ANY DAMAGED AREAS.
7. A COPY OF THE APPROVED PLANS SHALL BE KEPT IN A PLACE SPECIFIED BY THE GOVERNING AGENCY, AND BY LAW SHALL BE AVAILABLE FOR INSPECTION AT ALL TIMES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE ALL CONSTRUCTION SETS REFLECT THE SAME INFORMATION AS THE APPROVED PLANS. THE CONTRACTOR SHALL ALSO MAINTAIN ONE SET OF PLANS AT THE SITE FOR THE PURPOSE OF DOCUMENTING ALL AS-BUILT CHANGES, REVISIONS, ADDENDA, OR CHANGE ORDERS. THE CONTRACTOR SHALL FORWARD THE AS-BUILT W/ REDLINED DRAWINGS TO THE ARCHITECT / ENGINEER RESPONSIBLE OF THE PROJECT AT THE CONCLUSION OF THE PROJECT.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE SITE WHILE THE WORK IS IN PROGRESS UNTIL THE JOB IS COMPLETE.
9. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY POWER, WATER, AND TOILET FACILITIES AS REQUIRED BY THE PROPERTY OWNER OR GOVERNING AGENCY.
10. ALL CONSTRUCTION THROUGH THE PROJECT SHALL CONFORM TO THE LATEST C.B.C. AND ALL OTHER GOVERNING CODES, INCLUDING THE CALIFORNIA ADMINISTRATIVE CODES TITLE 8, 19, AND 24. THE MOST RESTRICTIVE CODE SHALL GOVERN.
11. THE CONTRACTOR AND SUBCONTRACTOR SHALL COMPLY WITH ALL LOCAL AND STATE REGULATIONS INCLUDING ALL OSHA REQUIREMENTS.
12. WHEN REQUIRED STORAGE OF MATERIALS OCCURS, THEY SHALL BE EVENLY DISTRIBUTED OVER THE FLOOR OR ROOF SO AS NOT TO EXCEED THE DESIGNED LIVE LOADS FOR THE STRUCTURE. TEMPORARY SHORING OR BRACING SHALL BE PROVIDED WHERE THE STRUCTURE OR SOIL HAS NOT ATTAINED THE DESIGN STRENGTH FOR THE CONDITIONS PRESENT.
13. THE CONTRACTOR SHALL SUPERVISE AND COORDINATE ALL WORK, USING HIS PROFESSIONAL KNOWLEDGE AND SKILLS. HE IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, PROCEDURES AND SEQUENCING AND COORDINATING ALL PORTIONS OF THE WORK UNDER THE PROJECT.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND INSPECTIONS WITH RESPECT TO THE WORK TO COMPLETE THE PROJECT. BUILDING PERMIT APPLICATIONS SHALL BE FILED BY THE OWNER OR AUTHORIZED AGENT. CONTRACTOR SHALL OBTAIN THE PERMIT AND MAKE FINAL PAYMENT OF SAID DOCUMENT.
15. ALL DIMENSIONS TAKE PRECEDENCE OVER SCALE. DRAWINGS ARE NOT TO BE SCALED UNDER ANY CIRCUMSTANCES.
16. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BLOCKING, BACKING, FRAMING, HANGERS OR SUPPORTS FOR INSTALLATION OF ITEMS INDICATED ON THE DRAWINGS.
17. THE CONTRACTOR SHALL PROVIDE THE FIRE MARSHALL OR U.I. APPROVED MATERIALS TO FILL/SEAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.
18. NEW CONSTRUCTION ADDED TO EXISTING CONSTRUCTION SHALL BE MATCHED IN FORM, TEXTURE, MATERIAL AND PAINT COLOR EXCEPT AS NOTED IN THE PLANS.
19. THE CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS HAVING A MINIMUM 2A:10-B:C RATING WITHIN 75FT. OF TRAVEL TO ALL PORTIONS OF THE CONSTRUCTION AREA.
20. MATERIALS TESTING SHALL BE TO THE LATEST STANDARDS AVAILABLE AS REQUIRED BY THE LOCAL GOVERNING AGENCY RESPONSIBLE FOR APPROVING THE RESULTS.
21. ALL GENERAL NOTES AND STANDARD DETAILS ARE THE MINIMUM REQUIREMENTS TO BE USED IN CONDITIONS WHICH ARE NOT SPECIFICALLY SHOWN OTHERWISE.
22. ALL DEBRIS AND REFUSE IS TO BE REMOVED FROM THE PROJECT. PREMISES SHALL BE LEFT IN A CLEAN BROOM FINISHED CONDITION AT ALL TIMES.
23. BUILDING INSPECTORS AND/OR OTHER BUILDING OFFICIALS ARE TO BE NOTIFIED PRIOR TO ANY GRADING AND CONSTRUCTION EFFORT AS MANDATED BY THE GOVERNING AGENCY.
24. ALL SYMBOLS AND ABBREVIATIONS ARE CONSIDERED CONSTRUCTION INDUSTRY STANDARDS. IF A CONTRACTOR HAS A QUESTION REGARDING THEIR EXACT MEANING THE ARCHITECT OR THE ARCHITECT / ENGINEER RESPONSIBLE OF THE PROJECT SHALL BE NOTIFIED FOR CLARIFICATIONS.

SPECIFICATIONS:

METALS

STRUCTURAL FRAMING SYSTEM AND EQUIPMENT

1. CABLE LADDERS AT INTERIOR SPACES WHERE INDICATED SHALL BE 1-1/2" SOLID BAR STRINGERS TYPE
2. ALL UNISTRUT SHALL BE P1000 (1-5/8").
3. MICROFLECT SHALL BE B 1 1 1 8 (U.N.O.) TO MATCH CABLE TRAY.
4. CABLE RUNS ON ROOF TOP AND OUTDOOR APPLICATIONS, SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
5. ALL ANTENNA SPECS. PER RF DATA SHEET.

ELECTRICAL

1. REFER TO DRAWINGS FOR SITE SPECIFIC INFORMATION
2. ALL ELECTRIC WORK TO COMPLY WITH THE LATEST EDITION OF THE CALIFORNIA ELECTRICAL CODE. (REFER TO THE COVER SHEET)
3. ALL INTERIOR SEISMIC UNISTRUT SHALL BE GROUNDED WITH #6 STRANDED COPPER WITH GREEN JACKET. ALL CONNECTIONS TO BE DOUBLE LUG.
4. BEFORE STARTING TRENCHING, THE CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING LINES AFFECTED BY THE CONTRACT AND IMMEDIATELY NOTIFY THE PROJECT MANAGER IF ANY REROUTING OF EXISTING LINES IS NECESSARY.

