



**PORT OF OAKLAND**

# MEMO

**TO:** Joe Marsh, Port Permit Coordinator  
**FROM:** Colleen Liang, Port Associate Environmental Scientist  
**DATE:** July 13, 2015  
**SUBJECT: PORT PERMIT COORDINATOR DECISION  
for Work on Private Property**

The Port of Oakland (Port) Permits Section staff and Environmental Programs and Planning staff have reviewed the subject Port Development Permit Application. We find the proposal meets the applicable standards of the "Port of Oakland Land Use and Development Code (LUDC) for the Oakland Airport Business Park". Detailed analysis and findings are set forth below.

Port Permit No: 5077  
Permit Applicant: Verizon Wireless c/o Modus Inc.  
Property Owner: Mercury Hotels, Inc.  
Project Location: 77 Hegenberger Road, Oakland  
Environ. Assessment: Categorical Exemption

## **Project Description**

The project site is located in the southwestern portion of the City of Oakland (City), in the vicinity of Oakland International Airport and Interstate 880 (I-880). The address of the proposed project is on the premises of the Holiday Inn located at 77 Hegenberger Road, Oakland, CA, within the Oakland Airport Business Park.

Verizon Wireless is proposing to modify the wireless telecommunication facility at this site to provide better service and data capacity to businesses and residents in the City of Oakland. The proposed site is intended to provide capacity relief and improve service to nearby areas. Improvements include:

- Replacement of existing antennas
- Addition of equipment units (A2 units and PCS RRUS12 w/A2 units) to existing equipment at the site

All exposed antennas and equipment will be painted and textured to match the tan color of the hotel building, which also is similar to the existing antennas and equipment.

### **Surrounding Area**

The project site is located within the Oakland Airport Business Park, Commercial Corridor. The site is off of Hegenberger Road, between Pardee Drive and Doolittle Drive. Hegenberger Road is a commercial corridor leading to Oakland International Airport. The project site is also within the Coliseum/Hegenberger Planning District of the Coliseum Area Redevelopment Project Area established by the City of Oakland in 1995, and expanded to a total of 6,764 acres in 1997.

### **Land Use Analysis (from LUDC Section 2)**

The project site is located within the "Port Area" of the City of Oakland, and within the Commercial Corridor of the Oakland Airport Business Park, originally established by Port Ordinance No.1343 by the Board of Port Commissioners in 1966. Development in the Business Park is currently regulated by the "Port of Oakland Land Use and Development Code (LUDC)", adopted by the Board of Port Commissioners on June 2011. The project is for utility and public service, which is an allowable use under the LUDC at this location.

### **Findings (from LUDC Section 5.5)**

The Port approves this application for a Development Permit, as submitted, with the following findings:

1. The proposed project will not be detrimental to the health, safety, peace, morals, comfort or general welfare of persons working, visiting, transiting through the Oakland Airport Business Park or be detrimental or injurious to property and improvements of the adjacent properties, the surrounding area or neighborhood or to the general welfare of the City.
2. The proposed project is consistent with the City of Oakland's General Plan.
3. The proposed project complies with provisions of the LUDC.
4. The proposed project has been adequately evaluated under the California Environmental Quality Act (CEQA).
5. The proposed project has been approved, or has a reasonable chance of being approved, by all outside agencies having jurisdiction over the project, including, but not limited to: the City of Oakland, Bay Conservation and Development Commission, Federal Aviation Administration, San Francisco Bay Regional Water Quality Control Board, Alameda County Airport Land Use Commission, Alameda County Public Health Department, and the California State Lands Commission.
6. The proposed project will neither interfere with the operations of Oakland International Airport nor enable the establishment of uses that may be incompatible with the potential imposition of noise, light, smoke, air currents, electronic or other emissions, vibrations, discomfort, and/or inconvenience resulting from airport operations at Oakland International Airport.
7. The Port has attached such conditions to issuance of the Development Permit as it deems reasonable or necessary to achieve the purposes of the LUDC, to reduce or to mitigate environmental impacts, and to address the project's

anticipated burden on the Oakland Airport Business Park and the Port, and which conditions otherwise promote the health, safety, and welfare of the surrounding community.

### **Environmental Findings**

The Port is the Lead Agency under CEQA, having land use jurisdiction over the Oakland Airport Business Park. The Port finds that this project is categorically exempt pursuant to CEQA Guidelines Section 15302, Replacement or Reconstruction, which exempts replacement or reconstruction of existing utility systems and/or facilities involving negligible or no expansion of capacity.

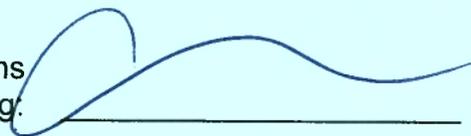
### **Permit Conditions**

1. All conditions of approval shall be printed on the final permit set of plans.
2. The project shall conform to Port-stamped approved plans, including the conditions of approval, unless otherwise approved by the Port. The applicant is responsible for including all details agreed upon, or conditions made by the Port, during the approval process. Failure to include any such details will not exempt the applicant from the Port for any changes prior to construction.
3. The use shall be fully described on the plans and is deemed approved by the Port approval stamp. Any modifications or clarifications will be included in the Specific Conditions. Any changes from the approved plans must be approved in writing by the Port.
4. The applicant shall make improvements for sidewalk(s) as required. Such improvements shall be included in the approved plans, unless otherwise specified in the Specific Conditions.
5. The applicant shall meet all applicable conditions and requirements of all outside agencies having jurisdiction over the project, including but not limited to: the City of Oakland, San Francisco Bay Conservation and Development Commission (BCDC), Federal Aviation Administration, San Francisco Bay Regional Water Quality Control Board, Alameda County Airport Land Use Commission, Alameda County Public Health Department, and the California State Lands Commission. The applicant shall report any conflicts with Port requirements to the Port prior to construction. Any such conflicts must be resolved by the applicant to the satisfaction of the Port and the outside agency involved.
6. The applicant shall provide copies of authorizations or permits from agencies noted above, such as BCDC, for work within 100-ft of the shoreline band.
7. The Project Applicant shall obtain, at the Project Applicant's expense, all City of Oakland building permits required for the Project.
8. The Project Applicant and the Project Applicant's contractor shall construct the Project according to the plans approved under Port and City permits. Modifications made to comply with City of Oakland permit requirements shall be subject to verification of compliance with Port permit conditions prior to the start of construction.

9. The Project Applicant shall maintain the Project site in a clean and orderly condition during the entire term of the Development Permit. If there is a work stoppage at any time after construction has commenced for a period of more than 30 days, the Project Applicant shall secure any completed or uncompleted work and remove or screen any stored materials. The Chief Engineer of the Port may provide a 30-day notice and order to the Project Applicant to comply with this condition. If the Project Applicant fails to comply during that time period, or fails to present and implement an acceptable plan for compliance, the Port maintains the right at Port's discretion, to complete the necessary work and bill the Project Applicant for all related costs, or impose reasonable fines for violation of this condition of approval and/or the Port Chief Engineer's order. Any such fine shall be reasonably related to the nature of the violation and/or the cost to correct.
10. To the maximum extent permitted by law, the Project Applicant shall defend, hold harmless, and indemnify the Port and its respective officers, agents and employees (whether the action is on behalf of the Port, or otherwise) (the "Indemnified Parties") against any and all liability, damages, claims, demands, judgments or other losses (including, without limitation, attorneys fees, expert witness and consultant fees and other litigation expenses), referendum or initiative relating to, resulting from or caused by, or alleged to have resulted from, or caused by, any action or approval associated with the Project. This indemnity includes, without limitation, any legal or administrative challenge, referendum or initiative filed or prosecuted to overturn, setaside, stay or otherwise rescind any or all approvals granted in connection with the Project, any environmental determination made for the Project, and granting any permit issued in accordance with the Project. This indemnity includes, without limitation, payment of all direct and indirect costs associated with any action specified herein. Direct and indirect costs as used herein shall include, without limitation, any attorney's fees, expert witness and consultant fees, court costs and other litigation fees, Port Attorney time and overhead costs, and other Port Staff overhead costs and normal day-to-day business expenses incurred by the Port ("Litigation Expenses"). The Indemnified Parties shall have the right to select counsel to represent the Indemnified Parties, at the Project Applicant's expense, in the defense of any action specified in this condition of approval. The Indemnified Parties shall take all reasonable steps to promptly notify the Project Applicant of any claim, demand, or legal actions that may create a claim for indemnification under these conditions of approval.
11. The Applicant shall comply with applicable stormwater quality requirements including Low Impact Development site design.
12. The applicant shall agree to comply with any other conditions added by the Permit Hearing Officer as well as any other conditions listed in the LUDC not otherwise listed here.

**RECOMMENDED:**

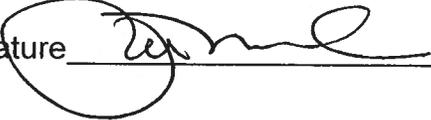
Environmental Programs  
and Planning



Date: 7/13/15

**DECISION:**

Port Permit Coordinator:  Approve  Deny

Signature  Date: 7/13/15

Attachments:

- Attachment 1 – Project Application
- Attachment 2 – Project Description
- Attachment 3 – Design Drawings

**Verizon Wireless • Base Station No. 189547 “Doolittle”  
77 Hegenberger Road • Oakland, California**

**Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of Verizon Wireless, a personal wireless telecommunications carrier, to evaluate proposed modifications to its existing base station (Site No. 189547 “Doolittle”) located at 77 Hegenberger Road in Oakland, California, for compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

**Executive Summary**

Verizon proposes to replace some of its directional panel antennas on the four-story Holiday Inn located at 77 Hegenberger Road 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 <sup>2</sup>	1.00 mW/cm <sup>2</sup>
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

**General Facility Requirements**

Base stations typically consist of two distinct parts: the electronic transceivers (also called “radios” or “channels”) that are connected to the traditional wired telephone lines, and the passive antennas that send the wireless signals created by the radios out to be received by individual subscriber units. The transceivers are often located at ground level and are connected to the antennas by coaxial cables. A small antenna for reception of GPS signals is also required, mounted with a clear view of the sky.



**Verizon Wireless • Base Station No. 189547 “Doolittle”  
77 Hegenberger Road • Oakland, California**

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

### **Computer Modeling Method**

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

### **Site and Facility Description**

Based upon information provided by Verizon, including construction drawings by Connell Design Group, LLC, dated December 5, 2013, that carrier presently has nine directional panel antennas installed on the sides of the two penthouses above the east and west ends of the roof of the four-story Holiday Inn located at 77 Hegenberger Road in Oakland. Verizon proposes to replace six of its existing antennas with six Andrew Model SBNHH-1D65C directional panel antennas at the same locations, retaining three Andrew Model LNX-6515DS antennas. The nine antennas would employ up to 8° downtilt, would be mounted at effective heights of at least 46 feet above ground, and would be oriented in identical groups of three toward 40°T, 180°T, and 310°T. The maximum effective radiated power in any direction would be 15,020 watts, representing simultaneous operation at 4,410 watts for AWS, 4,410 watts for PCS, 3,820 watts for cellular, and 2,380 watts for 700 MHz service. There are reported no other wireless telecommunications base stations at the site or nearby.

### **Study Results**

For a person anywhere at ground, the maximum RF exposure level due to the proposed Verizon operation is calculated to be 0.049 mW/cm<sup>2</sup>, which is 5.2% of the applicable public exposure limit. The maximum calculated level at any nearby building\* is 7.7% 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.

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\* Located at least 130 feet away, based on photographs from Google Maps.

**Verizon Wireless • Base Station No. 189547 “Doolittle”  
77 Hegenberger Road • Oakland, California**

**Recommended Mitigation Measures**

Due to their mounting locations and height, the Verizon antennas would not be accessible to unauthorized persons, 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, to include review of personal monitor use and lockout/tagout procedures, be provided to all authorized personnel who have access to the antennas, including employees and contractors of Verizon and of the property owner. No access within 15 feet directly in front of the antennas themselves, such as might occur during certain maintenance activities, should be allowed while the base station is in operation, unless other measures can be demonstrated to ensure that occupational protection requirements are met. It is recommended that explanatory signs<sup>†</sup> be posted at the antennas, readily visible from any angle of approach to persons who might need to work within that distance.

**Conclusion**

Based on the information and analysis above, it is the undersigned’s professional opinion that the proposed operation of the Verizon Wireless base station located at 77 Hegenberger Road 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 base stations. Training authorized personnel and posting explanatory signs is recommended to establish compliance with occupational exposure limits.

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<sup>†</sup> 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.



**Verizon Wireless • Base Station No. 189547 “Doolittle”  
77 Hegenberger Road • Oakland, California**

**Authorship**

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-20309, which expires on March 31, 2017. This work has been carried out under her direction, and all statements are true and correct of her own knowledge except, where noted, when data has been supplied by others, which data she believes to be correct.



*Andrea L. Bright*  
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Andrea L. Bright, P.E.  
707/996-5200

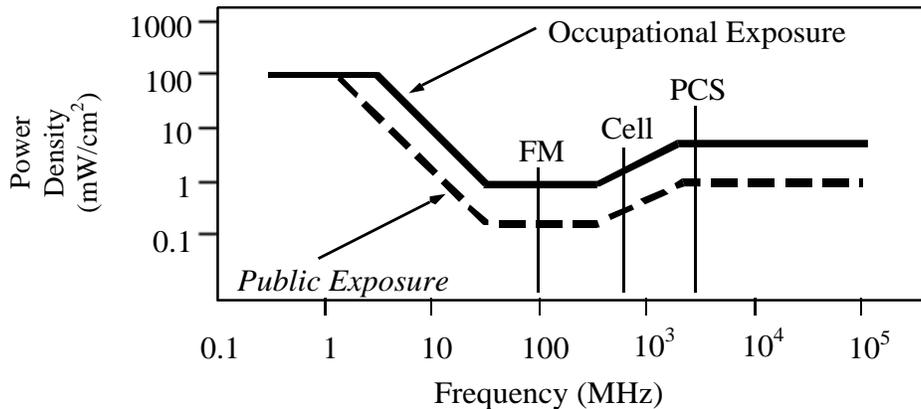
May 15, 2015

## FCC Radio Frequency Protection Guide

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

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

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



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  $S = \frac{180}{\theta_{BW}} \frac{0.1 \theta_{BW} P_{net}}{4\pi D^2 \theta h}$ , in mW/cm<sup>2</sup>,

and for an aperture antenna, maximum power density  $S_{max} = \frac{0.1 \theta_{BW} \theta_{BW} P_{net}}{4\pi h^2}$ , in mW/cm<sup>2</sup>,

- where  $\theta_{BW}$  = 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  
 $\theta$  = 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:

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

- 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.

Existing



Proposed



view from Hegenberger Road looking west at site



189547 Doolittle - PCS Project  
77 Hegenberger Road, Oakland, CA  
Photosims Produced on 5-21-2015

Existing



Proposed



view from west lot looking east at site

Existing



Proposed



Proposed Verizon Equipment

view from Hegenberger Road looking southwest at site



# DOOLITTLE - PCS PROJECT

PS NO. 189547  
 PSP NO. 20141071317  
 77 HEGENBERGER ROAD  
 OAKLAND, CA 94621



VERIZON WIRELESS  
 2785 MITCHELL DRIVE  
 WALNUT CREEK, CA 94598

PROJECT INFORMATION:

### DOOLITTLE

PS NO. 189547 / PROJECT #20141071317  
 77 HEGENBERGER ROAD,  
 OAKLAND, CA 94621

### Modus, Inc.

Site Acquisition · Planning · Construction Management · Site Modifications  
 149 NATOMA STREET, 3RD FLOOR  
 SAN FRANCISCO, CA 94105

CURRENT ISSUE DATE:

06/15/15

ISSUED FOR:

100% CD

REV.: DATE: DESCRIPTION: BY:

REV.	DATE	DESCRIPTION	BY
3	06/15/15	100% CD	JR
2	06/02/15	100% CD	JR
1	05/14/15	100% CD	JR
0	04/13/15	90% CD	GN

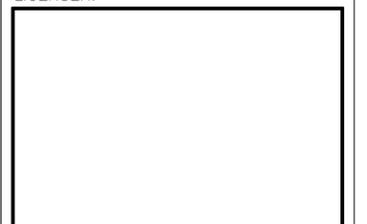
CIVIL ENGINEER:



DRAWN BY: CHK.: APV.:

GN	JR	
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LICENSER:



SHEET TITLE:

TITLE SHEET, SITE INFORMATION  
 AND VICINITY MAP

SHEET NUMBER:

T-1

**CODE COMPLIANCE**

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

2013 CALIFORNIA BUILDING CODE (\*13 CBC)  
 2013 CALIFORNIA FIRE CODE (\*13 CFC)  
 2013 CALIFORNIA ELECTRIC CODE (\*13 CEC)  
 2013 CALIFORNIA MECHANICAL CODE (\*13 CMC)  
 2013 NEPA 13 AUTOMATIC SPRINKLER SYSTEMS  
 2013 NFPA 72 NATIONAL FIRE ALARM CODE

**PROJECT DESCRIPTION**

THIS PROJECT CONSISTS OF A MODIFICATIONS TO AN EXISTING VERIZON WIRELESS ANTENNA FACILITY, MODIFICATIONS INCLUDE:

- REPLACE (6) EXISTING ANTENNAS WITH (6) NEW ANTENNAS, (2) ANTENNAS PER SECTOR, (3) SECTOR TOTAL
- ADD (3) A2 UNITS TO THE EXISTING AWS RRUS12
- ADD (3) PCS RRUS12 WITH A2 UNITS

ALL EXPOSED ANTENNAS AND CABLES TO BE PAINTED TO MATCH THE EXISTING BUILDING.

