COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: April 20, 2017

TO: Zoning Hearing Officer

FROM: Planning Staff

SUBJECT: Consideration of a Use Permit Renewal, pursuant to Section 6512.6 of the San Mateo County Zoning Regulations, to allow the continued operation of a communication tower located in the unincorporated North Skyline area of San Mateo County.

County File Number: PLN 2016-00466 (Ingenu, Inc.)

PROPOSAL

The applicant is proposing to renew the Use Permit for a 120-foot tall communication tower currently servicing the following eight carriers: Commlabs Inc., Double D Transportation, Durham School Services and Transportation, FleetTalk Management Services, Midpeninsula Open Space District, T-Mobile, United States Postal Service, and USA Mobility. Three associated equipment buildings are located next to the communication tower. As a maintenance modification, the applicant will install one new antenna for Ingenu, Inc., a new carrier, at a maximum height of 90 feet 3 inches on the communication tower and a GPS unit and an equipment cabinet will be installed within one of the three equipment buildings located east of the communication tower. This maintenance modification qualifies under the Federal Preemption as the modification does not constitute a substantial increase in the size of the tower as defined in the 2012 Federal Tax Act. The project parcel is located within the Skyline Boulevard State Scenic Corridor.

RECOMMENDATION

That the Zoning Hearing Officer approve the Use Permit Renewal, County File Number PLN 2016-00466, by making the required findings and adopting the conditions of approval listed in Attachment A.

BACKGROUND

Report Prepared By: Carmelisa Morales, Project Planner, 650/363-1873

Applicant: Ingenu, Inc.

Tower Operator: Pinnacle Towers LLC (a company owned by Crown Castle)

Owner: James Wickett

Location: 15010 Skyline Boulevard, Woodside

APN: 067-340-080

Parcel Size: 44,301 sq. ft. (1.02 acres)

Sphere-of-Influence: None

Existing Land Use: Communication tower servicing eight carriers

General Plan Designation: Open Space Rural

Zone: TMZ (Timberland Preserve Zone) District

Flood Zone: Zone X (area of minimal flood risk); FEMA Panel No.06081C0292E; effective October 16, 2012

Environmental Evaluation: Categorically exempt under provisions of Class 1, Section 15301, of the California Environmental Quality Act (CEQA) Guidelines for continued operation of an existing use.

Setting: The project site is on a privately owned parcel located west of Skyline Boulevard (Highway 35), across the street from the Skeggs Point scenic overlook parking lot, and approximately 2.25 miles away from the unincorporated community of Skylonda. The parcel is developed with a communication tower and three associated equipment buildings. The parcel and surrounding area consists of densely forested hills. Mature trees and other vegetation screen a majority of the project site.

Chronology:

Date		Action
September 11, 1991	-	Original use permit approved, County File Nos. UP 90-17, AR 90-8, and TPZ 90-3.
July 22, 2015	-	Use Permit Amendment approved, County File No. PLN 2015-00299.
October 28, 2016	-	Use Permit Renewal application submitted, County File No. PLN2016-00466 (current proposal).
December 9, 2016	-	Application deemed complete.
April 20, 2017	-	Zoning Hearing Officer public hearing date.

DISCUSSION

A. KEY ISSUES

1. Compliance with Conditions of Last Approval

The conditions of approval in the original Use Permit from 1991 are assessed below with regard to compliance and if the conditions should be either retained or revised. Staff recommends that some conditions, as indicated, be removed in instances where the condition: (1) has been complied with, or (2) is no longer deemed feasible or necessary.

1. The applicant shall submit a landscape plan providing for additional tree plantings in the area northeast of the tower. The tree screen shall be [a] fast growing species compatible with the existing tree cover. A performance bond to cover the cost of the plantings and installation is required. After installation, a maintenance bond is required to guarantee survival of plant materials for two growing seasons.

   Compliance with Condition? Yes. A landscape plan was submitted under the associated Building Permit (BLD 92-1297). The landscape plan was approved by Planning staff prior to building permit issuance. At the inspection stage, the applicant at the time verified with Planning staff that the required trees were planted.