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 WEST PORTAL AVENUE
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 OUTFRONTBB: 01121.000648.000648A
 398 WEST PORTAL AVENUE
 SAN FRANCISCO, CA 94127

SHEET TITLE:
 GENERAL NOTES & SPECIFICATIONS

T-2



APN: 2483/013

NEW COMCAST ANTENNA AREA, SEE ENLARGED SITE PLAN:
1 A-2

2 A-3

ISSUE STATUS

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COMCAST CENTER
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DATE:

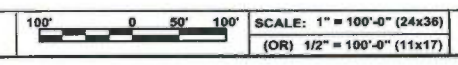
SFO-CA-M-N-0000005-K16 398
WEST PORTAL AVENUE

COMCAST NUMBER: SFO-CA-M-N-0000005-K16
OUTFRONTBB: 01121.000648.000648A
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SHEET TITLE:
SITE PLAN

A-1

SITE PLAN



NORTH

1

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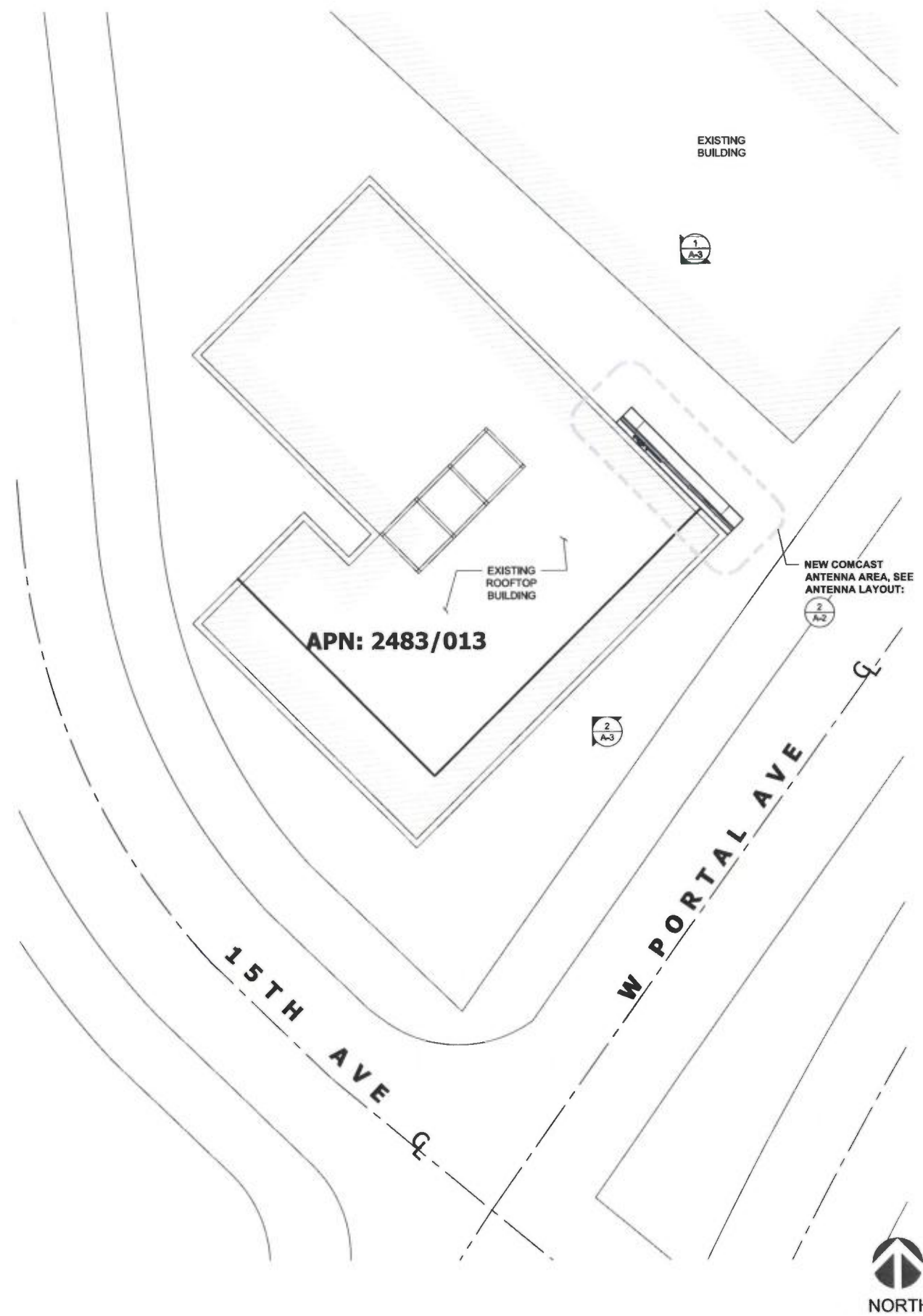
DATE:

SFO-CA-M-N-0000005-K16 398
WEST PORTAL AVENUE

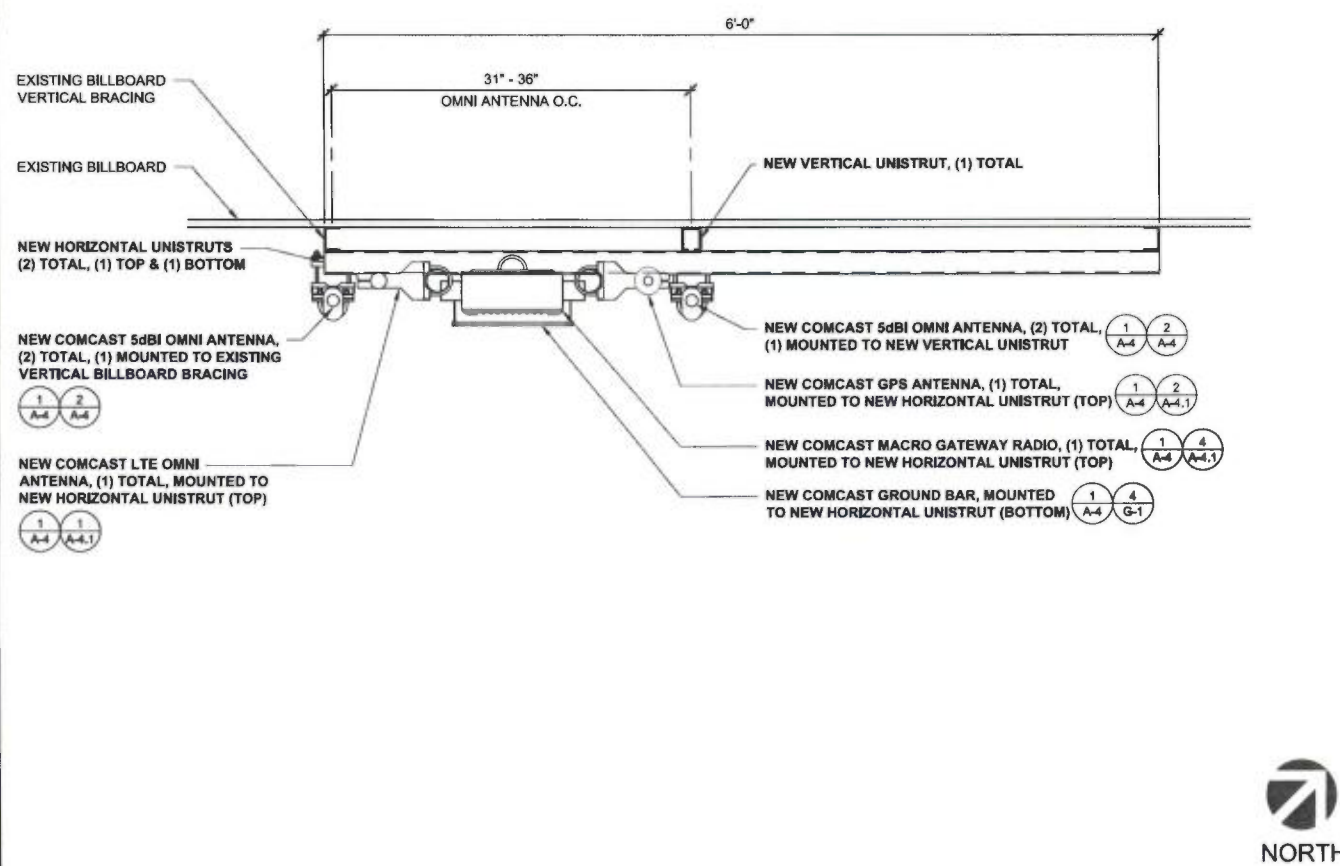
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 OUTFRONTBB: 01121.000648.000648A
 398 WEST PORTAL AVENUE
 SAN FRANCISCO, CA 94127

SHEET TITLE:
 ENLARGED SITE PLAN &
 ANTENNA & EQUIPMENT PLAN

A-2



NOT USED SCALE: **3**
 N.T.S.