**DRIVING DIRECTIONS**

START FROM VERIZON WIRELESS OFFICE:

- START OUT GOING SOUTHWEST ON MITCHELL DR. TOWARD N WIGET LN.
- TURN LEFT ONTO N WIGET LN.. TURN RIGHT ONTO YGNACIO VALLEY RD.
- YGNACIO VALLEY RD. BECOMES HILLSIDE AVE.
- MERGE ONTO CA-24 W TOWARD OAKLAND. CA-24 W BECOMES I-980 W.
- MERGE ONTO I-880 S TOWARD SAN JOSE. TAKE THE HEGENBERGER RD EXIT, EXIT 36, TOWARD COLISEUM/OAKLAND AIRPORT.
- TURN RIGHT ONTO HEGENBERGER RD. THE SITE IS ON THE RIGHT

**SHEET INDEX**

SHEET	DESCRIPTION
T-1	TITLE SHEET, SITE INFORMATION AND VICINITY MAP
T-2	GENERAL CONSTRUCTION NOTES, GENERAL NOTES, ABBREVIATIONS & LEGEND
T-3	RF EXPOSURE NOTES / SIGNAGE DETAILS
A-1	SITE PLAN AND ENLARGED ROOF PLAN
A-1.1	ANTENNA LAYOUT
A-2	ELEVATIONS
A-2.1	ELEVATIONS
D-1	DETAILS
D-2	SPEC SHEETS FOR ANTENNA AND RRU
E-1	SINGLE LINE DIAGRAM AND GROUNDING PLAN

**PROJECT TEAM**

**CIVIL ENGINEER:**

CONNELL DESIGN GROUP, LLC  
 26455 RANCHO PARKWAY SOUTH  
 LAKE FOREST, CA 92630  
 PHONE: (949) 753-8807  
 FAX: (949) 753-8833  
 E-MAIL: dconnell@connelldesigngroup.com  
 CONTACT: DAN CONNELL

**SITE ACQUISITION:**

MODUS, INC.  
 149 NATOMA STREET, 3RD FLOOR  
 SAN FRANCISCO, CA 94105  
 ZONING CONTACT: MICHELLE YONEMOTO  
 PHONE: (415) 297-6521  
 E-MAIL: myonemoto@modus-corp.com  
 LEASING CONTACT: JIMMY STILLMAN  
 PHONE: (530) 913-9577  
 E-MAIL: jstillman@modus-corp.com

**PROJECT INFORMATION**

**APPLICANT**

VERIZON WIRELESS  
 2785 MITCHELL DRIVE  
 WALNUT CREEK, CA 94598  
 PHIL. WESTMORELAND  
 (925) 279-6048

**OWNER**

MURCURY HOTELS INC.  
 -

**SITE ADDRESS:** 77 HEGENBERGER ROAD, OAKLAND, CA 94621

**LATITUDE (NAD 83):** 37.729067° N

**LONGITUDE (NAD 83):** -122.200867° W

**JURISDICTION:** OAKLAND / PORT

**OCCUPANCY TYPE:** -

**CONST. TYPE:** V-A

**A.P.N.:** 042-4410-001-16



**GENERAL CONTRACTOR NOTES**

**DO NOT SCALE DRAWINGS**

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

A.B.	ANCHOR BOLT	GRND.	GROUND
ABV.	ABOVE	HDR.	HEADER
ACCA	ANTENNA CABLE COVER ASSEMBLY	HGR.	HANGER
ADD'L	ADDITIONAL	HT.	HEIGHT
A.F.F.	ABOVE FINISHED FLOOR	ICGB.	ISOLATED COPPER GROUND BUS
A.F.G.	ABOVE FINISHED GRADE	IN.(')	INCH(ES)
ALUM.	ALUMINUM	INT.	INTERIOR
ALT.	ALTERNATE	LB.(#)	POUND(S)
ANT.	ANTENNA	L.B.	LAG BOLTS
APPRX.	APPROXIMATE(LY)	L.F.	LINEAR FEET (FOOT)
ARCH.	ARCHITECT(URAL)	L.	LONG(TUDINAL)
AWG.	AMERICAN WIRE GAUGE	MAS.	MASONRY
BLDG.	BUILDING	MAX.	MAXIMUM
BLK.	BLOCK	M.B.	MACHINE BOLT
BLKG.	BLOCKING	MECH.	MECHANICAL
BM.	BEAM	MFR.	MANUFACTURER
B.N.	BOUNDARY NAILING	MIN.	MINIMUM
BTWC.	BARE TINNED COPPER WIRE	MISC.	MISCELLANEOUS
B.O.F.	BOTTOM OF FOOTING	MTL.	METAL
B/U	BACK-UP CABINET	(N)	NEW
CAB.	CABINET	NO.(#)	NUMBER
CANT.	CANTILEVER(ED)	N.T.S.	NOT TO SCALE
C.I.P.	CAST IN PLACE	O.C.	ON CENTER
CLG.	CEILING	OPNG.	OPENING
CLR.	CLEAR	P/C	PRECAST CONCRETE
COL.	COLUMN	PCS	PERSONAL COMMUNICATION SERVICES
CONC.	CONCRETE	PLY.	PLYWOOD
CONN.	CONNECTION(OR)	PPC	POWER PROTECTION CABINET
CONSTR.	CONSTRUCTION	PRC	PRIMARY RADIO CABINET
CONT.	CONTINUOUS	P.S.F.	POUNDS PER SQUARE FOOT
d	PENNY (NAILS)	P.S.I.	POUNDS PER SQUARE INCH
DBL.	DOUBLE	P.T.	PRESSURE TREATED
DEPT.	DEPARTMENT	PWR.	POWER (CABINET)
D.F.	DOUGLAS FIR	QTY.	QUANTITY
DIA.	DIAMETER	RAD.(R)	RADIUS
DIAG.	DIAGONAL	REF.	REFERENCE
DIM.	DIMENSION	REINF.	REINFORCEMENT(ING)
DWG.	DRAWING(S)	REQ'D.	REQUIRED
DWL.	DOWEL(S)	RGS.	RIGID GALVANIZED STEEL
EA.	EACH	SCH.	SCHEDULE
EL.	ELEVATION	SHT.	SHEET
ELEC.	ELECTRICAL	SIM.	SIMILAR
ELEV.	ELEVATOR	SPEC.	SPECIFICATION(S)
EMT.	ELECTRICAL METALLIC TUBING	SQ.	SQUARE
E.N.	EDGE NAIL	S.S.	STAINLESS STEEL
ENG.	ENGINEER	STD.	STANDARD
EQ.	EQUAL	STL.	STEEL
EXP.	EXPANSION	STRUC.	STRUCTURAL
EXST.(E)	(E)	TEMP.	TEMPORARY
EXT.	EXTERIOR	THK.	THICK(NESS)
FAB.	FABRICATION(OR)	T.N.	TOE NAIL
F.F.	FINISH FLOOR	T.O.A.	TOP OF ANTENNA
F.G.	FINISH GRADE	T.O.C.	TOP OF CURB
FIN.	FINISH(ED)	T.O.F.	TOP OF FOUNDATION
FLR.	FLOOR	T.O.P.	TOP OF PLATE (PARAPET)
FDN.	FOUNDATION	T.O.S.	TOP OF STEEL
F.O.C.	FACE OF CONCRETE	T.O.W.	TOP OF WALL
F.O.M.	FACE OF MASONRY	TYP.	TYPICAL
F.O.S.	FACE OF STUD	U.G.	UNDER GROUND
F.O.W.	FACE OF WALL	U.L.	UNDERWRITERS LABORATORY
F.S.	FINISH SURFACE	U.N.O.	UNLESS NOTED OTHERWISE
FT.(')	FOOT(FEET)	V.I.F.	VERIFY IN FIELD
FTG.	FOOTING	W	WIDE(WIDTH)
G.	GROWTH (CABINET)	W/	WITH
GA.	GAUGE	WD.	WOOD
GI.	GALVANIZE(D)	W.P.	WEATHERPROOF
G.F.I.	GROUND FAULT CIRCUIT INTERRUPTER	WT.	WEIGHT
GLB.(GLU-LAM)	GLUE LAMINATED BEAM	⊕	CENTERLINE
GPS	GLOBAL POSITIONING SYSTEM	Ⓡ	PLATE

**ABBREVIATIONS** 3

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

**LEGEND** 4

1. THE LATEST EDITION OF THE AMERICAN INSTITUTE OF ARCHITECTS DOCUMENT A201 "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION" ARE INCLUDED IN THESE SPECIFICATIONS AS IF COMPLETELY REPRODUCED HEREIN.

2. THIS FACILITY IS AN UNOCCUPIED PCS TELECOMMUNICATIONS SITE AND IS EXEMPT FROM DISABLED ACCESS REQUIREMENTS.

3. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTORS PARTICIPATING SHALL VISIT THE JOB SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE NEW PROJECT, WITH THE CONSTRUCTION AND CONTRACT DOCUMENTS, FIELD CONDITIONS, AND CONFIRM THAT THE PROJECT CAN BE ACCOMPLISHED AS SHOWN, PRIOR TO PROCEEDING WITH SUBMISSION OF BIDS & CONSTRUCTION. SHOULD ANY ERRORS, OMISSION, OR DISCREPANCIES BE FOUND, THE CONTRACTORS SHALL IMMEDIATELY NOTIFY PROJECT MANAGER, AND THE ARCHITECT IN WRITING. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL INCLUDE THE MORE COSTLY OR EXTENSIVE WORK IN THE BID, UNLESS SPECIFICALLY DIRECTED OTHERWISE. IF A DISCREPANCY EXISTS AND THE PROJECT MANAGER AND ARCHITECT ARE NOT NOTIFIED, THE GENERAL CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL COSTS INCURRED TO REPAIR OR CORRECT ALL PROBLEMS THAT RESULT.

4. DRAWINGS SHALL NOT BE SCALED. FIGURED DIMENSIONS HAVE PRECEDENCE OVER DRAWING SCALE AND DETAIL DRAWINGS HAVE PRECEDENCE OVER SMALL SCALE DRAWINGS. CONTRACTOR SHALL CHECK ACCURACY OF ALL DIMENSIONS IN THE FIELD. UNLESS SPECIFICALLY NOTED, DO NOT FABRICATE ANY MATERIALS, OR BEGIN ANY CONSTRUCTION UNTIL THE ACCURACY OF DRAWING DIMENSIONS HAS BEEN VERIFIED AGAINST ACTUAL FIELD DIMENSIONS.

5. CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER AND THE ARCHITECT IF ANY DETAILS ARE CONSIDERED IMPRACTICAL, UNSUITABLE, UNSAFE, NOT WATERPROOF, OR NOT WITHIN CUSTOMARY TRADE PRACTICE. IF WORK IS PERFORMED, IT WILL BE ASSUMED THAT THERE IS NO OBJECTION TO ANY DETAIL. DETAILS ARE INTENDED TO SHOW THE END RESULT OF THE DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB CONDITIONS, AND SHALL BE INCLUDED AS PART OF THE WORK.

6. (E) ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IF THEY DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER, AND THE ARCHITECT SO THAT MODIFICATIONS CAN BE MADE BEFORE PROCEEDING WITH THE WORK.

7. ALL SYMBOLS AND ABBREVIATIONS USED ON THE DRAWINGS ARE CONSIDERED CONSTRUCTION STANDARDS. IF THE CONTRACTOR HAS QUESTIONS REGARDING THEIR EXACT MEANING, THE PROJECT MANAGER, AND THE ARCHITECT SHALL BE NOTIFIED FOR CLARIFICATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK.

8. THE CONTRACTOR SHALL OBTAIN AND PAY FOR PERMITS, LICENSES AND INSPECTIONS NECESSARY FOR PERFORMANCE OF THE WORK AND INCLUDE THOSE IN THE COST OF THE WORK TO VERIZON WIRELESS.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT ALL WORK, USING THE BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, PROCEDURES AND SEQUENCES, AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT, INCLUDING CONTACT AND COORDINATION WITH THE IMPLEMENTATION ENGINEER AND WITH THE LANDLORD'S AUTHORIZED REPRESENTATIVE'S

10. WORKMANSHIP THROUGHOUT SHALL BE OF THE BEST QUALITY OF THE TRADE INVOLVED, AND SHALL MEET OR EXCEED THE FOLLOWING MINIMUM REFERENCE STANDARDS FOR QUALITY AND PROFESSIONAL CONSTRUCTION PRACTICE:

NRCA – NATIONAL ROOFING CONTRACTORS ASSOCIATION  
O'HARE INTERNATIONAL CENTER  
10255 W. HIGGINS ROAD, SUITE 600 ROSEMONT, IL  
60018

SMACNA – SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION  
4201 LAFAYETTE CENTER DRIVE CHATTILLY, VA  
22021-1209

ITLP – INTERNATIONAL INSTITUTE FOR LATH AND PLASTER  
820 TRANSFER ROAD  
ST. PAUL, MN 55114-1406

AMA – ADHESIVE MANUFACTURERS ASSOCIATION  
401 NORTH MICHIGAN AVENUE, SUITE 2400  
CHICAGO, IL 60611

11. THE CONTRACTOR SHALL VERIFY, COORDINATE, AND PROVIDE ALL NECESSARY BLOCKING, BACKING, FRAMING, HANGERS OR OTHER SUPPORTS FOR ALL ITEMS REQUIRING THE SAME.

12. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTORS SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, LOCAL AND STATE JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS. CONTRACTORS SHALL COMPLY WITH STATE DEPARTMENT OF INDUSTRIAL REGULATIONS AND DIVISION OF INDUSTRIAL SAFETY (OSHA) REQUIREMENTS.

**GENERAL NOTES** 4

13. CONTRACTORS SHALL PROTECT THE OWNERS' PROPERTY FROM DAMAGE WHICH MAY OCCUR DURING CONSTRUCTION. ANY DAMAGE TO NEW AND (E) CONSTRUCTION, STRUCTURE, LANDSCAPING, CURBS, STAIRS, OR EQUIPMENT, ETC., SHALL BE IMMEDIATELY REPAIRED OR REPLACED TO THE SATISFACTION OF THE PROPERTY OWNER, OR HIS REPRESENTATIVE, AND VERIZON WIRELESS' REPRESENTATIVE, AT THE EXPENSE OF THE CONTRACTOR.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR, AND SHALL REPLACE OR REMEDY, ANY FAULTY, IMPROPER, OR INFERIOR MATERIALS OR WORKMANSHIP, OR ANY DAMAGE WHICH SHALL APPEAR WITHIN ONE YEAR AFTER THE COMPLETION AND ACCEPTANCE OF THE WORK UNDER THIS CONTRACT BY VERIZON WIRELESS.

15. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO LOCATE ALL (E) UTILITIES, WHETHER SHOWN HEREIN OR NOT, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTORS SHALL BEAR ALL EXPENSES FOR REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED IN CONJUNCTION WITH THE EXECUTION OF WORK.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE PROJECT SITE WHILE THE JOB IS IN PROGRESS AND UNTIL THE JOB IS COMPLETED AND ACCEPTED BY VERIZON WIRELESS.

17. THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER AND TOILET FACILITIES AS REQUIRED BY THE PROPERTY OWNER AND THE CITY OR GOVERNING AGENCY.

18. THE LATEST EDITION OF ALL PERMITTED AND APPROVED PLANS PERTAINING TO THIS PROJECT SHALL BE KEPT IN A PLAN BOX AND SHALL NOT BE USED BY WORKERS. ALL CONSTRUCTION SETS SHALL REFLECT THE SAME INFORMATION. THE CONTRACTOR SHALL ALSO MAINTAIN IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA AND CHANGE ORDERS, ON THE PREMISES AT ALL TIMES. THESE ARE TO BE UNDER THE CARE OF THE JOB SUPERINTENDENT.

19. THE CONTRACTOR SHALL REMOVE ALL RUBBISH AND WASTE MATERIALS ON A DAILY BASIS, AND SHALL EXERCISE STRICT CONTROL OVER JOB CLEANING THROUGHOUT CONSTRUCTION, INCLUDING FINAL CLEANUP UPON COMPLETION OF WORK. ALL AREAS ARE TO BE LEFT IN A BROOM CLEAN CONDITION AT THE END OF EACH DAY. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE GENERAL CONTRACTOR.

20. THE GENERAL CONTRACTOR MUST PERFORM WORK DURING PROPERTY OWNER'S PREFERRED HOURS TO AVOID DISRUPTION OF NORMAL ACTIVITY.

21. ALL EXPOSED METAL SHALL BE HOT-DIPPED GALVANIZED.

22. SEAL ALL PENETRATIONS THROUGH FIRE-RATED AREAS WITH U.L. LISTED OR FIRE MARSHAL APPROVED MATERIALS IF AND WHERE APPLICABLE TO THIS FACILITY AND PROJECT SITE.