   Recommend to Retain Condition? Yes, but modified to: Existing landscaping must be maintained.

2. The upper 60-foot portion of the tower shall be painted a non-glare medium intensity grey/blue color to the satisfaction of the Planning Director.

   Compliance with Condition? Yes. The entire communication tower is painted a non-glare medium intensity grey/blue color.

   Recommend to Retain Condition? Yes, but modified to: The communication tower and all future modifications to the communication tower shall be painted a non-glare medium intensity grey/blue color. Prior to the issuance of a building permit, the applicant shall submit color samples for the communication tower. Paint colors shall be subject to the review and approval of the Planning and Building Department. Color verification will be confirmed by the Current Planning Section prior to a final inspection for the building permit.

3. The applicant shall obtain a building permit prior to construction, grading, or tree cutting on the site.

Compliance with Condition? Yes. Two building permits were issued and passed the final building inspections for this Use Permit: (1) a Building Permit (BLD 92-1297) for the communication tower and one equipment building, and (2) the other Building Permit (BLD 93-1123) for the other two equipment buildings.

Recommend to Retain Condition? Yes, but modified to: Once a use permit is obtained, the applicant shall obtain a building permit and build in accordance with the approved plans.

4. These communications facilities shall be available to appropriate public agencies during emergencies at no charge.

Compliance with Condition? Yes. The communication tower is available to appropriate public agencies during emergencies at no charge.

Recommend to Retain Condition? Yes, but modified to: If technically practical and without creating any interruption in commercial service caused by electronic magnetic interference (EMI), floor space, tower space and/or rack space for equipment in a wireless telecommunication facility, the communication tower shall be made available to the County for public safety communication use.

2. Additional Recommended Conditions of Approval

Staff recommends Conditions of Approval Nos. 9-14 in Attachment A be imposed on this Use Permit in order to ensure consistency with other wireless telecommunication facility approvals.

3. Compliance with the General Plan

Staff has determined that the project complies with all applicable County General Plan policies, specifically:

Visual Quality Policies

Policy 4.21 (*Utility Structures*) seeks to minimize adverse visual impacts generated by utility structures. Policy 4.22 (*Scenic Corridors*) further aims to enhance the visual quality of scenic corridors by managing the location and appearance of structural development. The 120-foot tall communication tower is not proposed to change in height. Approximately 15 feet of the communication tower can be seen from Skyline Boulevard as shown in the photo simulations submitted by the applicant (see Attachment D). The communication tower was painted a non-glare medium intensity grey/blue color as conditioned by the original Use Permit. The proposed antenna for Ingenu, Inc., will be mounted on the communication tower at a maximum height of 90 feet 3 inches and be screened by the existing forest canopy

surrounding the project site. To ensure visual impacts are minimized, the proposed antenna will be painted a non-glare medium intensity grey/blue color to match the communication tower and aid in blending in with the natural environment. The proposed equipment cabinet will also not be visible from Skyline Boulevard as it will be within an existing equipment building also screened by the surrounding forest canopy.

4. Compliance with Zoning Regulations

The project site is located within the Timberland Preserve Zone (TPZ) Zoning District. Pursuant to Section 6752 of the County Zoning Regulations, all development proposed for location within the TPZ Zoning District must meet the definition of compatible use as defined in Section 6701.1. Communication facilities are considered a compatible use in the TPZ Zoning District and the required TPZ Minor Development Permit was approved in 1991 (County File No. TPZ 90-3).

The applicant proposes to install an antenna for Ingenu, Inc., to be placed on the existing communication tower and a GPS unit and an equipment cabinet within an existing equipment building adjacent to the communication tower. This qualifies under the Federal Preemption as a maintenance modification because the modification does not constitute a substantial increase in the size of the tower as defined in the 2012 Federal Tax Act.

5. Compliance with the Wireless Telecommunication Facilities Ordinance

Pursuant to Section 6512.6 of the Wireless Telecommunication Facilities (WTF) Ordinance, existing facilities built prior to January 9, 2009 are subject to the provisions of the WTF Ordinance related to new facilities. Staff has reviewed the project against the provisions of Section 6512.6 and determined that the project complies with the applicable standards discussed below:

a. Development and Design Standards

Section 6512.2.A states that new wireless telecommunication facilities shall be prohibited in a Sensitive Habitat, as defined by Policy 1.8 of the General Plan (*Definition of Sensitive Habitats*) for facilities proposed outside of the Coastal Zone.