ANTENNA LAYOUT

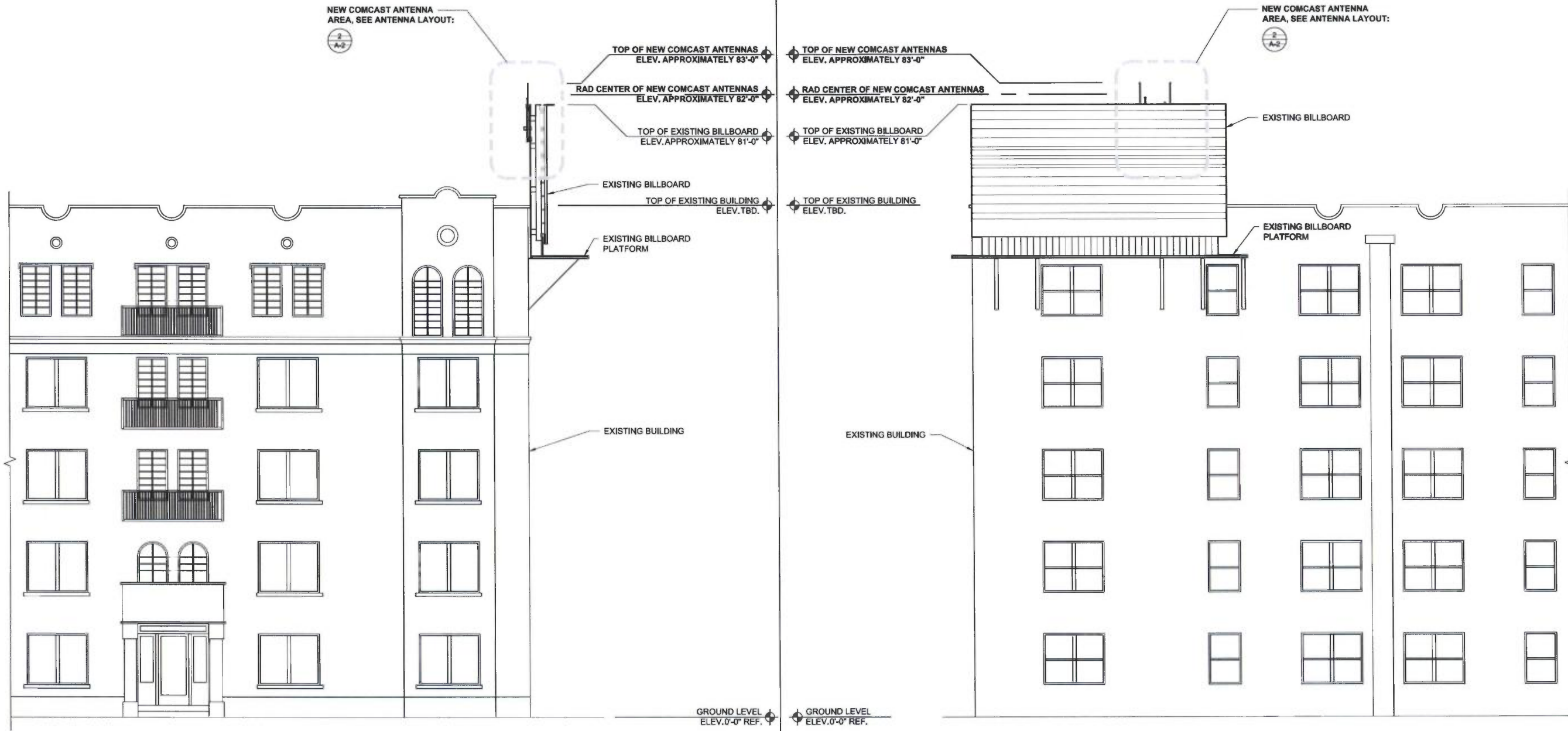
SCALE: 1-1/2" = 1'-0" (24x36)
 (OR) 3/4" = 1'-0" (11x17) **2**

ENLARGED SITE PLAN

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

DISCLAIMER

THE ELEVATION HEIGHTS SPECIFIED IN THIS RECORD DRAWING ARE BASED UPON INFORMATION GATHERED DURING THE SITE VISIT AND/OR AVAILABLE DOCUMENTS. THE NEW COMCAST OMNI ANTENNA INSTALLATION WILL NOT PROTRUDE ABOVE THE EXISTING STRUCTURE HEIGHT NO MORE THAN 24" - 26". THE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY FOR ANY ERRORS OR OMISSIONS THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT OF INCORRECT INFORMATION PROVIDED. PARTIES RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN AN A1 LETTER FROM A LICENSED SURVEYOR FOR VERIFICATION OF ITS ACCURACY.



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SAN FRANCISCO, CA 94127

SHEET TITLE:
NORTHEAST & SOUTHEAST
ELEVATIONS

A-3

SOUTHEAST ELEVATION

0 1.5' 3' 5' SCALE: 3/16" = 1'-0" (24x36)
(OR) 3/32" = 1'-0" (11x17)