23. PROVIDE A PORTABLE FIRE EXTINGUISHER WITH A RATING OF NOT LESS THAN 2-A OR 2-A, 10-BC WITHIN 75 FEET WALK DISTANCE TO ALL PORTIONS OF THE PROJECT CONSTRUCTION AREA.

24. ELECTRICAL POWER SYSTEM SHALL BE GROUNDED PER NEC ARTICLES 250 AND 810.

25. ALL NEW OPENINGS IN THE EXTERIOR ENVELOPE OF CONDITIONED SPACES SUCH AS AT WALL AND ROOF PENETRATIONS SHALL BE CAULKED OR SEALED TO LIMIT INFILTRATION OF AIR AND MOISTURES.

26. U.N.O., CONTRACTOR SHALL PROVIDE CLOSE-OUT PACKAGE TO VERIZON WIRELESS WHICH WILL INCLUDE:  
(CONTRACTOR SHALL REFER TO THEIR CURRENT CONTRACT FOR A COMPLETE LIST OF DELIVERABLES.)

- A. BUILDING PERMITS/ELECTRICAL PERMITS
- B. FINAL INSPECTION CARD
- C. STAMPED BUILDING PERMIT PLANS
- D. GROUNDING TEST
- E. SWEEP TEST
- F. CONCRETE TEST
- G. SPECIAL INSPECTION REPORTS
- H. WARRANTIES, MANUAL, EQUIPMENT SPECIFICATIONS
- I. SUBCONTRACTOR CONTACT LIST
- J. RED LINED ASBUILTS
- K. CONSTRUCTION PROCESS PHOTOS
- L. SITE COMPLETION PHOTOS
- M. A WRITTEN REPORT ON ANTENNA SERIAL NUMBER FOR EACH SECTOR
- N. MANUFACTURER'S PERFORMANCE REPORT FOR EACH ANTENNA

CONTRACTOR SHALL REFER TO THEIR CURRENT CONTRACT FOR A COMPLETE LIST OF DELIVERABLES.

**GENERAL CONSTRUCTION NOTES** 2

1. PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS NOTED OTHERWISE. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

2. THE CONTRACTOR SHALL OBTAIN, IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.

3. CONTRACTOR SHALL CONTACT USA (UNDERGROUND SERVICE ALERT.) AT (800) 227-2600, FOR UTILITY LOCATIONS, 48 HRS BEFORE PROCEEDING WITH ANY EXCAVATION, SITE WORK OR CONSTRUCTION.

4. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE, OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CBC'S REQUIREMENTS REGARDING EARTHQUAKE RESISTANCE, FOR, BUT NOT LIMITED TO, PIPING, LIGHT FIXTURES, CEILING GRID, INTERIOR PARTITIONS, AND MECHANICAL EQUIPMENT. ALL WORK MUST COMPLY WITH LOCAL EARTHQUAKE CODES AND REGULATIONS.

6. REPRESENTATIONS OF TRUE NORTH, OTHER THAN THOSE FOUND ON THE PLOT OF SURVEY DRAWING, SHALL NOT BE USED TO IDENTIFY OR ESTABLISH THE BEARING OF TRUE NORTH AT THE SITE. THE CONTRACTOR SHALL RELY SOLELY ON THE PLOT OF SURVEY DRAWING AND ANY SURVEYOR'S MARKINGS AT THE SITE FOR THE ESTABLISHMENT OF TRUE NORTH, AND SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH THE WORK IF ANY DISCREPANCY IS FOUND BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS AND THE TRUE NORTH ORIENTATION AS DEPICTED ON THE CIVIL SURVEY. THE CONTRACTOR SHALL ASSUME SOLE LIABILITY FOR ANY FAILURE TO NOTIFY THE ARCHITECT/ENGINEER.

7. THE BUILDING DEPARTMENT ISSUING THE PERMITS SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS PRIOR TO THE COMMENCEMENT OF WORK, OR AS OTHERWISE STIPULATED BY THE CODE ENFORCEMENT OFFICIAL HAVING JURISDICTION.

8. THE ARCHITECT/ENGINEER, CONNELL DESIGN GROUP LLC, AND REPRESENTATIVES OF THE OWNER, MUST BE NOTIFIED AT LEAST TWO FULL DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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

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

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

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

13. ANY DRAIN AND/OR FIELD TILE ENCOUNTERED DURING CONSTRUCTION SHALL BE RETURNED TO ITS ORIGINAL CONDITION PRIOR TO COMPLETION OF WORK. SIZE, LOCATION AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON "AS-BUILT" DRAWINGS BY GENERAL CONTRACTOR, AND ISSUED TO ARCHITECT/ENGINEER AT COMPLETION OF PROJECT.

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

15. INCLUDE MISC. ITEMS PER VERIZON WIRELESS SPECIFICATIONS.

**GENERAL CONSTRUCTION NOTES** 1

VERIZON WIRELESS  
2785 MITCHELL DRIVE  
WALNUT CREEK, CA 94598

PROJECT INFORMATION:

**DOOLITTLE**  
PS NO. 189547 / PROJECT #20141071317  
77 HEGENBERGER ROAD,  
OAKLAND, CA 94621

**Modus, Inc.**  
Site Acquisition · Planning · Construction Management · Site Modifications  
149 NATOMA STREET, 3RD FLOOR  
SAN FRANCISCO, CA 94105

CURRENT ISSUE DATE:

**06/15/15**

ISSUED FOR:

**100% CD**

REV.:	DATE:	DESCRIPTION:	BY:
3	06/15/15	100% CD	JR
2	06/02/15	100% CD	JR
1	05/14/15	100% CD	JR
0	04/13/15	90% CD	GN

CIVIL ENGINEER:

**CONNELL DESIGN GROUP, LLC**  
ENGINEERING AND DESIGN  
26455 RANCHO PARKWAY SOUTH, LAKE FOREST, CA 92650  
(949) 753-8807 OFFICE - (949) 753-8833 FAX

DRAWN BY:	CHK.:	APV.:
GN	JR	

LICENSER:

SHEET TITLE:

GENERAL CONSTRUCTION NOTES,  
GENERAL NOTES, ABBREVIATIONS &  
LEGEND

SHEET NUMBER:

**T-2**

**SIGNAGE AND STRIPING INFORMATION**

THE FOLLOWING INFORMATION IS A GUIDE LINE WITH RESPECT TO PREVAILING STANDARDS LIMITING HUMAN EXPOSURE TO RADIO FREQUENCY ENERGY AND SHOULD BE USED AS SUCH. IF THE SITE'S EMF REPORT OR ANY LOCAL, STATE OR FEDERAL GUIDELINES OR REGULATION SHOULD BE IN CONFLICT WITH ANY PART OF THESE NOTES OR PLANS THE MORE RESTRICTIVE GUIDE LINE OR REGULATION SHALL BE FOLLOWED AND OVER RIDE THE LESSER.

THE PUBLIC LIMIT OF RF EXPOSURE ALLOWED BY VERIZON WIRELESS IS 1mWcm<sup>2</sup> AND THE OCCUPATIONAL LIMIT OF RF EXPOSURE ALLOWED BY VERIZON WIRELESS IS 5mWcm<sup>2</sup>

IF THE BOTTOM OF THE ANTENNA IS MOUNTED (8) EIGHT FEET ABOVE THE GROUND OR ROOF LINE OF THE PERSONAL COMMUNICATION SYSTEM (PCS) AND DOSE NOT EXCEED THE PUBLIC LIMIT OF RF EXPOSURE LIMIT THEN NO STRIPING OR BARRICADES SHOULD BE NEEDED.

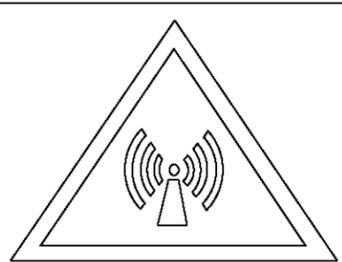
IF THE PUBLIC LIMIT OF RF EXPOSURE ON THE SITE IS EXCEEDED AND THE AREA IS PUBLICLY ACCESSIBLE (e.g. ROOF ACCESS DOOR THAT CANNOT BE LOCKED OR HAVING A FIRE EGRESS) THEN BOTH BARRICADES AND STRIPING WILL BE NEEDED AROUND THE ANTENNAS. THE EXACT EXTENT OF THE BARRICADES AND STRIPING WILL BE DETERMINED BY THE EMF REPORT FOR THE SITE DONE BEFORE OR SHORTLY AFTER THE CONSTRUCTION OF THE SITE. USE THE PLANS AS A GUIDE LINE FOR PLACEMENT OF SUCH BARRICADES AND STRIPING.

IF THE PUBLIC LIMIT OF RF EXPOSURE ON THE SITE IS NOT EXCEEDED AND THE AREA IS NOT PUBLICLY ACCESSIBLE (e.g. ROOF ACCESS DOOR IS LOCKED), THEN JUST STRIPING OUT TO THE PUBLIC LIMIT WILL BE NEEDED AROUND THE ANTENNAS. THE EXACT EXTENT OF THE STRIPING WILL BE DETERMINED BY THE EMF REPORT FOR THE SITE DONE BEFORE OR SHORTLY AFTER THE CONSTRUCTION OF THE SITE. USE THE PLANS AS A GUIDE LINE FOR PLACEMENT OF SUCH STRIPING.

ALL TRANSMIT ANTENNAS REQUIRE A THREE LANGUAGE WARNING SIGN WRITTEN IN ENGLISH, SPANISH AND CHINESE. THIS SIGN WILL BE PROVIDED TO THE CONTRACTOR BY THE VERIZON WIRELESS CONSTRUCTION MANAGER AT THE TIME OF CONSTRUCTION. THE LARGER SIGN SHALL BE PLACED AT ALL ROOF ACCESS LOCATIONS AND ON ALL BARRICADES IN PLANE SITE AND THE SMALLER SIGN SHALL BE PLACED ON THE ANTENNAS THEMSELVES OR ON THE OUT SIDE OF THE ANTENNA ENCLOSURES IN A MANNER THAT IS EASILY SEEN BY ANY PERSON ON THE ROOF. WARNING SIGNS SHALL COMPLY WITH ANSI C95.2 COLOR, SYMBOL, AND CONTENT CONVENTIONS. ALL SIGN WILL HAVE VERIZON WIRELESS'S NAME AND THE COMPANY CONTACT INFORMATION (e.g., TELEPHONE NUMBER) TO ARRANGE FOR ACCESS TO THE RESTRICTED AREAS. THIS TELEPHONE NUMBER WILL BE PROVIDED TO THE CONTRACTOR BY THE VERIZON WIRELESS CONSTRUCTION PROJECT MANAGER AT THE TIME OF CONSTRUCTION.

PHOTOS OF ALL STRIPING, BARRICADES AND SIGNAGE WILL BE PART OF THE CONTRACTORS CLOSE OUT PACKAGE AND WILL BE TURNED INTO THE VERIZON WIRELESS CONSTRUCTION PROJECT MANAGER AT THE END OF CONSTRUCTION. STRIPING SHALL BE DONE WITH FADE RESTRAINT YELLOW SAFETY PAINT IN A CROSS HATCH PATTERN AS SHOW BY THE DETAIL. ALL BARRICADES SHELL BE MADE OF AN RF FRIENDLY MATERIAL SO THAT NOT TO BLOCK OR INTERFERE WITH THE OPERATION OF THE SITE SHALL BE PAINTED WITH FADE RESTRAINT YELLOW SAFETY PAINT. THE CONTRACTOR SHALL PROVIDE ALL RF FRIENDLY BARRICADES NEED AND SHALL PROVIDE THE VERIZON WIRELESS CONSTRUCTION PROJECT MANAGER WITH A THE DETAILED SHOP DRAWING OF EACH BARRICADE.

**NOTE:**  
1. ALL REQUIRED SIGNAGE WILL BE INSTALLED AND FIELD VERIFIED. SEE SHEET A-1 FOR SIGN LOCATIONS



**WARNING**  
HIGH RADIO FREQUENCY EXPOSURE AREA

**KEEP BACK 15 FEET FROM THIS ANTENNA. IF ACCESS IS REQUIRED WITHIN THIS DISTANCE, PLEASE CONTACT ANTENNA OWNER BEFORE APPROACHING.**

**ADVERTENCIA**  
AREA DE EXPOSICION DE ALTAS FRECUENCIAS DE RADIO

**MANTENERSE A 15 PIES DE DISTANCIA DE ESTA ANTENA. SI ES NECESARIO ACERCARSE MAS, COMUNIQUESE CON EL PROPIETARIO DE LA ANTENA ANTES DE HACERLO.**

**警告**  
高廣無線電能量地區

話保持在此天線 15 呎以外，如需要進入此範圍內，話在這入之前先聯絡天線的持有人

PHONE NUMBER/ NUMBRÓ DE TELÉFONO/ 電話號碼

VERIZON WIRELESS

OWNER/ PROPIETARIO/ 持有人

189547

SITE NUMBER/ NUMERÓ DEL SITIO/ 此站號碼

Hammitt & Edison, Inc.

**NOTICE**

Radio frequency fields beyond this point may exceed the FCC general public exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

In accordance with Federal Communications Commission rules on frequency emissions 47 CFR 1.1307(b)

TO BE INSTALLED ON ROOFTOP ENTRY POINT

TYPICAL NOTICE SIGN SCALE: N.T.S. 4

**CAUTION**

Radio frequency fields within one foot of this antenna may exceed Federal limits for human exposure. Stay clear by that distance.

VERIZON  
Carrier  
189547  
Site #

TO BE INSTALLED AT BASE OF STEALTH ANTENNA SCREEN

TYPICAL CAUTION SIGN SCALE: N.T.S. 1

**CAUTION**

Beyond this point: Radio frequency fields at this site may exceed FCC rules for human exposure.

For your safety obey all posted signs and site guidelines for working in radio frequency environments.

In accordance with Federal Communications Commission rules on radio Frequency emissions 47 CFR 1.1307(b)

TO BE INSTALLED AT BASE OF STEALTH ANTENNA SCREEN

TYPICAL CAUTION SIGN SCALE: N.T.S. 5

**IN CASE OF EMERGENCY**

CALL

1-800-242-7622

Site No: 189547

EXISTING SIGNAGE ON EQUIPMENT ROOM DOOR

EMERGENCY CONTACT SIGN SCALE: N.T.S. 2

**WARNING**

Beyond this point: Radio frequency fields at this site exceed the FCC rules for human exposure.

Failure to obey all posted signs and site guidelines for working in radio frequency environments could result in serious injury

In accordance with Federal Communications Commission rules on radio Frequency emissions 47 CFR 1.1307(b)

THIS SIGN NOT TO BE UTILIZED AT THIS SITE

TYPICAL WARNING SIGN SCALE: N.T.S. 7

**NOTICE**

GUIDELINES FOR WORKING IN RADIO FREQUENCY ENVIRONMENTS

- All personnel should have electromagnetic energy (EME) awareness training.
- All personnel entering this site must be authorized, obey all posted signs.
- Assume all antennas are active. Before working on antennas, notify owners and disable appropriate transmitters.
- Maintain minimum 10 feet clearance from all antennas Do not stop in front of antennas.
- Prohibited Access Areas are indicated with red paint stripes along rooftop
- Worker Notification Areas are indicated with yellow paint stripes along rooftop
- Use personal RF monitors while working near antennas.
- Never operate transmitters without shields during normal operation.
- Do not operate base station antennas in equipment rooms.

TO BE INSTALLED ON ROOFTOP ENTRY POINT

RF GUIDELINES SIGN SCALE: N.T.S. 3

GENERAL NOTES SCALE: N.T.S. 8

MULTI-LANGUAGE SIGN SCALE: N.T.S. 7

TYPICAL WARNING SIGN SCALE: N.T.S. 7

RF GUIDELINES SIGN SCALE: N.T.S. 3

VERIZON WIRELESS  
2785 MITCHELL DRIVE  
WALNUT CREEK, CA 94598

PROJECT INFORMATION:

**DOOLITTLE**  
PS NO. 189547 / PROJECT #20141071317  
77 HEGENBERGER ROAD,  
OAKLAND, CA 94621

**Modus, Inc.**  
Site Acquisition · Planning · Construction Management · Site Modifications  
149 NATOMA STREET, 3RD FLOOR  
SAN FRANCISCO, CA 94105

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3	06/15/15	100% CD	JR
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1	05/14/15	100% CD	JR
0	04/13/15	90% CD	GN

CIVIL ENGINEER:

**CONNELL DESIGN GROUP, LLC**  
ENGINEERING AND DESIGN  
26455 RANCHO PARKWAY SOUTH, LAKE FOREST CA 92650  
(949) 753-8807 OFFICE - (949) 753-8833 FAX

DRAWN BY: CHK.: APV.:

GN JR

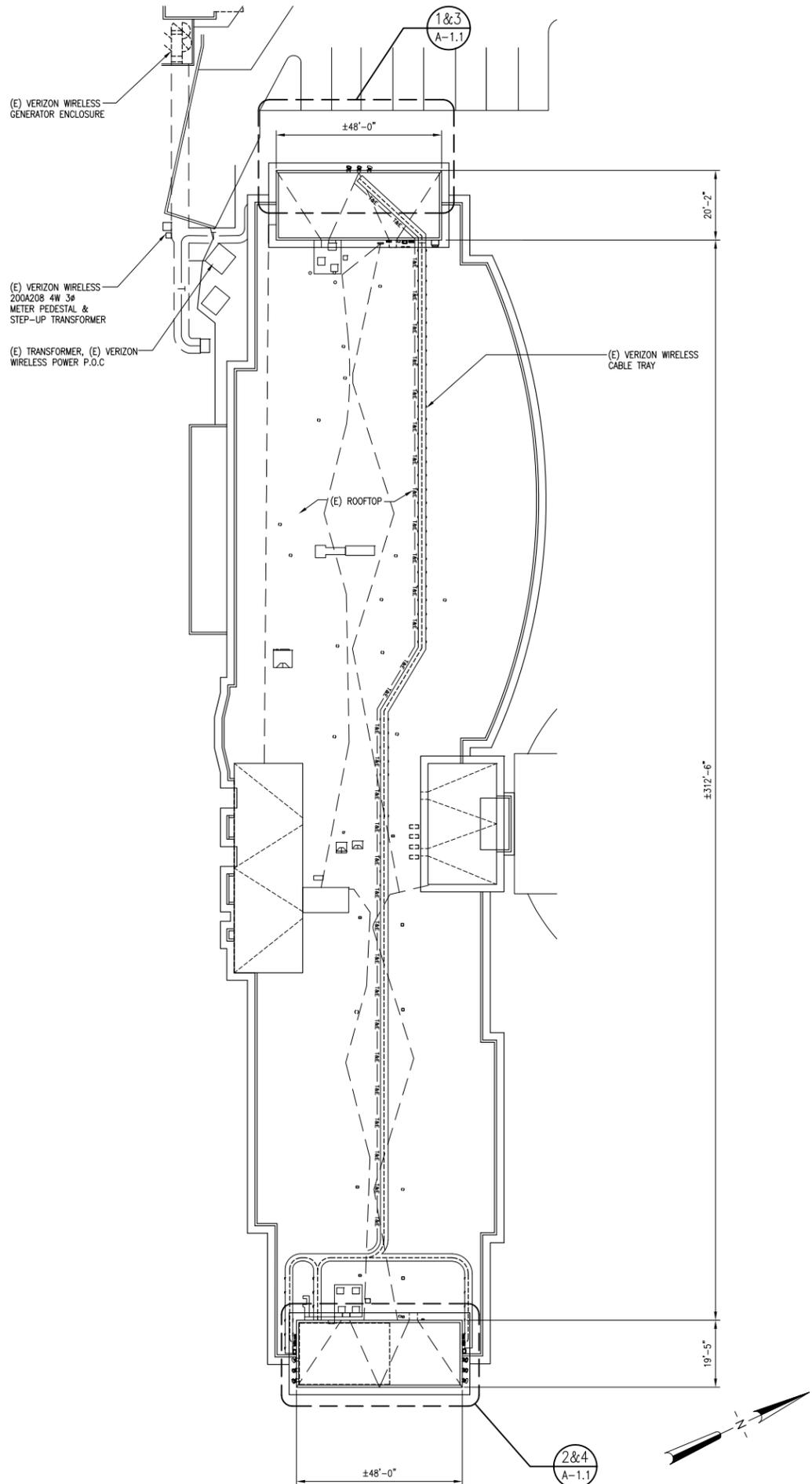
LICENSER:

SHEET TITLE:

RF EXPOSURE NOTES / SIGNAGE DETAILS

SHEET NUMBER:

**T-3**

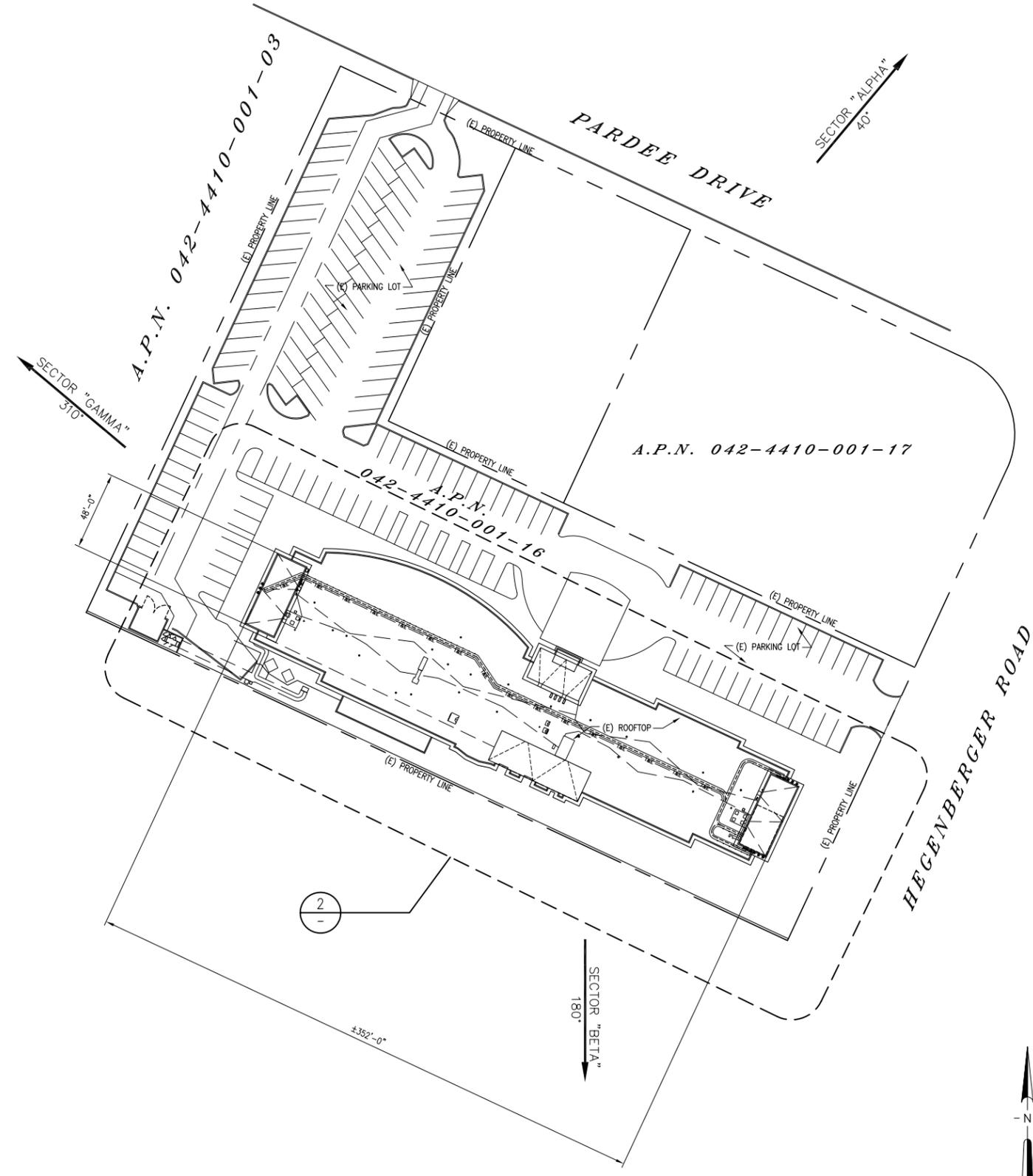


ENLARGED ROOF PLAN

SCALE: 1"=20'-0"  
0 10' 20'

(A) VERIFY EXISTING OR ADD NEW RF SIGNAGE PER SHEET T-3 ALL REQUIRED SIGNAGE WILL BE INSTALLED AND FIELD VERIFIED

NOTE:  
SITE PLAN IS PRELIMINARY AND DONE WITHOUT THE BENEFIT OF A SURVEY.



SCALE: 1"=40'-0"  
0 20' 40'



**verizon**wireless  
VERIZON WIRELESS  
2785 MITCHELL DRIVE  
WALNUT CREEK, CA 94598

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GN	JR	

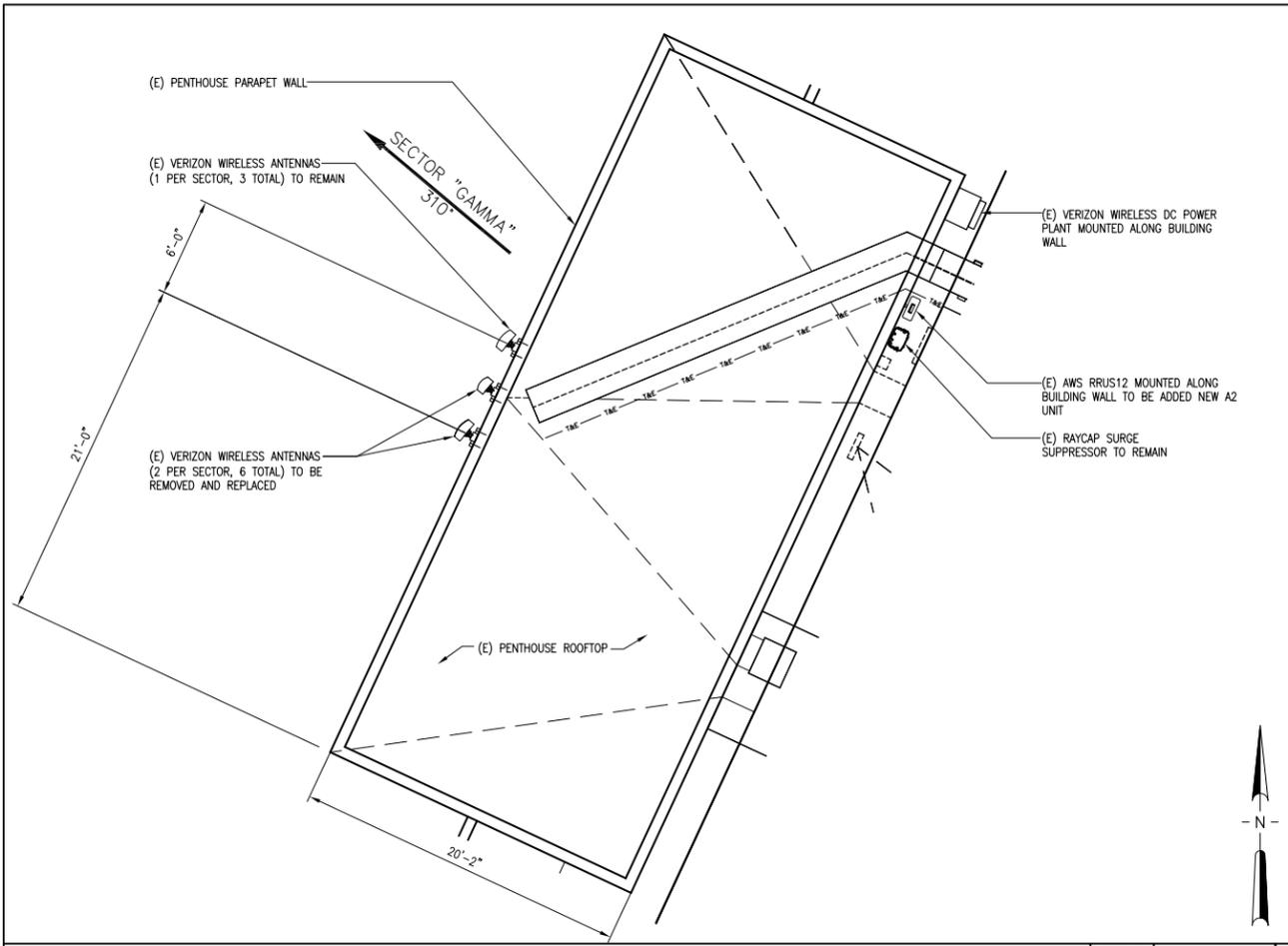
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SHEET TITLE:  
**SITE PLAN & ENLARGED ROOF PLAN**

SHEET NUMBER:  
**A-1**

REV.: DATE: DESCRIPTION: BY:

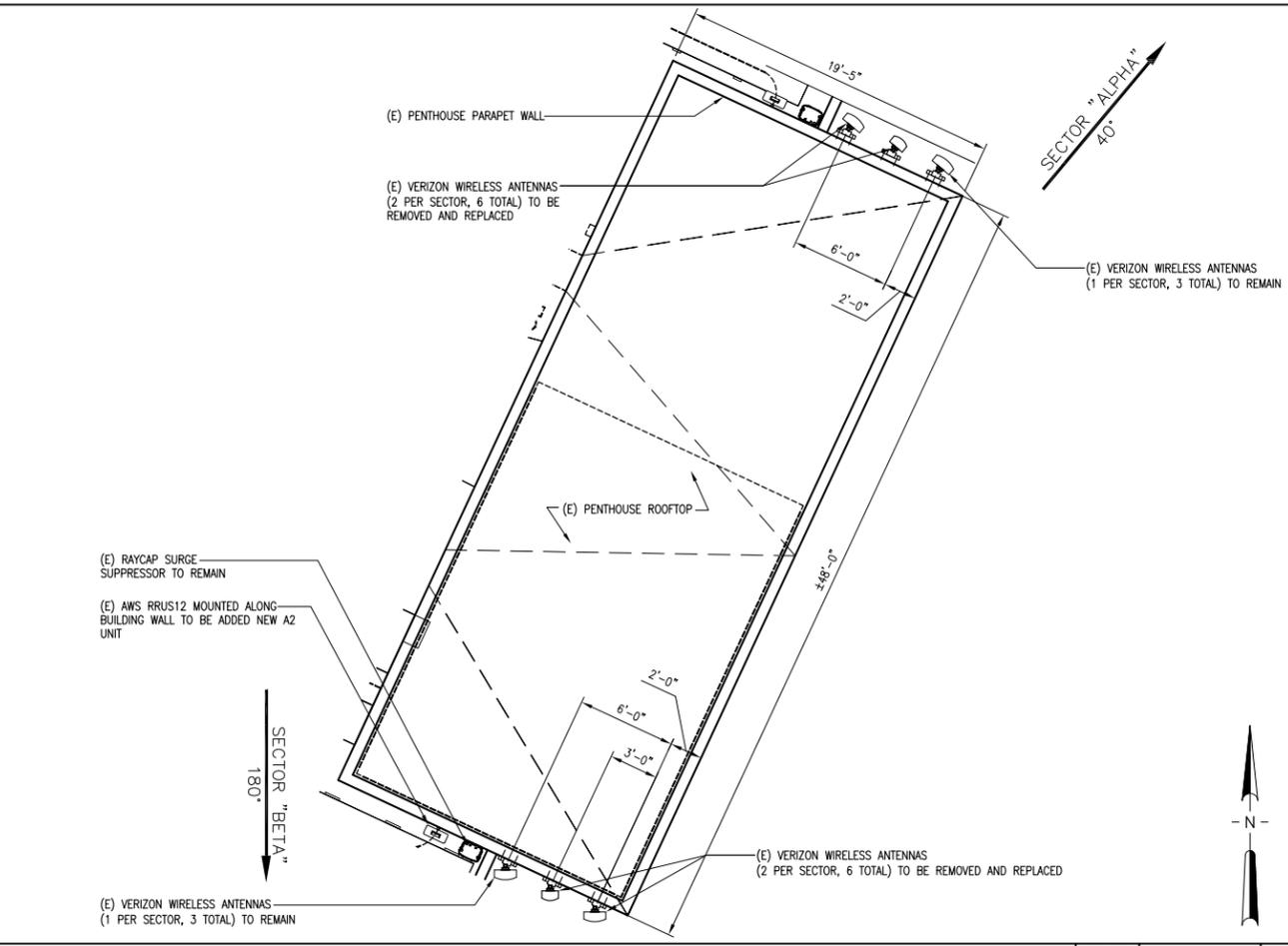
REV.	DATE	DESCRIPTION	BY
3	06/15/15	100% CD	JR
2	06/02/15	100% CD	JR
1	05/14/15	100% CD	JR
0	04/13/15	90% CD	GN



EXISTING ANTENNA LAYOUT

SCALE: 3/16"=1'-0" 0 2' 4' 6'