2

NORTHEAST ELEVATION

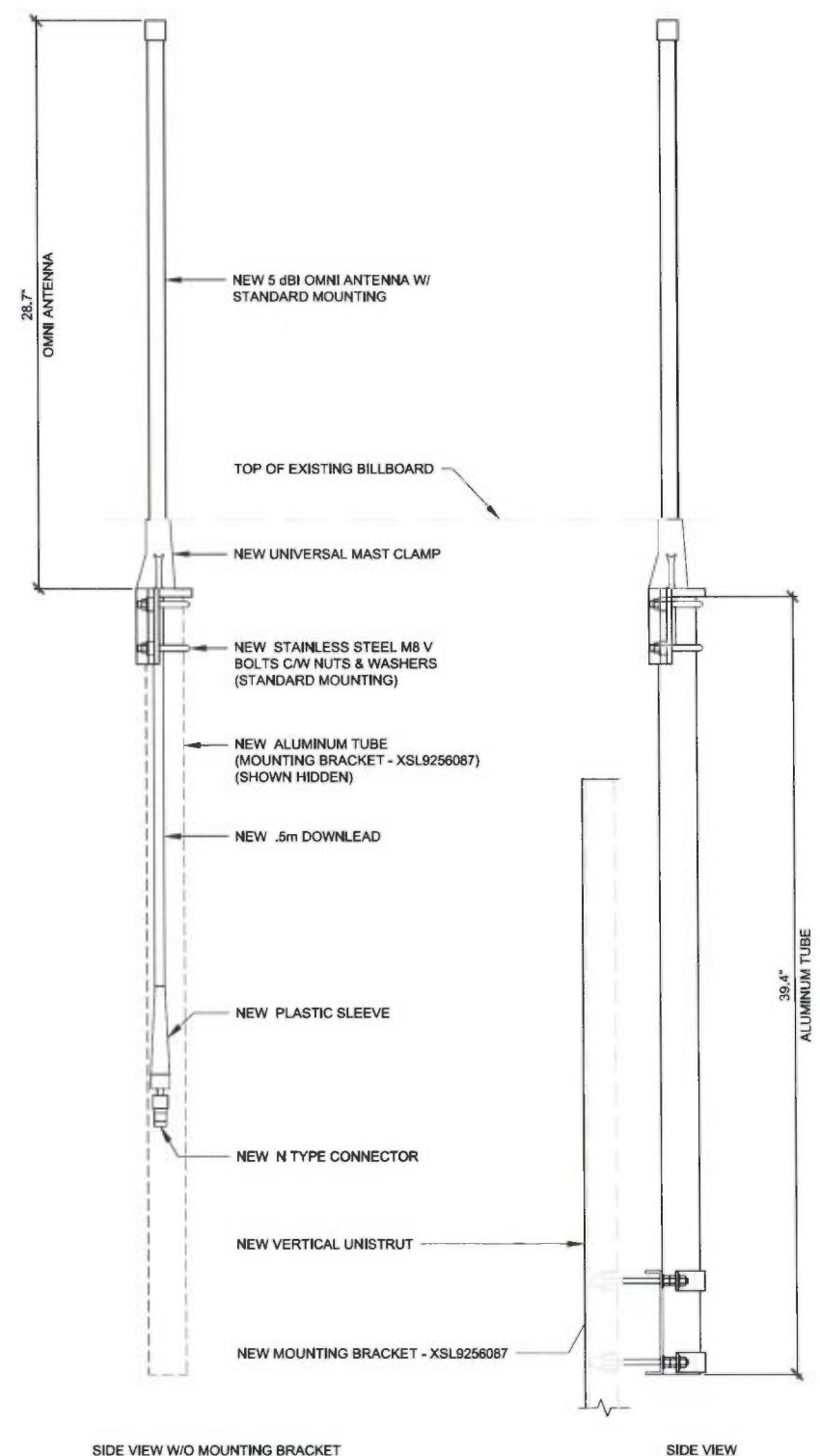
0 1.5' 3' 5' SCALE: 3/16" = 1'-0" (24x36)
(OR) 3/32" = 1'-0" (11x17)

1

AMPHENOL
7553893
LENGTH: 28.7"
WEIGHT
W/O MOUNTING
BRACKET: 1.1LBS



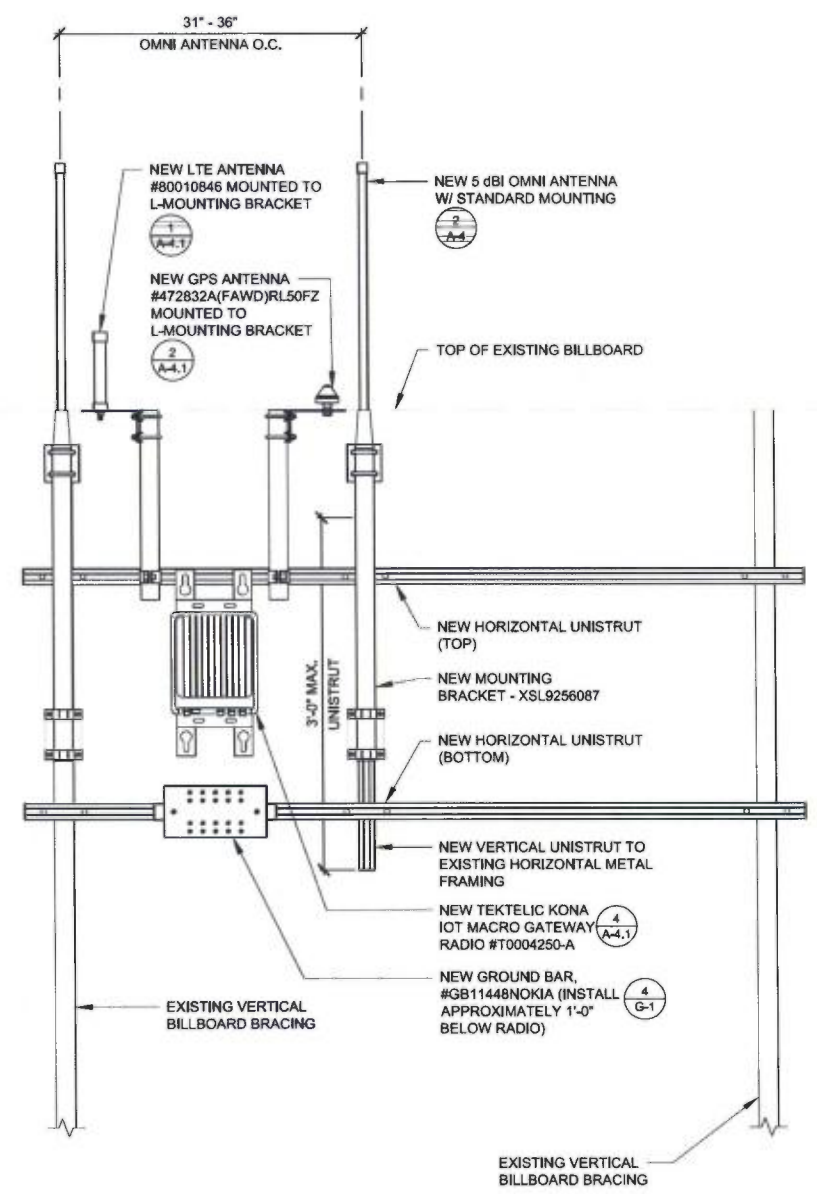
PLAN VIEW



SIDE VIEW W/O MOUNTING BRACKET

SIDE VIEW

OMNI ANTENNA DETAIL



ANTENNA MAST CONFIGURATION

NOT USED

SCALE
N.T.S. 4

NOT USED

SCALE
N.T.S. 3

SCALE
N.T.S. 2

SCALE
N.T.S. 1

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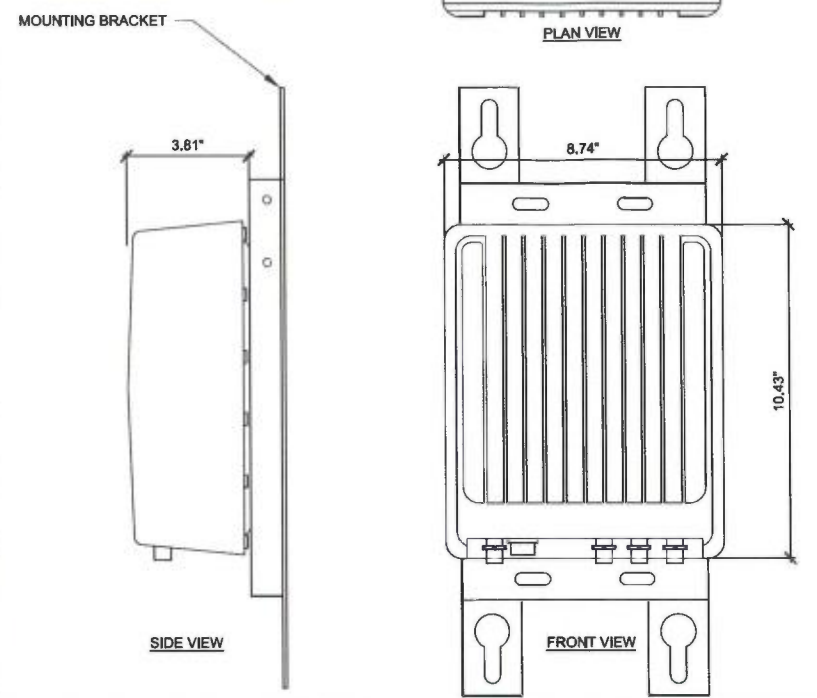
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SAN FRANCISCO, CA 94127

SHEET TITLE:
EQUIPMENT DETAILS & SPECIFICATIONS

A-4

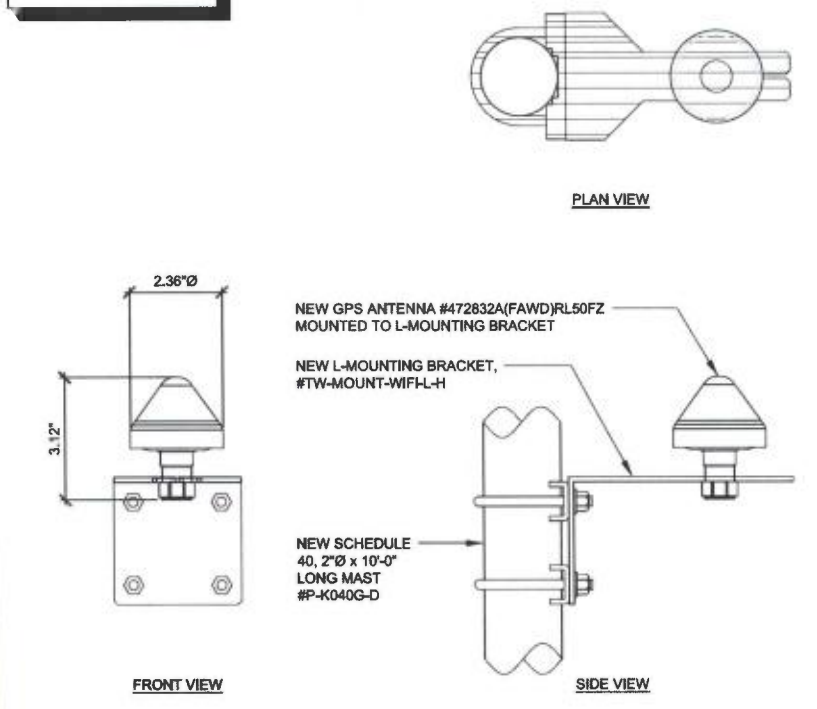
TEKTELIC KONA IOT MACRO GATEWAY
T0004250-A

LENGTH: 8.74"
WIDTH: 3.9"
HEIGHT: 11.3"
WEIGHT: 11.33 LBS



NOKIA
472832A(FAWD)RL50FZ

HEIGHT: 3.12"
DIAMETER: 2.36"
WEIGHT: .31 LBS



NOT USED

SCALE
N.T.S. 6

RADIO DETAIL

SCALE
N.T.S. 4

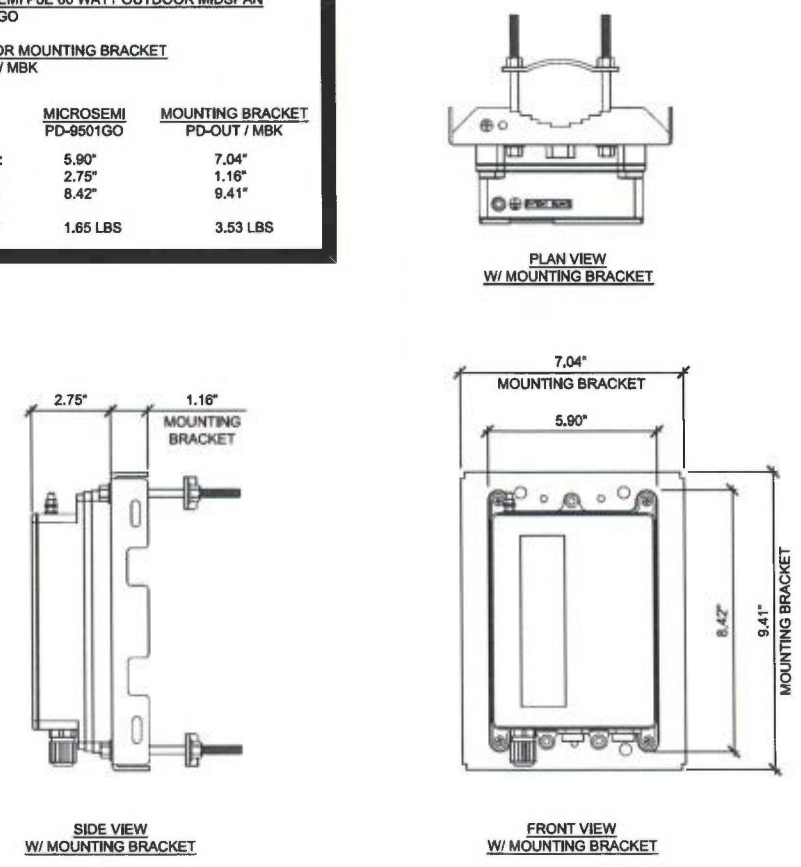
GPS ANTENNA

SCALE
N.T.S. 2

MICROSEMI PoE 60 WATT OUTDOOR MIDSPAN
PD-9501GO

OUTDOOR MOUNTING BRACKET
PD-OUT / MBK

	MICROSEMI PD-9501GO	MOUNTING BRACKET PD-OUT / MBK
LENGTH:	5.90"	7.04"
WIDTH:	2.75"	1.16"
HEIGHT:	8.42"	9.41"
WEIGHT:	1.65 LBS	3.53 LBS