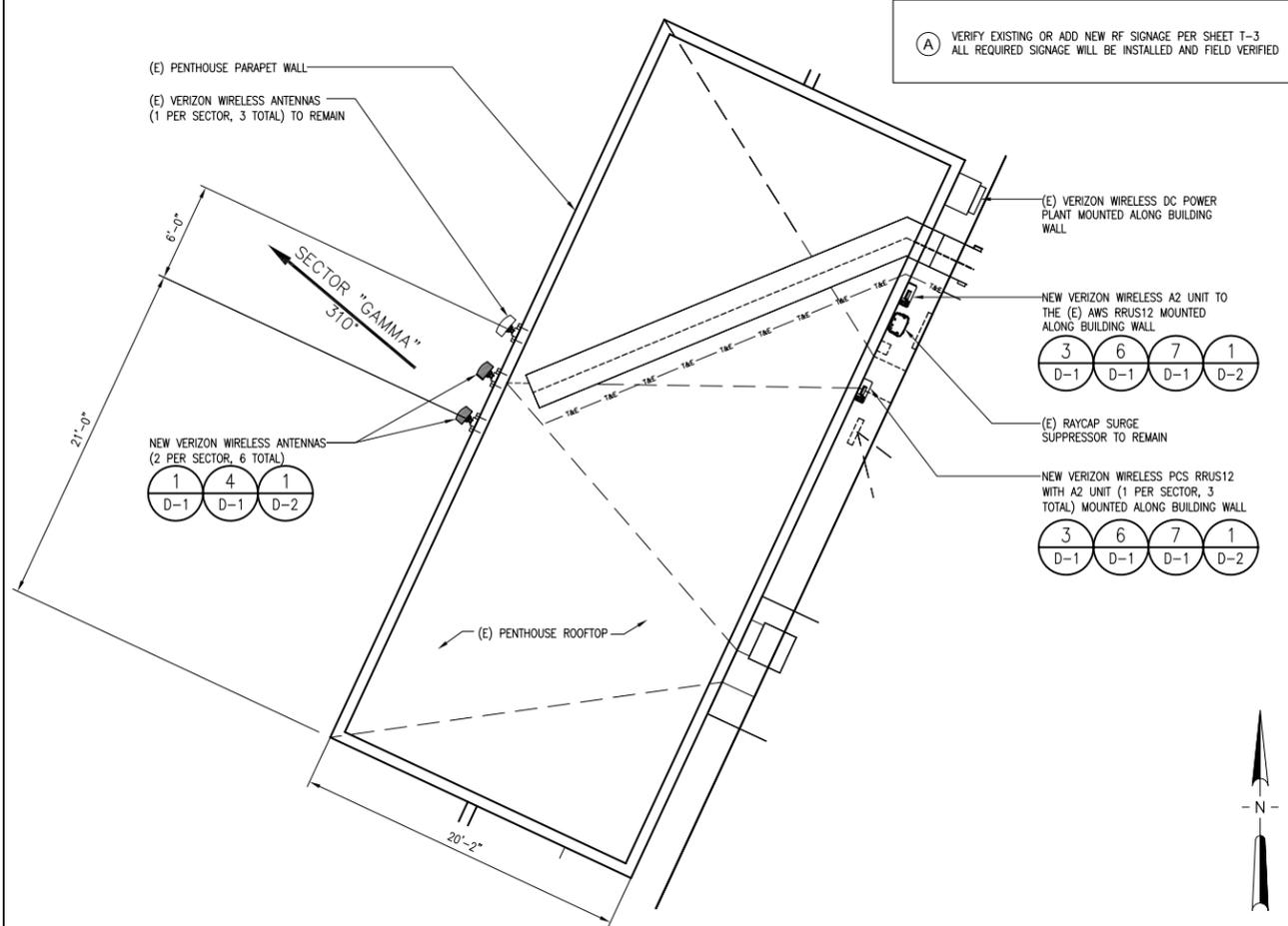
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EXISTING ANTENNA LAYOUT

SCALE: 3/16"=1'-0" 0 2' 4' 6'

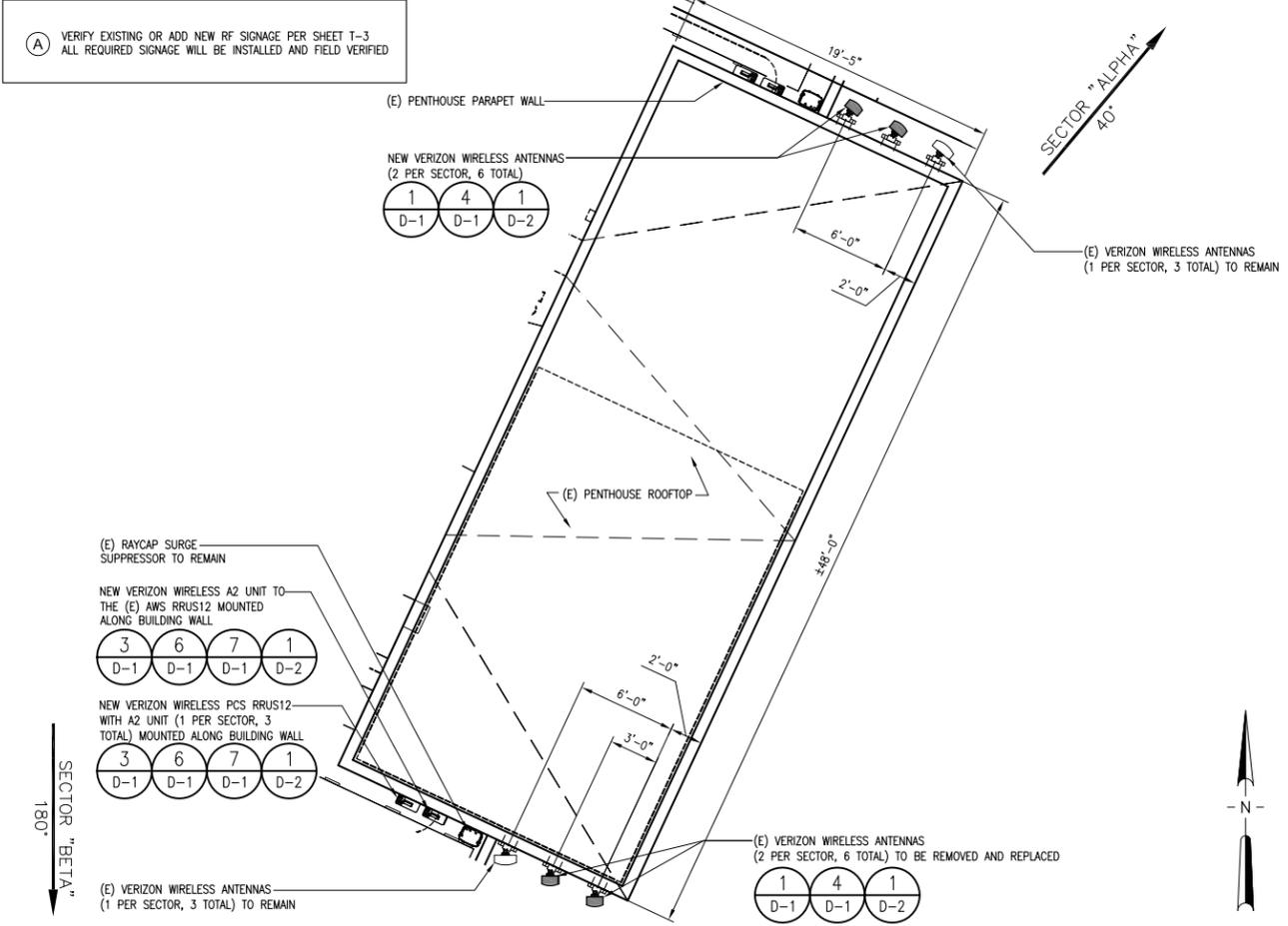
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NEW ANTENNA LAYOUT

SCALE: 3/16"=1'-0" 0 2' 4' 6'

3



NEW ANTENNA LAYOUT

SCALE: 3/16"=1'-0" 0 2' 4' 6'

4





VERIZON WIRELESS  
2785 MITCHELL DRIVE  
WALNUT CREEK, CA 94598

PROJECT INFORMATION:

**DOOLITTLE**

PS NO. 189547 / PROJECT #20141071317  
77 HEGENERBERGER ROAD,  
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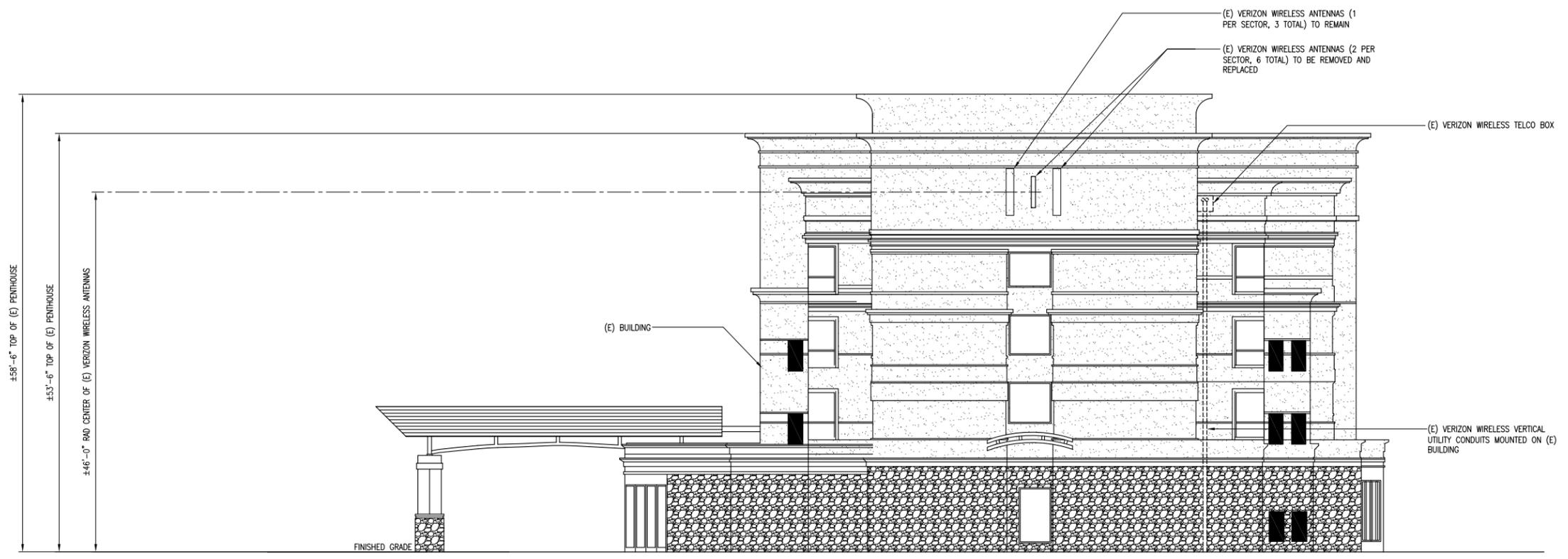
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SHEET TITLE:

ELEVATIONS

SHEET NUMBER:

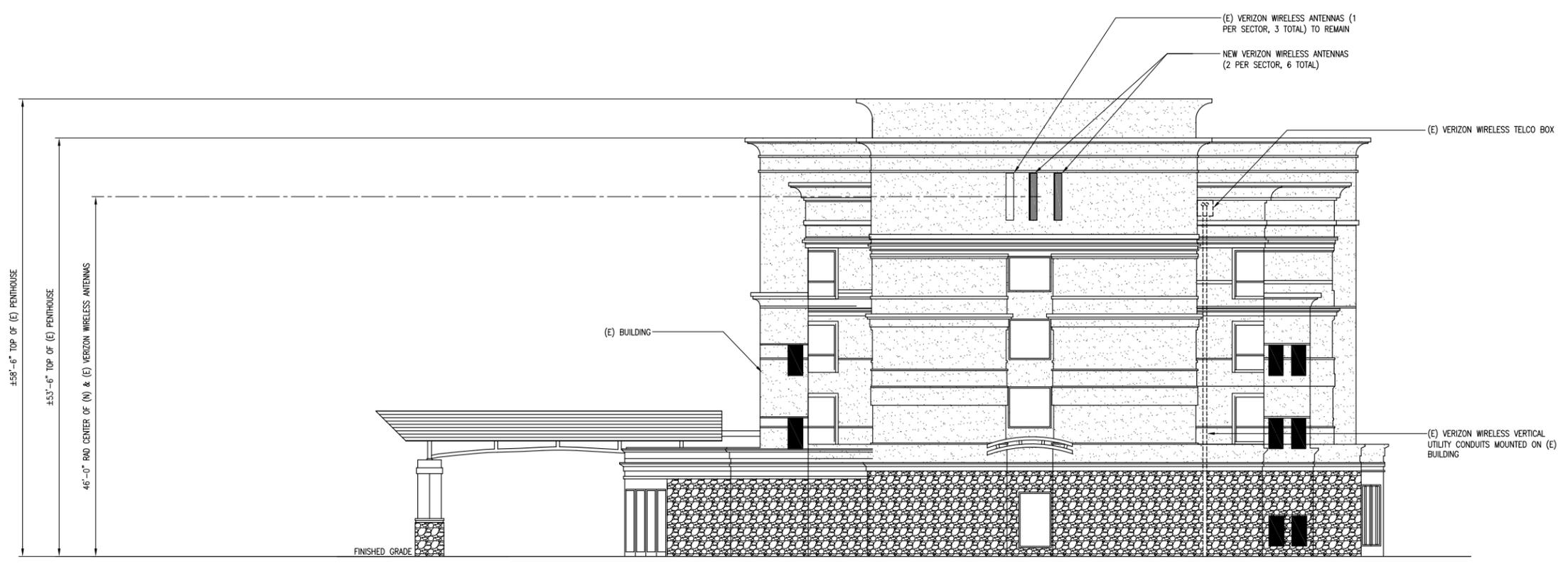
**A-2.1**



EXISTING WEST ELEVATION

SCALE: 1/8"=1'-0"  
0 4' 8'

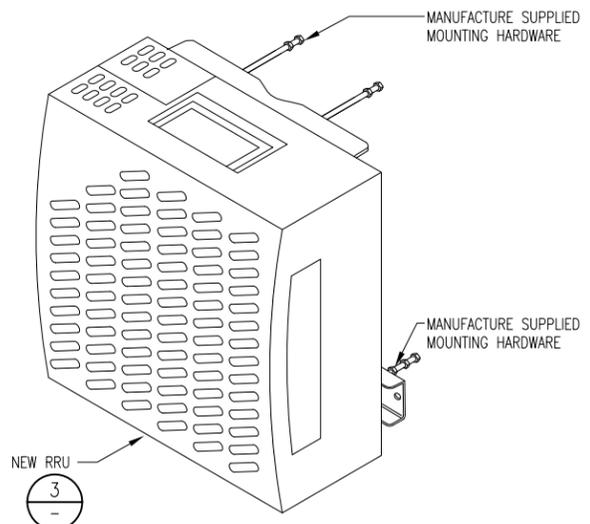
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NEW WEST ELEVATION

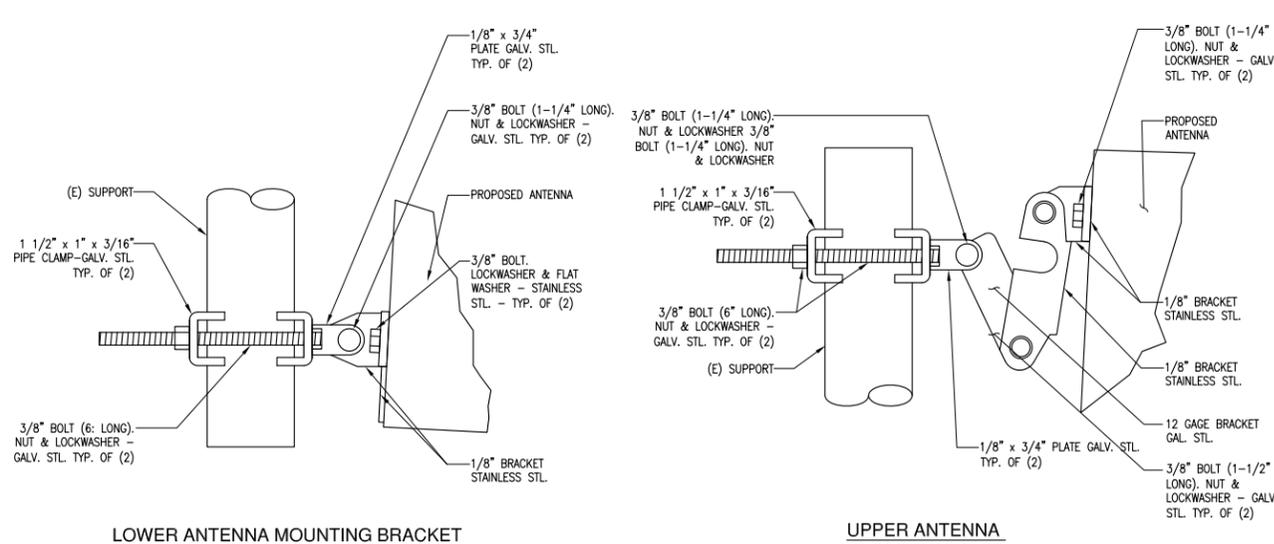
SCALE: 1/8"=1'-0"  
0 4' 8'