NOT USED

SCALE
N.T.S. 5

PoE DETAIL

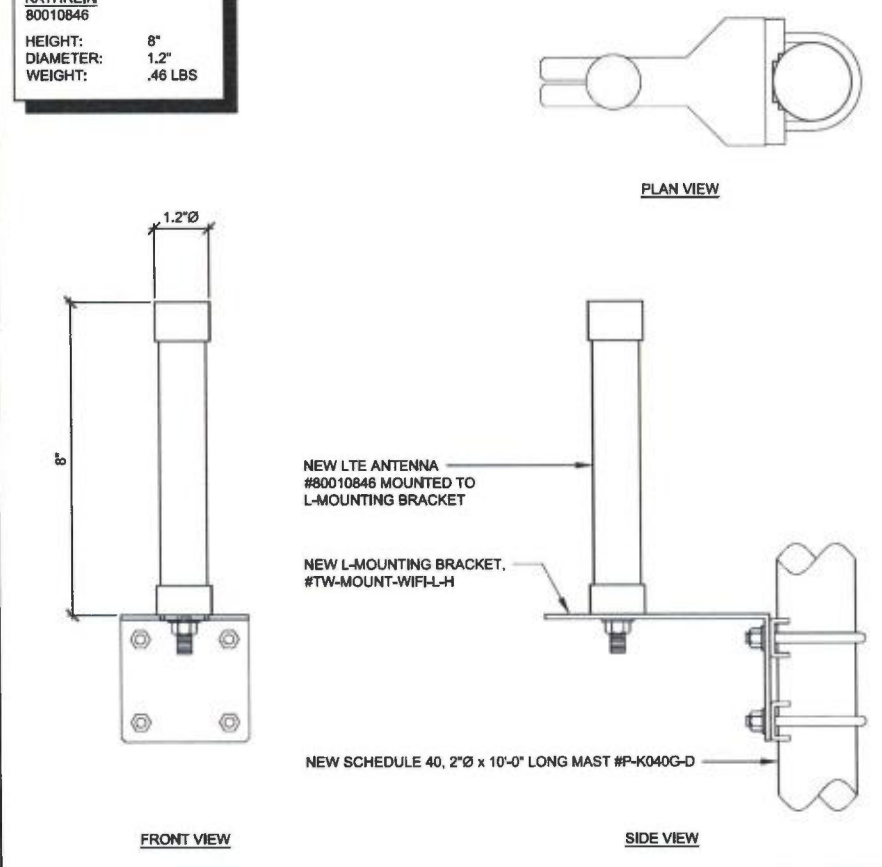
SCALE
N.T.S. 3

LTE ANTENNA

SCALE
N.T.S. 1

KATHREIN
80010846

HEIGHT: 8"
DIAMETER: 1.2"
WEIGHT: .46 LBS



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WEST PORTAL AVENUE

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SHEET TITLE:
EQUIPMENT DETAILS & SPECIFICATIONS

A-4.1

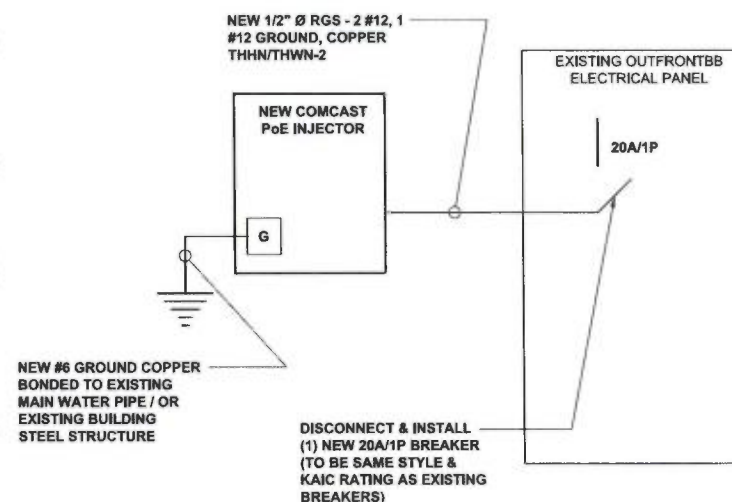
NOT USED

SCALE
N.T.S. 4

ELECTRICAL NOTES

SCALE
N.T.S. 2

- UTILITY GENERAL NOTES:
1. ALL NEW GROUNDINGS FOR ELECTRICAL ROUTE MUST BE DONE PER CEC, NEC & LOCAL BUILDING & SAFETY REQUIREMENTS.
 2. ALL NEW CONDUIT FROM ELECTRICAL PANEL TO COMCAST RADIO MUST BE EMT (INDOOR) & RGS (OUTDOOR) CONDUITS. INSTALL WEATHERPROOF PULL BOXES AS REQD. PER CEC, NEC & LOCAL BLDG. & SAFETY REQUIREMENTS & MUST HAVE TRAFFIC COVERS.
 3. ALL NEW PULL BOXES MUST BE HOT-DIPPED GALVANIZED AND WEATHERPROOF
 4. ALL NEW WIRE SPLICES PULL BOXES DONE PER CEC & NEC.
 5. FIELD VERIFY EXACT ELECTRICAL CONDUIT ROUTE.
 6. COMCAST EQUIPMENT, OUTLET AND CONDUIT NEED TO BE LABELED & ALL CLEARANCE FOR ELECTRICAL EQUIPMENT BY CEC & NEC.
 7. NEW GROUND RODS MAY BE USED FOR SITE GROUNDING IF DESIRED RESISTANCE IS ACHIEVED.
 8. CONTRACTOR TO INSTALL UTILITY CONDUIT (LATERAL).
 9. UTILITY POINTS OF SERVICE AND WORK / MATERIALS SHOWN ARE BASED UPON PRELIMINARY INFORMATION PROVIDED BY COMCAST CONSTRUCTION TEAM & COMCAST CONSTRUCTION MANAGER / AND OR LANDLORD'S MANAGEMENT COMPANY AND ARE FOR BID PURPOSES ONLY.
 10. CONTRACTOR SHALL COORDINATE WITH COMCAST CONSTRUCTION TEAM & COMCAST CONSTRUCTION MANAGER / AND OR LANDLORD'S MANAGEMENT COMPANY FOR FINAL AND EXACT WORK / MATERIALS REQUIREMENTS AND CONSTRUCT. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS, PULL ROPES, CABLES, PULL BOXES, CONCRETE ENCASUREMENT OF CONDUIT (IF REQUIRED), TRANSFORMER PAD, BARRIERS, POLE RISERS, TRENCHING, BACKFILL, PAY ALL UTILITY COMPANY FEES AND INCLUDE ALL REQUIREMENTS IN SCOPE OF WORK.



SYMBOLS

⊗	GROUND ROD WITH ACCESS	•	COMPRESSION, CLAMP, OR DOUBLE HOLE LUG TYPE GROUND CONNECTION
⊕	XIT GROUND ROD	■	EXOTHERMIC CONNECTION (CADWELD) TO GROUND RING AND COMPRESSION TO GROUND HALO
⊗	GROUND ROD	— G —	GROUNDING WIRE, DASHED LINE INDICATES UNDERGROUND
⊔	DISCONNECT SWITCH	— T —	TELEPHONE LINE, DASHED LINE INDICATES UNDERGROUND
⊕	UTILITY METER	— C —	COAXIAL CABLE, DASHED LINE INDICATES UNDERGROUND
⊔	CIRCUIT BREAKER	— A —	ANTENNA COAX
⊔	FUSE	Ⓜ	DETAIL REFERENCE DETAIL NO.2 ON SHEET E3
⊕	GENERATOR		
⊔	LIGHT SWITCH		

ABBREVIATIONS

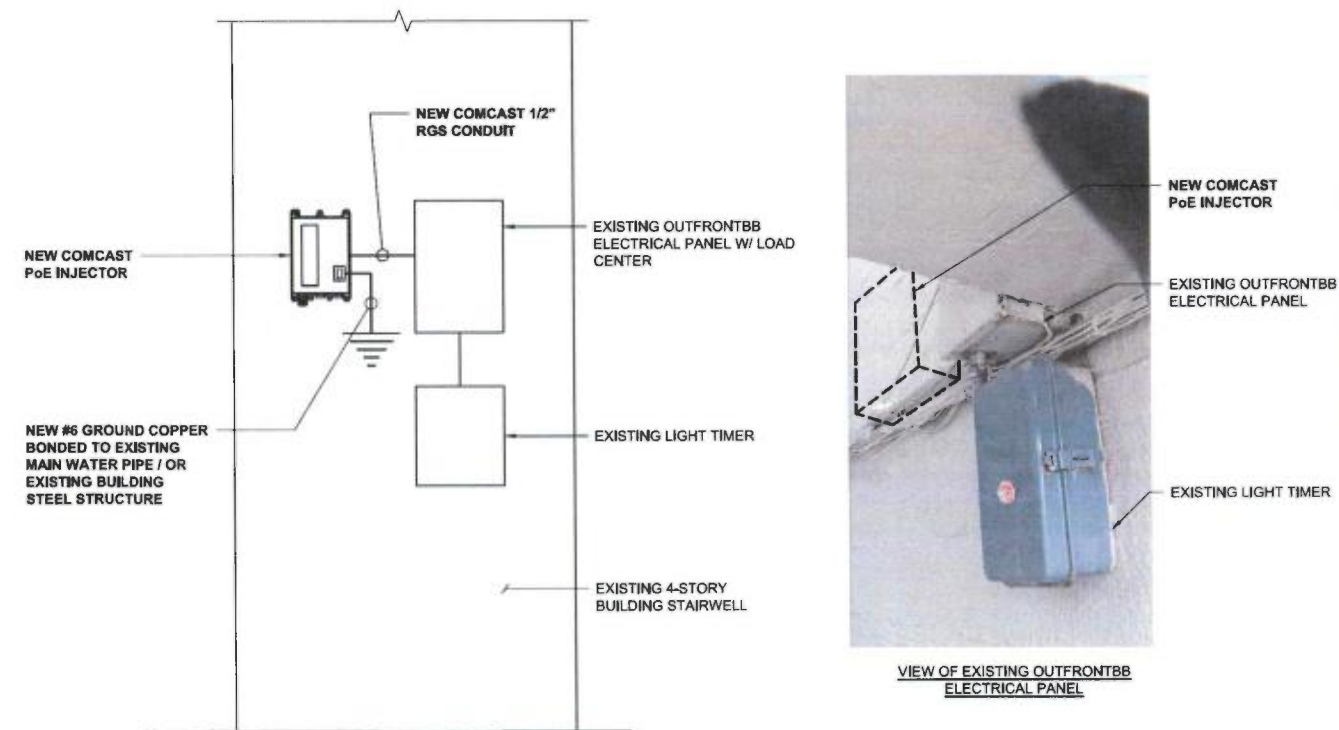
ACCA	ANTENNA CABLE COVER ASSEMBLY	IGR	INTERIOR GROUND RING (HALO)
AWG	AMERICAN WIRE GAUGE	MIGB	MASTER ISOLATED GROUND BAR
BTCW	BARE TINNED COPPER WIRE	(N)	NEW (PROVIDE AND INSTALL UNLESS NOTED OTHERWISE)
C	CONDUIT	PCS	PERSONAL COMMUNICATION SERVICE
CIGBE	COAX INSULATED GROUND BAR EXTERNAL CONDUIT ONLY	PDC	POWER PROTECTION CABINET
CO	CONDUIT ONLY	PRC	PRIMARY RADIO CABINET
DWG	DRAWING	PVC	POLYVINYL CHLORIDE CONDUIT
EMT	ELECTRICAL METALLIC TUBING	RGS	RIGID GALVANIZED STEEL
NEW OR EX.	EXISTING	RWY	RACEWAY
GEN	GENERATOR	S.L.D.	SINGLE LINE DIAGRAM
GFI	GROUND FAULT CIRCUIT INTERRUPTER	TMLP	VERIZON WIRELESS WIRELESS LIMITED PARTNERSHIP
GRND	GROUND	TEL	TELEPHONE
GPS	GLOBAL POSITIONING SYSTEM	TYP.	TYPICAL
GR	GROWTH	WP	WEATHERPROOF EQUIPMENT

SYMBOLS & ABBREVIATIONS

SCALE
N.T.S. 3

1-LINE DIAGRAM

SCALE
N.T.S. 1



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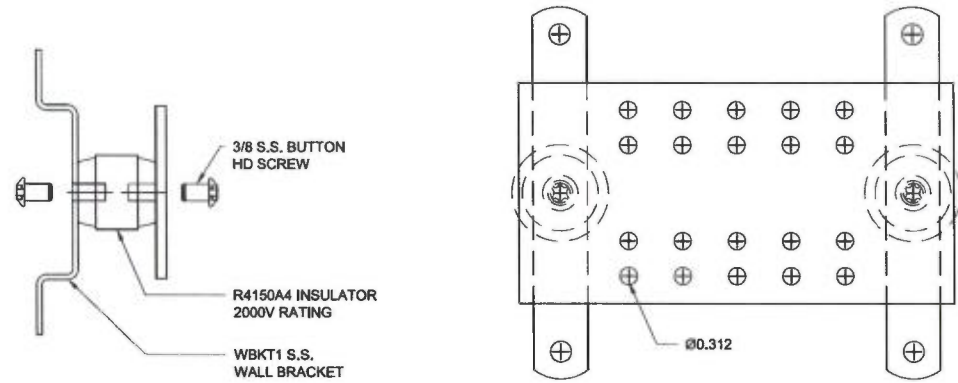
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SHEET TITLE:
1-LINE DIAGRAM & NOTES

E-1



CONFIGURATION DESIGN

SCALE
N.T.S. **4**

1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
2. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING GROUND WIRES AND CONNECT TO SURFACE MOUNTED BUS BARS, FOLLOW ANTENNA AND BTS MANUFACTURERS PRACTICES FOR GROUNDING REQUIREMENTS. GROUND COAX SHIELDS AT BOTH ENDS AND EXIT FROM TOWER OR POLE USING MFR'S PRACTICES.
3. ALL GROUND WIRE SHALL BE GREEN INSULATED WIRE ABOVE GROUND.
4. CONTRACTOR TO VERIFY AND TEST GROUND TO SOURCE. GROUNDING AND OTHER OPERATIONAL TESTING WILL BE WITNESSED BY A NOKIA REPRESENTATIVE.
5. REFER TO DIVISION 16 GENERAL ELECTRIC; GENERAL ELECTRICAL PROVISION AND COMPLY WITH ALL REQUIREMENTS OF GROUNDING STANDARDS.
6. CONTRACTOR TO ABIDE BY ALL NOKIA SAFETY STANDARDS DURING SITE CONSTRUCTION.
7. CONTRACTOR SHALL REFER TO NOKIA STANDARDS FOR GROUNDING CONNECTIONS & INSTALLATION METHODS.
8. ELECTRICAL CONTRACTOR TO PROVIDE DETAILED DESIGN OF GROUNDING SYSTEM, AND RECEIVE APPROVAL OF DESIGN BY AUTHORIZED NOKIA REPRESENTATIVE, PRIOR TO INSTALLATION OF GROUNDING SYSTEM. PHOTO DOCUMENT ALL CADWELDS AND GROUND RING.
9. NOTIFY CONSTRUCTION MANAGER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.
10. GROUNDING ROD NOTES (WHERE APPLICABLE)
11. ELECTRICAL CONTRACTOR SHALL ORDER GROUND RESISTANCE TESTING ONCE THE GROUND SYSTEM HAS BEEN INSTALLED; A QUALIFIED INDIVIDUAL UTILIZING THE FALL OF POTENTIAL METHOD, SHOULD PERFORM THE TEST. THE REPORT WILL SHOW THE LOCATION OF THE TEST AND CONTAIN NO LESS THAN 9 TEST POINTS ALONG THE TESTING LINE, GRAPHED OUT TO SHOW THE PLATEAU.
12. POINT GROUND TEST OR 3 POINT 62% TESTS WILL NOT BE ACCEPTED AS ALTERNATIVES TO THE AFORE MENTIONED GROUND TESTS. TEST SHALL BE PERFORMED WHILE THE COUNTERPOISE IS ISOLATED. TEST SHALL BE PERFORMED WHILE THE COUNTERPOISE IS ISOLATED FROM THE A/C SYSTEM GRIDS AND EXISTING COMMUNICATIONS FACILITY.