2



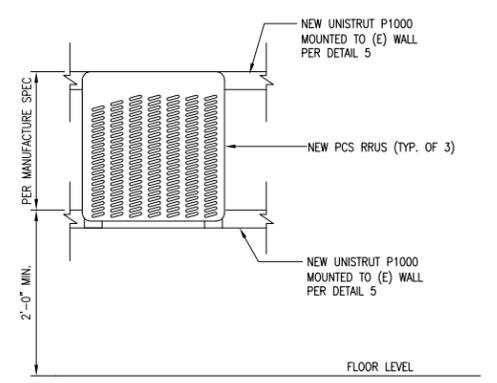
NOT USED SCALE: N.T.S. 9

RRU MOUNTING DETAIL



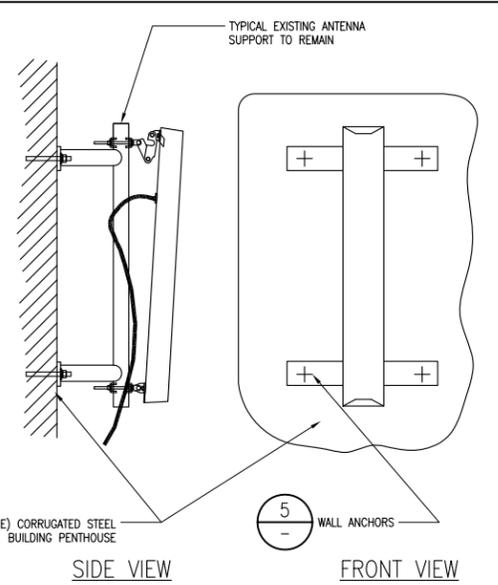
LOWER/ UPPER ANTENNA MOUNTING BRACKET

SCALE: N.T.S. 1



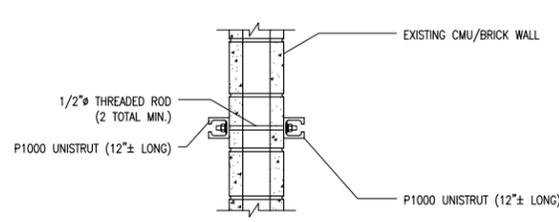
NOT USED SCALE: N.T.S. 10

RRU MOUNT

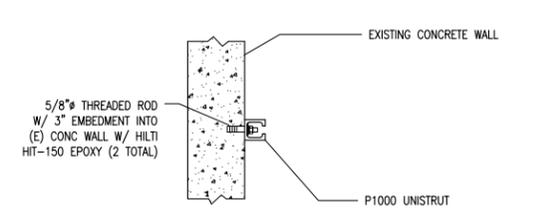


ANTENNA MOUNTING

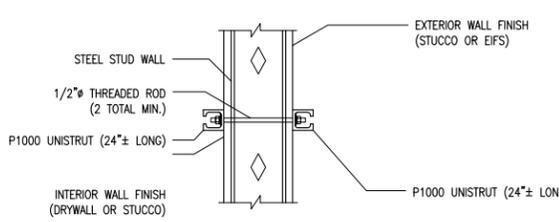
NOT USED SCALE: N.T.S. 2



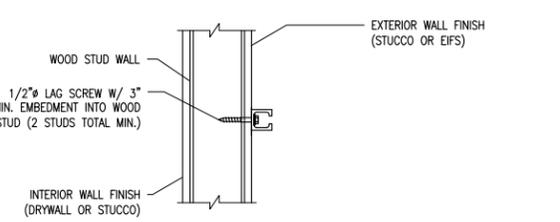
FOR HOLLOW WALLS UP TO 20" THICK



FOR SOLID CONCRETE/CMU WALLS



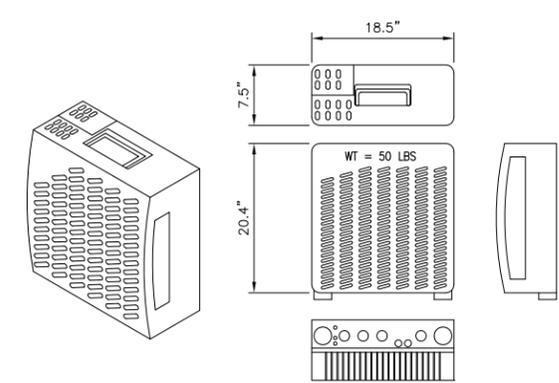
FOR STEEL STUD WALLS



FOR WOOD STUD WALLS

NOT USED SCALE: N.T.S. 11

UNISTRUT ATTACHMENT DETAIL



RRU DETAIL

**verizon**wireless  
 VERIZON WIRELESS  
 2785 MITCHELL DRIVE  
 WALNUT CREEK, CA 94598

PROJECT INFORMATION:  
**DOOLITTLE**  
 PS NO. 189547 / PROJECT #20141071317  
 77 HEGENERBERGER ROAD,  
 OAKLAND, CA 94621

**Modus, Inc.**  
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CIVIL ENGINEER:  
  
**CONNELL DESIGN GROUP, LLC**  
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 (949) 753-8807 OFFICE - (949) 753-8833 FAX

DRAWN BY: CHK.: APV.:  
 GN JR

LICENSER:  
 SHEET TITLE:  
**DETAILS**

SHEET NUMBER:  
**D-1**

## Product Specifications

COMMSCOPE®



### SBNHH1D65C

Andrew® Tri-band Antenna, 698-896 and 2x 1695-2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

### Electrical Specifications

Frequency Band, MHz	698-806	806-896	1695-1880	1850-1990	1920-2180	2300-2360
Gain, dBi	16.2	16.0	17.7	17.9	18.5	18.5
Beamwidth, Horizontal, degrees	66	64	70	65	63	58
Beamwidth, Vertical, degrees	8.9	7.8	5.7	5.2	5.0	4.4
Beam Tilt, degrees	0-11	0-11	0-7	0-7	0-7	0-7
USLS, dB	11	12	15	15	15	14
Front-to-Back Ratio at 180°, dB	29	31	27	27	28	27
CPR at Boresight, dB	27	21	18	19	16	19
CPR at Sector, dB	14	9	10	10	8	4
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VISWR   Return Loss, dB	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0	1.5   14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	400	400	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm					

### Electrical Specifications, BASTA\*

Frequency Band, MHz	698-806	806-896	1695-1880	1850-1990	1920-2180	2300-2360
Gain by all Beam Tilts, average, dBi	15.8	15.6	17.3	17.8	18.2	18.1
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.5	±0.3	±0.2	±0.5	±0.4
Gain by Beam Tilt, average, dBi	0°   16.0 5°   16.0 11°   15.5	0°   15.8 5°   15.8 11°   15.2	0°   17.3 4°   17.4 7°   17.3	0°   17.7 4°   17.8 7°   17.7	0°   18.0 4°   18.2 7°   18.1	0°   17.9 4°   18.2 7°   18.2
Beamwidth, Horizontal Tolerance, degrees	±1.2	±1.9	±3.4	±3.8	±4.7	±3.7
Beamwidth, Vertical Tolerance, degrees	±0.6	±0.5	±0.3	±0.2	±0.3	±0.2
USLS, dB	13	14	17	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	26	24	27	25	25	26
CPR at Boresight, dB	29	22	20	21	19	21
CPR at Sector, dB	14	11	13	11	9	5

\* CommScope® supports NQMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the [whitepaper Time to Raise the Bar on BASTA](#).

### General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol®   Teletilt®
Operating Frequency Band	1695 - 2360 MHz   698 - 896 MHz
Performance Note	Outdoor usage

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## Product Specifications

COMMSCOPE®

SBNHH1D65C

### Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum   Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	879.0 N @ 150 km/h 197.6 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h   150.0 mph

### Dimensions

Depth	181.0 mm   7.1 in
Length	2453.0 mm   96.6 in
Width	301.0 mm   11.9 in
Net Weight	22.5 kg   49.6 lb

### Remote Electrical Tilt (RET) Information

Input Voltage	10-30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/ATSG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female   8-pin DIN Male
RET Interface, quantity	1 female   1 male
RET System	Teletilt®

### Regulatory Compliance/Certifications

<b>Agency</b>	<b>Classification</b>
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system



### Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

### \* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance

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## RRUS12, RRUS11 & RRUS A2 DIMENSIONS & WEIGHT

### Dimensions with Solar Shield and Handle and Feet

Height	518 mm
Width	470 mm
Depth	190 mm

RRUS12  
20.4" X 18.5" X 7.5"  
50lbs

### Dimensions with Solar Shield and Handle

Height	500 mm
Width	431 mm
Depth	182 mm

RRUS11  
19.7" X 17.0" X 7.2"  
51lbs

### Dimensions with Solar Shield and Handle and Feet

Height	417 mm
Width	384 mm
Depth	85 mm

RRUS A2  
16.4" X 15.1" X 3.3"  
22lbs

AR Update June 2013 | Commercial in confidence | 2013-06-13



## RRUS A2/A3

The RRUS A2/A3 is a two RX branch radio unit that can be used together with an RRU to provide a four RX branch implementation for Main Remote applications. It can be installed standalone or be mounted behind the standard RRU on site, appearing as one unit. In addition, the RRUS A2/A3 can provide power and a cascading optical link to its associated RRU.

Depending on the software application, the RRUS A2/A3 supports the Antenna Line Devices (ALDs), and the Remote Electrical Tilt Unit (RETU). The RETU can be connected either through the ASC or the Remote Interface Unit (RIU) over the antenna interface or directly using the RRUS A2/A3 Remote Electrical Tilt (RET) interface, which is the link to the antenna communication system.

RRUS A2/A3 currently supports LTE and WCDMA standards. It has two uplink RX branches but no downlink TX branch. It can be used as a two RX unit to add support for four way RX diversity when used in combination with RRU1V, RRUS 01, RRUS 11, RRUS 02, RRUS 12 and RRUS 13.

The optional equipment for the RRUS A2/A3 is wall, pole and mast installation equipment together with tamper resistance.



VERIZON WIRELESS  
2785 MITCHELL DRIVE  
WALNUT CREEK, CA 94598

### PROJECT INFORMATION:

#### DOOLITTLE

PS NO. 189547 / PROJECT #20141071317  
77 HEGENBERGER ROAD,  
OAKLAND, CA 94621

#### Modus, Inc.

Site Acquisition | Planning | Construction Management | Site Modification  
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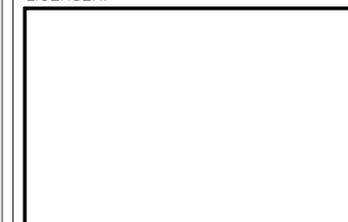
### CIVIL ENGINEER:



### DRAWN BY: CHK.: APV.:

GN	JR	
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### LICENSER:



### SHEET TITLE:

SPEC SHEETS FOR ANTENNA & RRU

### SHEET NUMBER:

D-2



## Structural Calculations

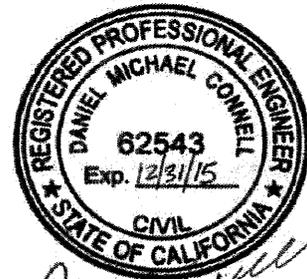
<b>PS No: 189547</b>		<i>Job No:</i> Doolittle PCS
<i>Name:</i> DOOLITTLE - PCS PROJECT		
<i>Address:</i> 77 Hegenberger Road, Oakland, CA 94621		<i>Sheet:</i> 1 of 10
<i>Client:</i> Modus, Inc. for Verizon		<i>Date:</i> 05/22/15

### Applicable Codes:

2013 California Building Code (2012 IBC)  
ASCE 7-10

**Scope:** Modify an Unmanned Wireless Telecommunication Facility:  
Calculation for new Antennas, RRU's, etc on an existing antenna structure.

**Notes:** The electronic components (Ant, RRU, etc) noted above weigh approximately 100lbs each. Reviewers please note that these calcs are based on upper bound loads, ie maximum expected loads: the exact name or exact weight of a component is of secondary importance as long as total load is accurate. Generous miscellaneous loads are added in order to account for future loading contingencies.



**CDG**

**Connell Design Group  
Consulting Civil Engineers**

26455 Rancho Parkway South, Lake Forest, CA 92630  
949-753-8807 Office - 949-753-8833 FAX





VERIZON WIRELESS  
7785 MITCHELL DRIVE  
WALNUT CREEK, CA 94598

**PROJECT INFORMATION:**

**DOOLITTLE**  
PS NO. 186577 PROJECT #20411071317  
77 HEGEMBER ROAD  
OAKLAND, CA 94621

**Modus, Inc.**  
194 WILSON STREET, 2ND FLR  
SAN FRANCISCO, CA 94133

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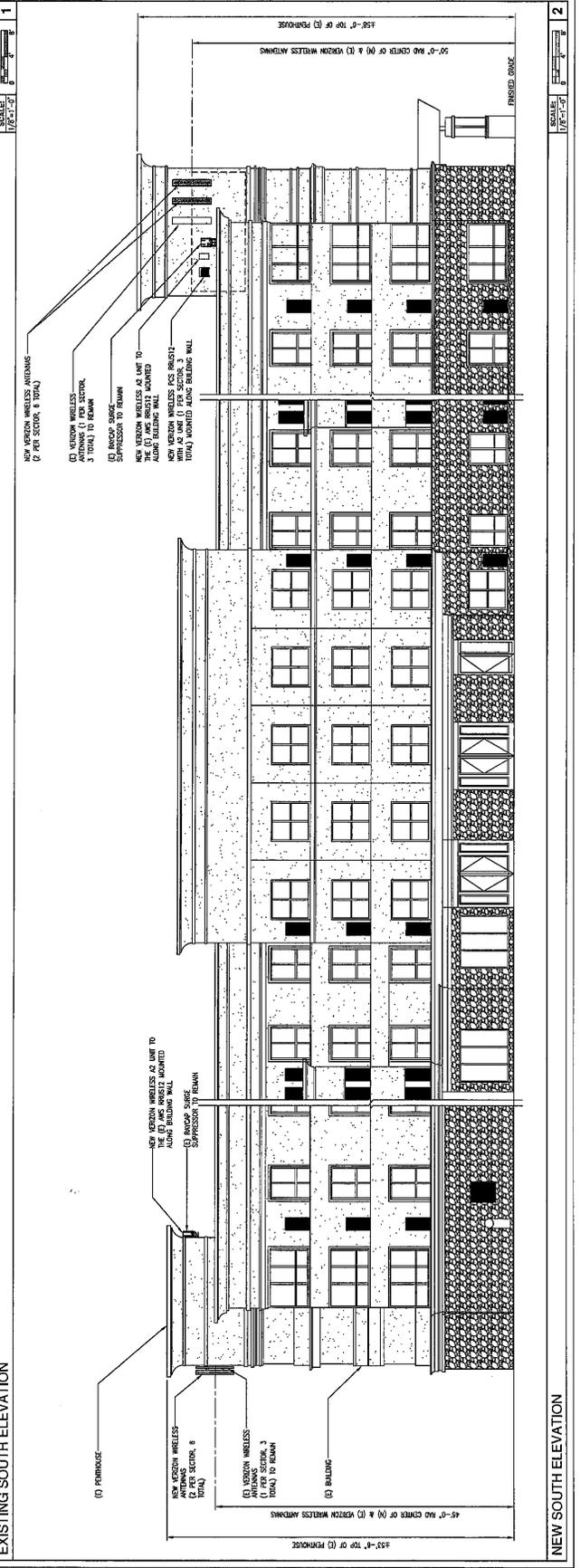
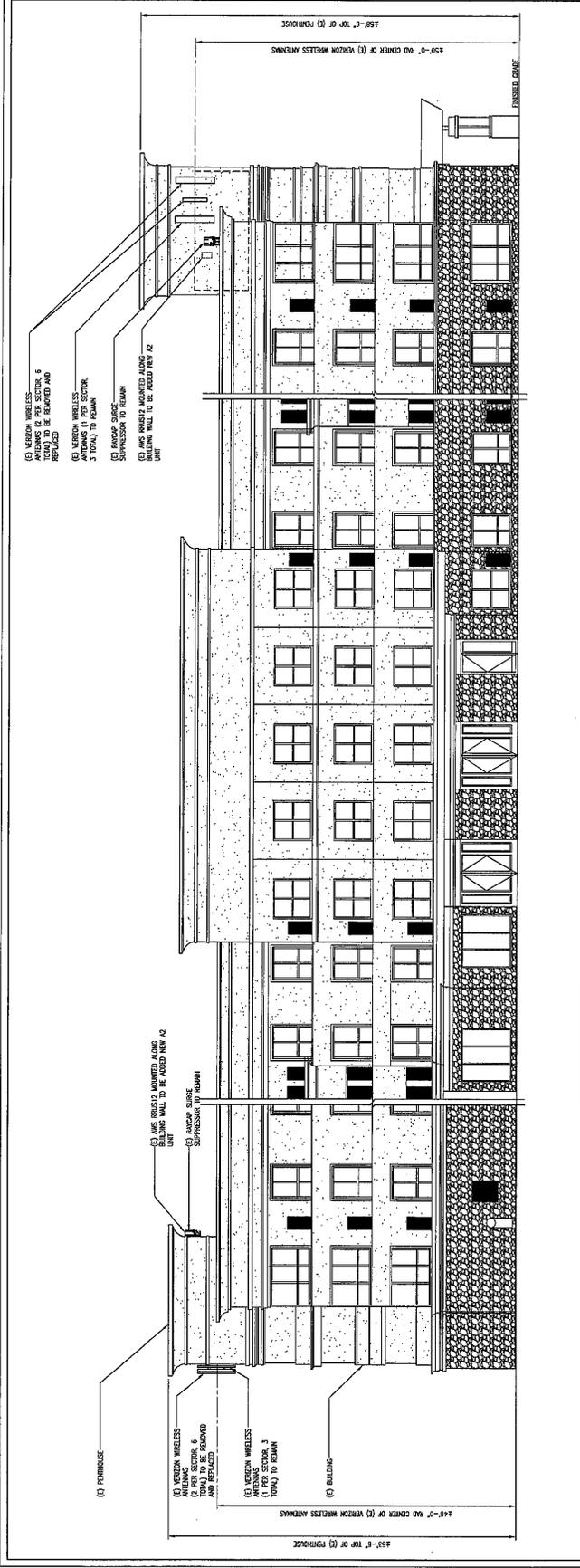
**CDG**  
CORNING WIRELESS, LLC  
300 BAYVIEW DRIVE, SUITE 100  
SAN FRANCISCO, CA 94134

**CIVIL ENGINEER:**

DRAWN BY: \_\_\_\_\_ CHK. BY: \_\_\_\_\_  
GN \_\_\_\_\_ UR \_\_\_\_\_  
LICENSER: \_\_\_\_\_

**SHEET TITLE:**  
ELEVATIONS

**SHEET NUMBER:**  
A-2



**Equipment Seismic Loading (2013 CBC):**

ASCE Sect 12.8: Equiv. Lateral Force Procedure:

Site Data:

		(USGS Design Maps max values)	
$S_s =$	3.125	(Max. Mapped Spectral Acceleration at Short Period)	
$S_1 =$	1.500	(Max. Mapped Spectral Acceleration at 1-Second Period)	
<u>Seismic Design Requirements:</u>			
Seismic Design Category =	<b>D</b>		<b>E</b>
$F_a =$	1.0	(Table 11.4-1)	0.9
$F_v =$	1.5	(Table 11.4-2)	2.4
$S_{MS} = F_a S_s =$	3.125	(11.4-1, Maximum Considered Spectral Response)	
$S_{M1} = F_v S_1 =$	2.250	(11.4-2, Maximum Considered Spectral Response)	
$S_{DS} = 2/3 S_{MS} =$	2.083	(11.4-3, Design Spectral Response)	1.875
$S_{D1} = 2/3 S_{M1} =$	1.500	(11.4-4, Design Spectral Response)	2.400
$I =$	1	(Seismic Importance Factor)	
$R =$	2.5	(Table 13.6-1, Response Modification Coefficient)	
$\Omega_o =$	2	(Table 12-2.1, Overstrength Factor)	
$C_d =$	5	(Table 12.2-1, Design Amplification Factor)	
$C_T =$	0.02	(Table 12.8-2 Building Period Coefficient)	
$h_n =$	70	(Max Building Height, Cs not sensitive to)	
$T_a = C_T h_n^{0.9} =$	0.48	(12.8-7 Fundamental Period)	
$ap =$	1	(Table 13.6-1, Seismic Coeff. For Mech and Elect. Comp.)	