GENERAL GROUNDING NOTES

SCALE
N.T.S. **3**

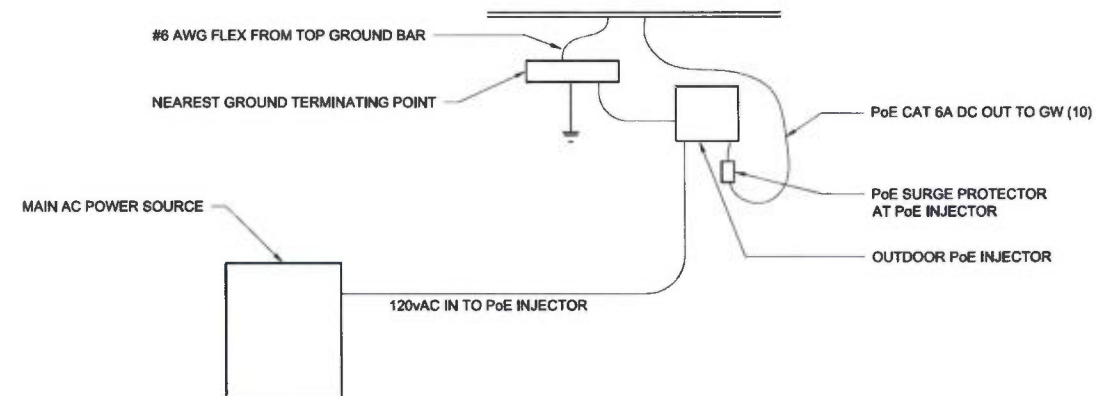
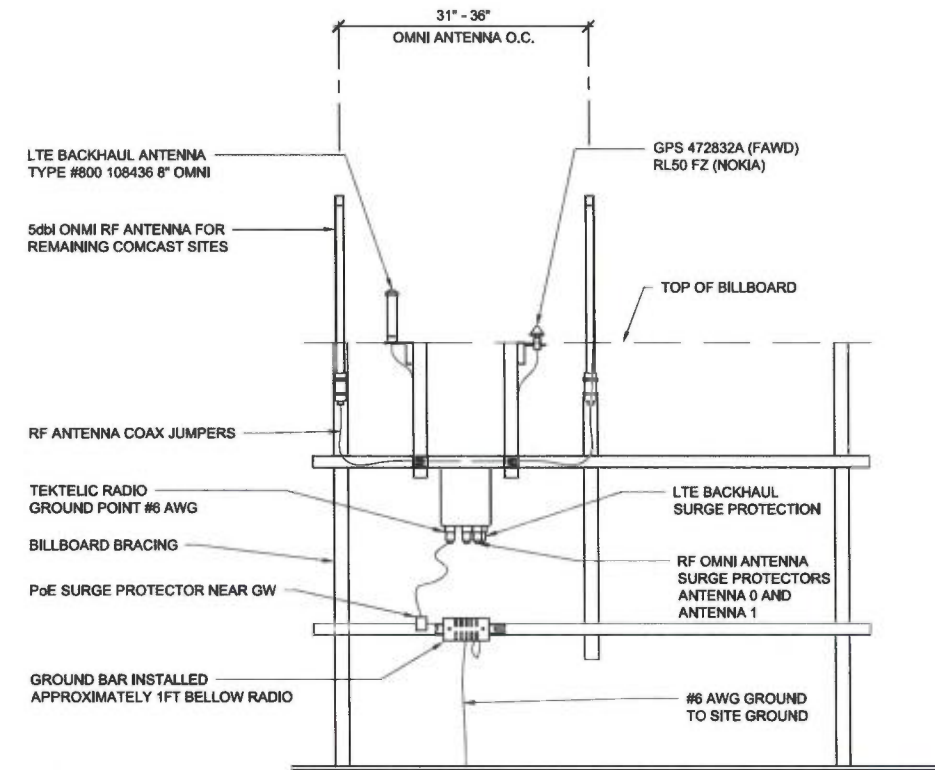
1. THE DESIGN OF THE ANTENNA MAST CONFIGURATION CALLS FOR A TWO (2) INCH DIAMETER, 10-FOOT MAST WITH THE GROUND BAR AND ANTENNAS MOUNTED ON IT IN A SET RELATIONSHIP TO THE RADIO, AND GROUND BAR.
2. THE MAST, RADIOS AND ANTENNAS WOULD BE THE SAME NO MATTER WHAT TYPE SITE WAS SELECTED FOR THE INSTALLATION.
3. THE TEKTELIC GATEWAY/RADIO UNIT IS MOUNTED ON THE ANTENNA MAST AT ABOUT 24" TO 36" ABOVE THE BASE OF THE ROOFTOP OR AT MID SPAN ON SPECIFIC SITE TOWER.
4. THE HARGER GROUND BAR IS MOUNTED 12 INCHES BELOW THE RADIO TO PREVENT INDUCTION BUILD-UP DURING A LIGHTNING STRIKE. THE SURGE PROTECTORS FOR THE GPS, LTE, AND BOTH RF ANTENNAS ARE MOUNTED INTO THE ANTENNA PORTS ON THE BOTTOM OF THE RADIO.
5. THE RF JUMPERS ARE CONSTRUCTED WITH THE SURGE PROTECTORS BUILT IN. THE ENTIRE RF JUMPER IS FULLY WEATHER-PROOFED FROM CONNECTOR TO CONNECTOR. THEIR GROUND CABLES ARE CRIMPED TO THE GROUND RING OF THE SURGE PROTECTOR AT THE RADIO END, AND ARE ATTACHED TO THE HARGER GROUND BAR USING #10 AWG TWO (2) HOLE LUGS. THE GROUND CABLES ARE #10 AWG.
6. THE FOUR (4) ANTENNAS ARE MOUNTED ABOVE THE RADIO, WITH THE TWO RF ANTENNAS MOUNTED, WITH ONE (1) ON EACH SIDE OF THE MAST USING THE S200 COMMSCOPE 24" STAND-OFF BRACKETS.
7. THE LTE AND GPS ANTENNAS ARE MOUNTED ON THEIR RESPECTIVE MOUNTING BRACKETS AT A LOWER HEIGHT, APPROXIMATELY 2" TO 4" BELOW THE BOTTOM BAR OF THE S200 COMMSCOPE MOUNTING BRACKETS.
8. THE COAXIAL ANTENNA JUMPER CABLES ARE ATTACHED TO EACH OF THE ANTENNAS, WITH THE WEATHER PROOFING SLIDE-UP COVERS ATTACHED AS INSTRUCTED.
9. THE TEKTELIC RADIO IS GROUNDED TO THE HARGER GROUND BAR USING A TWO (2) HOLE #6 AWG LUG OFR CONNECTION TO THE RADIO AND A TWO-HOLE LUG FOR ATTACHMENT TO THE HARGER GOUND BAR.
10. THE HARGER GROUND BAR IS GROUNDED USING #6 AWG FLEX GROUND CABLE TO THE POINT OF LOWEST POTENTIAL ON THE TOWER OR DIRECTLY TO THE TOWER GROUND AT THE BASE OF THE TOWER.
11. FOR THE BILLBOARD, THE GROUND POINT SHOULD BE LOCATED AND VERIFIED BY SITE SURVEY AND THE GROUND CABLE ATTACHED AT THAT POINT.

CONFIGURATION NOTES

SCALE
N.T.S. **2**

SCHEMATIC GROUNDING PLAN

SCALE
N.T.S. **1**



ISSUE STATUS

REV.	DATE	DESCRIPTION	BY
A	05/05/17	90% CONSTRUCTION	AS



SAC AE DESIGN GROUP, INC.
5015 SHOREHAM PLACE, STE. 190
SAN DIEGO, CA 92122
www.sacw.com
619.735.3766

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OUTFRONTBB: 01121.000648.000648A
398 WEST PORTAL AVENUE
SAN FRANCISCO, CA 94127

SHEET TITLE:
SCHEMATIC GROUNDING PLAN & DETAILS

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