Determine V:

$V = C_s \times W$	Chapter 12	(12.8-1)
$F_p = C_s \times W_p$	Chapter 13	(13.3-1)

**STRUCTURAL:**

Determine Cs:

$(S_{DS} I / R) =$	0.833	( $C_s$ Short Period)	(12.8-2)	0.750
$C_s = (S_{D1} I / R T) =$	1.240	( $C_s$ Max)	(12.8-3)	1.983
$C_s =$	0.010	( $C_s$ Min)	(12.8-5)	0.010
$C_s = (0.5 S_1) I / R =$	0.300	SDC E or F, $S_1 > 0.6G$ only	(12.8-6)	0.300

**NON-STRUCTURAL COMPONENT:**

		<b>Therefore, use this value of Cs</b>	
$C_s = (1 + 2) 0.40 ap S_{ds} I / R =$	<b>1.000</b>	(Equip. on Roof)	(13.3-1) 0.900
$C_s = (1 + 0) 0.40 ap S_{ds} I / R =$	0.333	(Equip. on Ground)	(13.3-1) 0.300
$C_s = 1.6 S_{ds} I =$	3.33	(Need not exceed)	(13.3-2) 3.00
$C_s = 0.3 S_{ds} I =$	0.63	(Not less than)	(13.3-3) 0.56

**ASCE 7-10 Section 29.5: Design Wind Load on Other Structures:**

$F = q_z G C_f A_f$		(29.4-1)
$q_z = .00256 K_z K_{zt} K_d V^2$		(29.3-1)
Mean Roof Height =	50	ft Sect.29.5.1
Exp: =	<b>C</b>	Chapter C26
Exposure coefficient $K_z =$	1.090	Table 29.3-1
Topography factor $K_{zt} =$	1.00	
Directionality factor $K_d =$	0.85	Table 26.6-1
Wind Speed $V =$	<b>110</b>	mph Fig. 26.5-1B Cat. II
$q_z =$	28.70	psf
$G =$	1.00	(29.5-2)
Rooftop Force coeff $C_f =$	1.9	
LRFD Design wind pressure: $P =$	54.5	psf
	x 0.6	
ASD Design wind pressure: $P =$	<b>32.7</b>	psf

**Generate Lateral Loads on one Antenna Array: (see p. 2, photos 5)**

Equipment	Weight (lbs)	Quantity	Total (lbs)	
Antenna	70	1	70	(max, incl mount'g kit, etc)
RRU	70	0	0	(mounted separately)
Pipe/Misc	45	1	45	
Misc	35	1	35	
Total Wt. =			150	lbs max.

**Dimensions:**

W = 1 ft  
L = 1 ft  
H = 8 ft

**Wind Load:**

Atrans = W x H = 8.0 ft<sup>2</sup>  
Along. = L x H = 8.0 ft<sup>2</sup>

Design Wind Pressure = 32.7 psf (see p. 3)

Fw = A x P = 262 lbs Trans.  
Fw = A x P = 262 lbs Long.

**Seismic Load:**

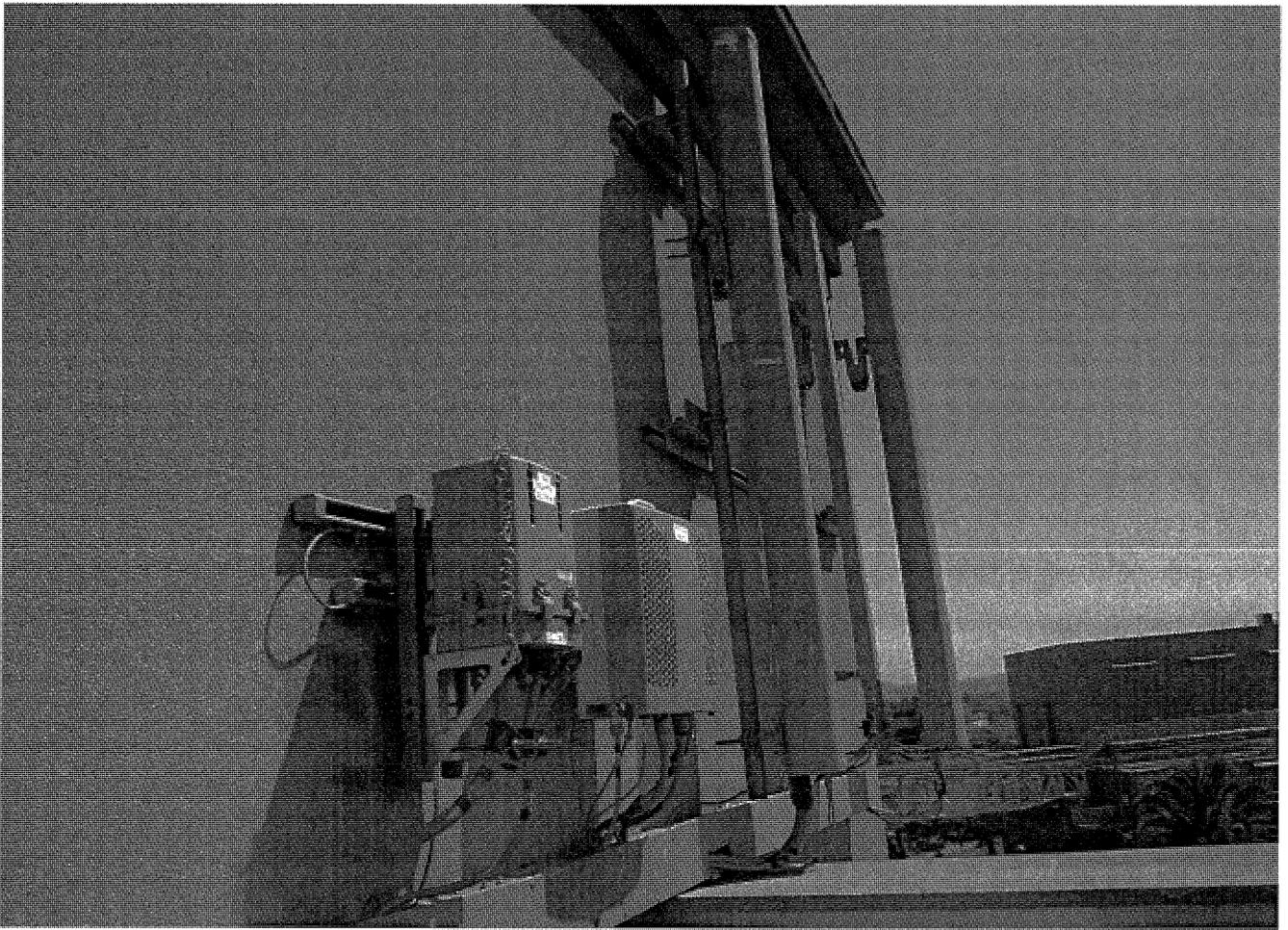
Cs = 1.000 (see p. 3)  
0.7 x Cs = 0.700 (CBC LC 16-12)

Cs	x	Wt	=	V	
0.700		150		105	lbs Transverse
0.700		150		105	lbs Longitudinal

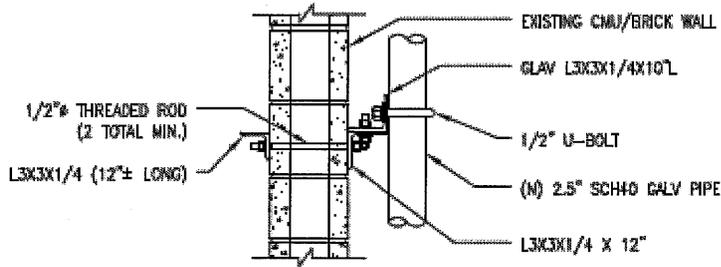
**Therefore:**

Wind controls in the transverse direction.  
Wind controls in the longitudinal direction.

**Analysis:** the antennas are mounted on exterior rooftop screenwalls (see p. 2, 5 photos)  
the above loads at top & bot supports: DL = 150/2 = 75lbs WL = 262/2 = 131lbs  
Mounting bolt capacities are shown on p. 6 and exceed the above load demands.  
a RISA check of the mount'g is run on p. 7 et al.  
Therefore, the proposed antenna mountings are structurally adequate to support the proposed new antennas, RRU's, etc.



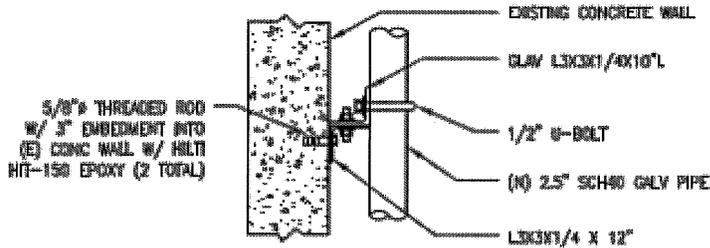
**Standard Pipe to Wall Mounting: 2 Bolts T. & B. = 4 Bolts Total**



**1/2in Threaded Rod:**

Vallow = 750 lbs x 4 bolts = 3000 lbs  
Tallow = 1200 lbs x 4 bolts = 4800 lbs

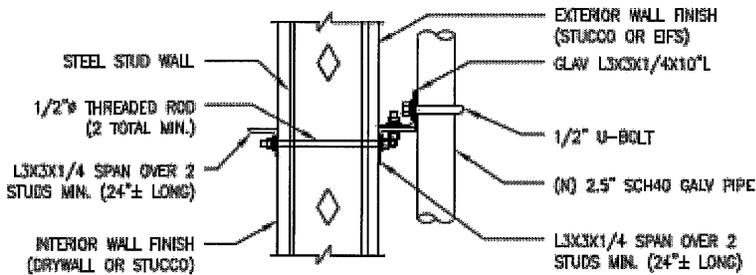
**FOR HOLLOW WALLS UP TO 20" TH**



**1/2in Threaded Rod w/ 3in Embedment:**

Vallow = 1250 lbs x 4 bolts = 5000 lbs  
Tallow = 1600 lbs x 4 bolts = 6400 lbs

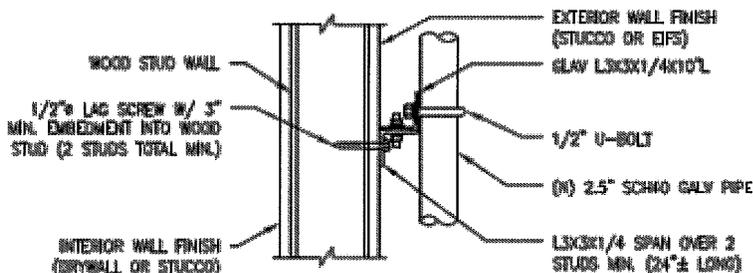
**FOR SOLID CONCRETE/CMU WALLS**



**1/2in Threaded Rod:**

Vallow = 1000 lbs x 4 bolts = 4000 lbs  
Tallow = 1500 lbs x 4 bolts = 6000 lbs

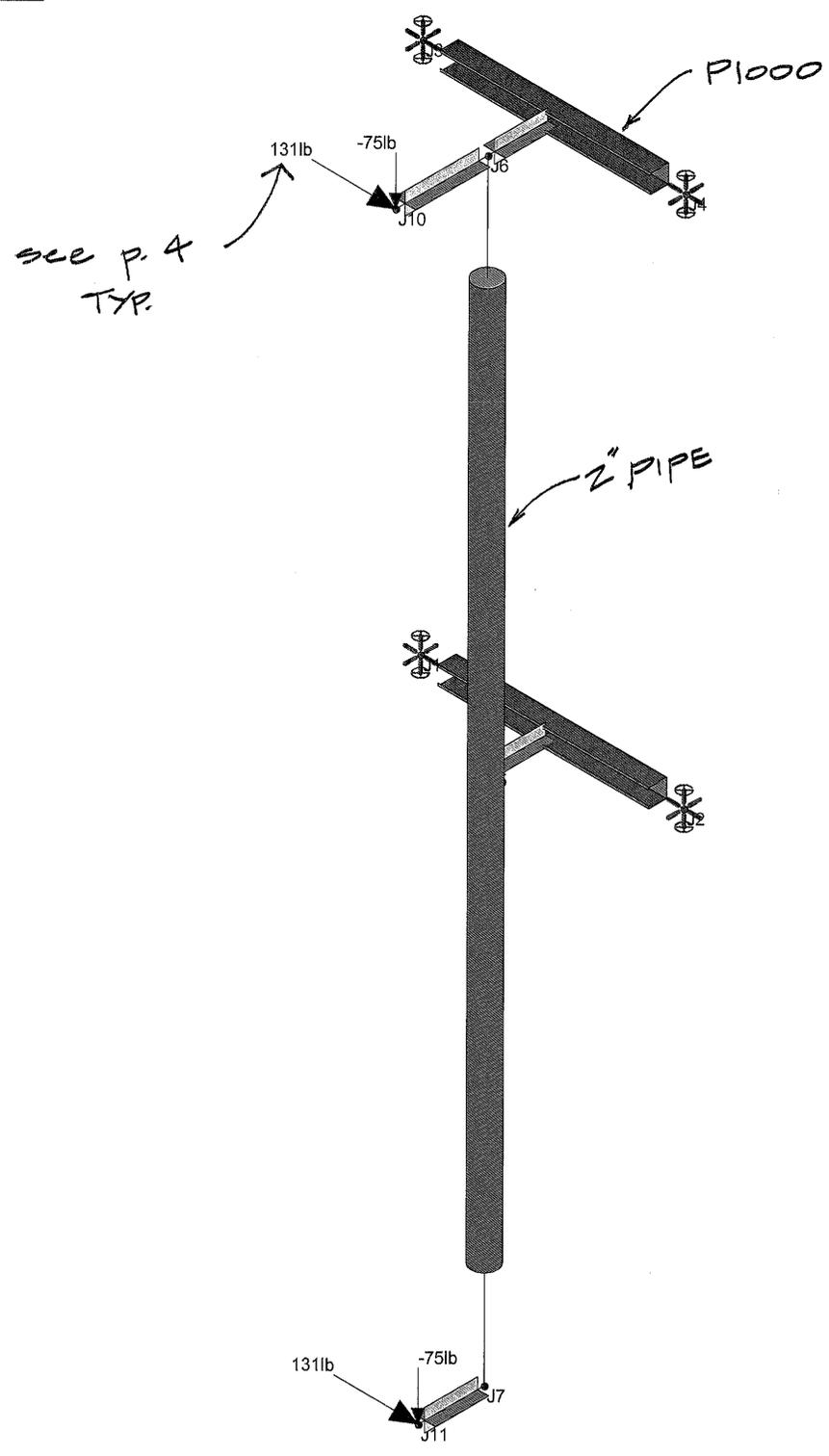
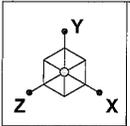
**FOR STEEL STUD WALLS**



**1/2in Lag Screw w/ 3in Embedment:**

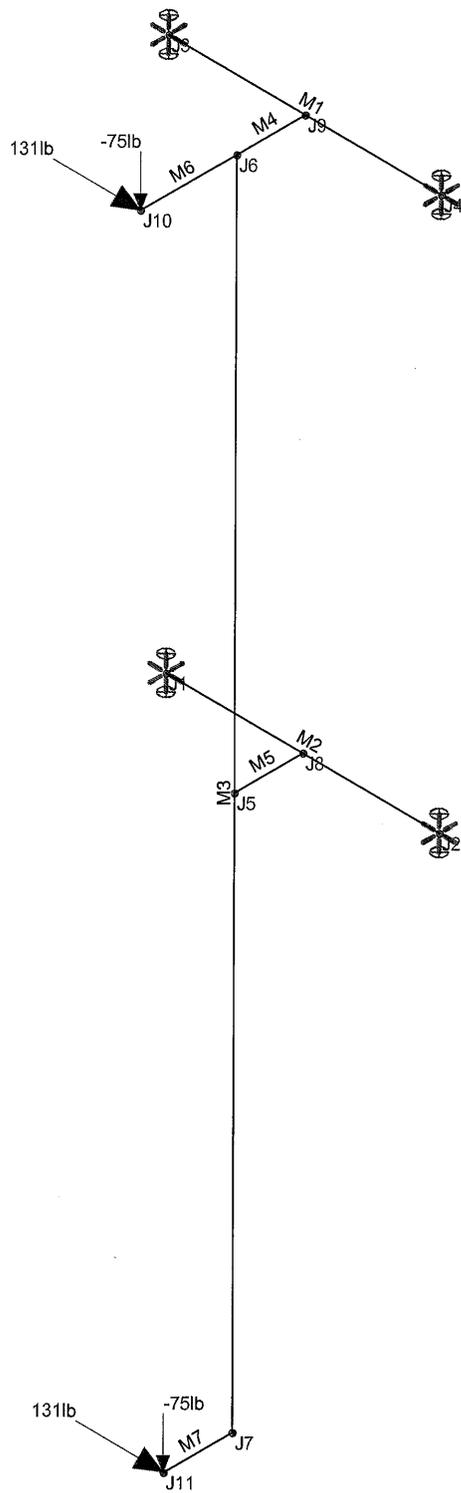
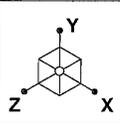
Vallow = 340 lbs x 4 bolts = 1360 lbs  
Tallow = 1130 lbs x 4 bolts = 4520 lbs

**FOR WOOD STUD WALLS**



Loads: LC 2, D + WLX  
 Solution: Envelope

Connell Design Group		SK - 1
JS	Antenna Mount	May 22, 2015 at 11:57 AM
Doolittle PCS		Doolittle PCS Ant Mount.r3d



Loads: LC 2, D + WLX  
 Solution: Envelope

Connell Design Group

JS

Doolittle PCS

Antenna Mount

SK - 2

May 22, 2015 at 11:58 AM

Doolittle PCS Ant Mount.r3d

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (1/E...Density[lb/f...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	Gr. 35	29000	11154	.3	.65	490	35	1.5	58	1.2
2	Gr. 36	29000	11154	.3	.65	490	36	1.5	58	1.2

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	2in Pipe	PIPE 2.0	Beam	None	Gr. 35	Typical	1	.63	.63	1.25
2	L3x3	L3X3X4	Beam	None	Gr. 36	Typical	1.44	1.23	1.23	.03

**Cold Formed Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (1/E5 F)	Density[lb/ft <sup>3</sup> ]	Yield[ksi]	Fu[ksi]
1	A570 33	29500	11346	.3	.65	490	33	52
2	Gr 50	29500	11346	.3	.65	490	50	70

**Cold Formed Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rules	A [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	P1000	P1000 -A_C...	Beam	None	A570_33	Typical	.57	.19	.24	1

**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	J3	J4			P1000	Beam	None	A570 33	Typical
2	M2	J1	J2			P1000	Beam	None	A570 33	Typical
3	M3	J7	J6			2in Pipe	Beam	None	Gr. 35	Typical
4	M4	J9	J6			RIGID	None	None	RIGID	Typical
5	M5	J8	J5			RIGID	None	None	RIGID	Typical
6	M6	J10	J6			RIGID	None	None	RIGID	Typical
7	M7	J11	J7			RIGID	None	None	RIGID	Typical

**Joint Coordinates and Temperatures**

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	J1	0	0	.5	0	
2	J2	2	0	.5	0	
3	J3	0	4	.5	0	
4	J4	2	4	.5	0	
5	J5	1	0	1	0	
6	J6	1	4	1	0	
7	J7	1	-4	1	0	
8	J8	1	0	.5	0	
9	J9	1	4	.5	0	
10	J10	1	4	1.7	0	
11	J11	1	-4	1.5	0	

**Joint Boundary Conditions**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]	Footing
1	J1	Reaction	Reaction	Reaction		Reaction		
2	J2	Reaction	Reaction	Reaction		Reaction		
3	J3	Reaction	Reaction	Reaction		Reaction		
4	J4	Reaction	Reaction	Reaction		Reaction		

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	DL	DL		-1		2			
2	WLX	WLX				2			
3	WLZ	WLX							

**Joint Loads and Enforced Displacements (BLC 1 : DL)**

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/ft, ...
1	J10	L	Y	-75
2	J11	L	Y	-75

**Joint Loads and Enforced Displacements (BLC 2 : WLX)**

	Joint Label	L,D,M	Direction	Magnitude[(lb.k-ft), (in.rad), (lb*s^2/ft, ...
1	J10	L	X	131
2	J11	L	X	131

**Load Combinations**

	Description	Sol...PD...SR...	BLC Fact...	BLC Factor								
1	D	Yes Y	1	1								
2	D + WLX	Yes Y	1	1	2	1						
3	D + WLZ	Yes Y	1	1		3	1					

**Envelope Joint Reactions**

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	J1	max	0	1	50.716	2	22.24	1	0	1	.028	2	0	1
2		min	-130.082	2	50.636	1	-111.146	2	0	1	-.011	1	0	1
3	J2	max	0	-1	50.636	1	155.625	2	0	1	.051	2	0	1
4		min	-130.082	2	50.557	2	22.24	1	0	1	.011	1	0	1
5	J3	max	0	1	41.854	2	-22.241	1	0	1	.032	2	0	1
6		min	-.908	2	41.854	1	-93.613	2	0	1	.011	1	0	1
7	J4	max	0	1	41.854	1	49.132	2	0	1	.01	2	0	1
8		min	-.908	2	41.853	2	-22.241	1	0	1	-.011	1	0	1
9	Totals:	max	0	1	184.98	1	-.002	2						
10		min	-261.981	2	184.98	1	-.002	1						

**Envelope AISC 13th(360-05): ASD Steel Code Checks**

	Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om ...	Mnzz/om ...	Cb	Eqn
1	M3	PIPE 2.0	.423	4	2	.081	4	2	19357.161	20958.084	1.245	1.245	1...	H1-1b	

**Envelope AISI Cold Formed Steel Code Checks**

	Member	Shape	Code Check	Loc[ft]	LC	Shea...	Loc[ft]	Dir	LC	phi*Pn[...	phi*Tn[...	phi*Mn...	phi*Mn...	Cb	Cmyy	Cmzz	AISI E...
1	M1	P1000 -A ...	.264	1	2	.034	0	z	2	17329...	18810	.577	.79	1.311	.476	.85	C5.1...
2	M2	P1000 -A ...	.407	1.021	2	.057	1	z	2	17329...	18810	.586	.787	1.312	.376	.85	C5.2...

OK



PORT OF OAKLAND

Development Permit Application Form

Permit No: \_\_\_\_\_

APPLICANT TO COMPLETE ITEMS WITHIN BOX, SIGN PAGE 2, and SUBMIT TO PERMIT COODINATOR

Project Address: 77 Hegenberger Rd. Oakland, CA 94621

Applicant: Verizon Wireless c/o Modus Inc. (Michelle Monemoto)

Contact: Telephone / FAX: (415) 297-6521 /

Property Owner: Mercury Hotels Inc.

Contact: Telephone / FAX: 510-638-7777 /

Tenant: Verizon Wireless

Contact: Telephone / FAX: 773-732-5497 /

Type of Project (check all that apply): New Construction  Exterior  Interior   
Demolition  Site Utilities  HazMat

Size of Property/Leasehold (sf): \_\_\_\_\_ Existing Improvements (sf): \_\_\_\_\_

Proposed Improvements (sf): \_\_\_\_\_ Parking; existing N/A proposed N/A

Project Description: Remove & Replace 6 Existing antennas w/ new antennas, add 3 A2 units to the AWS RRHS, add 3 PCS RRHS w/ A2 units. All antennas & cables painted to match existing building

Valuation: \$ 30,000

Submittals / Approvals (Check indicates required):

Development Review

Sent

Received

<input type="checkbox"/> CEQA <sup>1</sup> (Attachment 1- sample only, to be issued by Env.Planning if needed)	_____	_____
<input type="checkbox"/> FAA 7460 <sup>2</sup> (Attachment 2)	_____	_____
<input type="checkbox"/> Design Review Committee	_____	_____
<input type="checkbox"/> Variance (Attachment 3)	_____	_____
<input type="checkbox"/> Property Manager	_____	_____
<input type="checkbox"/> Tree Removal (Attachment 4)	_____	_____
<input type="checkbox"/> General Plan Conformity	_____	_____

Sustainability / Social Justice

Sent

Received

<input type="checkbox"/> Dark Skies Exterior Lighting <sup>3</sup> (Attachment 5)	_____	_____
<input type="checkbox"/> Sustainable Opportunities Tool Kit <sup>1</sup> (Attachment 6)	_____	_____
<input type="checkbox"/> Waste Reduction & Recycling Plan <sup>1</sup> (Attachment 7)	_____	_____
<input type="checkbox"/> Storm Water Pollution Prevention Plan <sup>4</sup> (Attachment 8)	_____	_____
<input type="checkbox"/> Energy Conservation <sup>5</sup> (Attachment 9)	_____	_____
<input type="checkbox"/> Safety/Hazardous Materials <sup>4</sup>	_____	_____
<input type="checkbox"/> Maritime/Aviation Project Labor Agreement <sup>1</sup> (Attachment 10)	_____	_____

Design & Engineering Review

Sent

Received

<input type="checkbox"/> Civil	_____	_____
<input type="checkbox"/> Electrical/Mechanical	_____	_____
<input type="checkbox"/> Utilities	_____	_____
<input type="checkbox"/> Facilities	_____	_____
<input type="checkbox"/> Operations	_____	_____
<input type="checkbox"/> Other: _____	_____	_____

Approvals

Sent

Received

<input type="checkbox"/> Legal	_____	_____
<input type="checkbox"/> Board Secretary	_____	_____
<input type="checkbox"/> Executive Director or Chief Engineer	_____	_____
<input type="checkbox"/> Board of Port Commissioners	_____	_____
<input type="checkbox"/> City of Oakland (Attachment 11)	_____	_____

Responsible Department: 1- Environmental Planning 2- Permits 3- Engineering Electrical/Mechanical  
4- Environmental Health & Safety 5- Utilities

NOTE: Application is not complete until all required attachments are submitted and applicable fees are paid.

**Agreement:**

By the signature below, the Applicant agrees to comply with the general conditions listed on this page, and specific conditions delineated at the time of approval. The Applicant certifies that the  Port of Oakland ("Port") Tenant /  property owner (check one) has retained Applicant to carry out the work described herein. If the Applicant is not the Contractor, the Applicant hereby certifies that the Contractor will be directed to meet all the conditions of this permit approval. Applicant certifies that the  Port Tenant /  property owner authorizes Applicant on his/her behalf to submit and further agrees to be bound by the material representations herein. These representations are made to induce the Port to approve this application and the Port approval of this application is made in reliance on the foregoing representations.

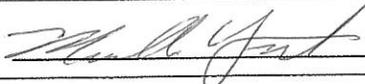
**General Conditions of Approval:**

1. The Applicant agrees to obtain all required development permits from the City of Oakland, and to comply with all conditions of such approval(s). This Port development permit generally takes the place of City of Oakland Zoning approval. Any other authorization made by approval of this permit will be noted in the specific conditions issued at the time of approval.
2. The Federal Aviation Administration (FAA) requires the filing of Form 7460 for any work being done within 20,000 feet of the Airport, or for any structure over 200 feet high. This Form must be filed prior to Port approval, with a copy provided to the Port. The application must include a drawing prepared and signed by a licensed engineer, with locations sited to within 6". The Port reserves the right to deny the application based on any FAA conditions of approval. If conditions are made after Port approval of the permit that are objectionable, the Port may rescind approval or cause the Applicant to alter the project to remove the condition(s).
3. Contractor shall comply with the Maritime and Aviation Project Labor Agreement (MAPLA) in performing all work authorized by this permit. Prior to commencement of said work, Applicant shall submit a fully executed copy of a MAPLA Letter of Assent covering said work executed by the Prime Contractor for the project.

Status: (to be completed by Port staff)

- Permit work is covered by MAPLA
- Permit work is exempt from the MAPLA for the following reason:
  - Totally paid for by another governmental agency (other than the Port of Oakland)
  - The tenant has undertaken less than \$50,000 of work within the South Airport sub-area, or less than \$150,000 for all other Airport and Maritime areas.

4. The Applicant is responsible for obtaining necessary permits from any other jurisdiction having authority over the work, and is responsible for meeting all conditions of such approval(s). The Port reserves the right to refuse any conditions that impact Port operations.

Applicant Signature: <u></u>	Date: <u>7/2/15</u>
---	---------------------

**Port Approval:**

The signature below certifies that the Port of Oakland has approved the project, and the applicant is free to start work. This page serves as the applicants approved permit.

Approved: \_\_\_\_\_ Date: \_\_\_\_\_  Additional Conditions Attached

Port of Oakland  
Building and Development  
530 Water Street  
Oakland, CA 94607  
(510)627-1100

June 29, 2015

Verizon Wireless  
c/o Modus Inc.  
149 Natoma Street 3<sup>rd</sup> Floor  
San Francisco, CA 94105  
Michelle Yonemoto  
[myonemoto@modus-corp.com](mailto:myonemoto@modus-corp.com)  
(415) 297-6521



## Project Description

Proposed modification to a **Verizon Wireless Telecommunications Facility** at  
189547 Doolittle  
77 Hegenberger Road, Oakland, CA 94621 APN 042-4410-001-16

Verizon Wireless is proposing to modify this wireless telecommunication facility to provide better service and data capacity to businesses and residents in the City of Redwood City. The proposed site is intended to provide capacity relief and improve service to nearby areas.

The proposed project involves the installation of new antennas and equipment as follows:

### **Structure and Antenna Location**

- Antennas are located on the façade of the building. There are a total of (3) three separate sectors on two wings of the building.
  - Replacement of **(6) of the existing (9) total antennas with (6) new antennas** [2 per sector]
  - Addition of **(3) new A2 Units** to the existing (3) AWS RRUS12 [1 RRUS12 with A2 unit per sector, (3) sectors total]
  - Addition of **3 new PCS RRUS12 with A2 units**

### **Colors and Finishes:**

- All exposed antennas and equipment painted and textured to match the tan color of the building's penthouses
- Proposed antennas and equipment color and design to match existing antenna and equipment design

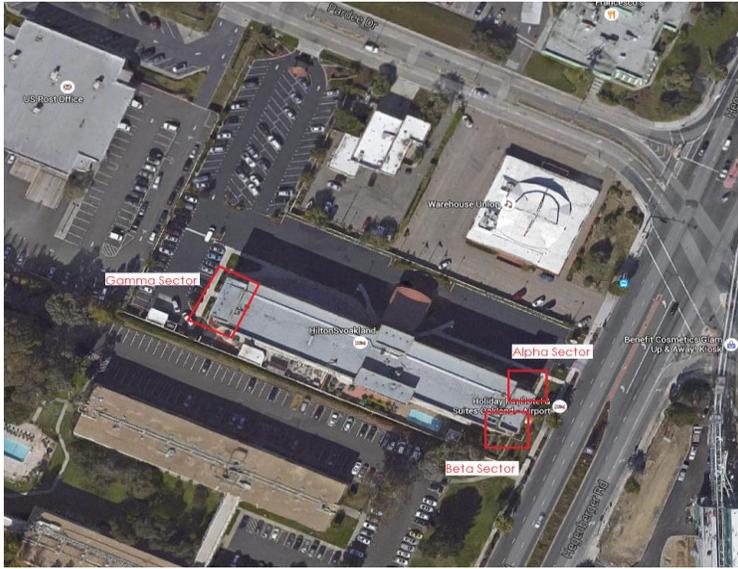
### **Site Location / Access:**

- Site is off of Hegenberger Road, between Pardee Drive and Doolittle Drive.
- Access made directly from Hegenberger road, into the property parking lot that leads to the building's main entrance.

This represents a preliminary overall project description and ongoing submitted revisions may alter final measurements.

## Example Finishes, Final Finishes and Context Photos

Aerial View of Site, and location of equipment



View of Site from Parking lot looking south



View of Site from Hegenberger Rd looking west



View of Site from Hegenberger looking southwest



View of Site from Hegenberger Rd looking northeast



Proposed installation looking northeast to match existing tan wall of building



View of Beta Sector Location



View of Alpha Sector Location



View of Gamma Sector Equipment



View of Access Door on Eastern Wing



View of Access Door from Roof Entrance



**CAUTION**  
Verizon Personnel  
Remain On  
Walk Pads  
At All Times  
When On Roof

**INFORMATION**  
This is a Verizon Wireless  
Antenna Site  
Site ID: 15-04-0469  
For information, call:  
800-264-6620