The project site is not located in a sensitive habitat, as defined by Policy 1.8 of the General Plan. The proposed co-location facility will be installed on the existing communication tower and the GPS unit and equipment cabinet will be installed in an existing equipment building.

Section 6512.2.B prohibits new wireless telecommunication facilities from being located in areas zoned Residential (R),

unless the applicant demonstrates that a review has been conducted of other options and no other sites or combination of sites allow feasible service or adequate capacity and coverage.

The project site is not located in a residentially-zoned district. As discussed in Section A.4 above, the project site is located in the TPZ Zoning District where communication facilities are considered a compatible use.

Section 6512.2.C prohibits new wireless telecommunication facilities to be located in areas where co-location on existing facilities would provide equivalent coverage with less environmental impacts.

The applicant is requesting to continue the operation of a communication tower where eight co-location facilities are currently installed. The applicant is also proposing a maintenance modification to install an antenna for Ingenu, Inc., a new carrier, to co-locate onto the communication tower and utilize the space within an existing equipment building on the project site.

Section 6512.2.D requires new wireless telecommunication facilities to be constructed so as to accommodate co-location, and must be made available for co-location.

The communication tower is available for co-location and currently accommodates eight carriers. The 10 Year Build Out Plan (see Attachment E) states that co-location is encouraged and is demonstrated by the maintenance modification proposed for a new carrier to co-locate onto the communication tower. Therefore, co-location opportunities are available and encouraged by the applicant.

Sections 6512.2.E and F seek to minimize and mitigate visual impacts from public views by siting new facilities outside of public view, using natural vegetation for screening, painting equipment to blend with existing landscaping, and designing the facility to blend in with the surrounding environment.

A maintenance modification is proposed to install a co-location facility onto the existing 120-foot tall communication tower. The co-location facility consists of one antenna mounted on the communication tower at approximately 90 feet 3 inches high, and a GPS unit and an equipment cabinet within one of three existing equipment buildings located east of the communication tower. As discussed in Section A.3 above, the proposed antenna will be painted a non-glare medium intensity grey/blue color to match the communication tower. The proposed antenna, GPS unit and equipment cabinet will be screened

by existing mature vegetation surrounding the project site and will not be visible from public viewpoints from Skyline Boulevard.

Section 6512.2.G requires that the exterior of wireless telecommunication facilities be constructed of non-reflective materials.

The proposed co-location facility will be constructed of non-reflective materials. As discussed in the section above, the co-location facility will be painted a non-glare medium intensity grey/blue color to match the existing communication tower.

Section 6512.2.H requires that wireless telecommunication facilities comply with all the requirements of the underlying zoning district, including, but not limited to, setbacks.

As discussed in Section A.4 above, Compliance with Zoning Regulations, the communication tower is considered a compatible use in the TPZ Zoning District. There are no other zoning requirements such as setbacks. Therefore, the proposed maintenance modification complies with all applicable zoning requirements.

Section 6512.2.I.1 does not allow ground-mounted towers in the forested areas of the TPZ Zoning District to exceed the height of the forest canopy by more than 10% of the height of the forest canopy, or five feet, whichever is less. Ground-mounted towers in any district shall never exceed a maximum height of 150 feet.

The forest canopy surrounding the existing communication tower is approximately 80 feet tall. Although the 120-foot tall tower does not comply with this current regulation, the tower is considered a legal non-conforming structure as the original use permit for the tower was approved in 1991. Pursuant to Section 6135 (*Non-Conforming Structures*), a non-conforming structure may continue to exist provided that all provisions in Chapter 4 (*Zoning Non-Conformities*) are met. There are no proposed changes to the tower except for the minor modification proposed to install an antenna for Ingenu, Inc. Therefore, the project complies with all applicable regulations.

b. Performance Standards

The proposed project meets the required standards of Section 6512.3 (*Performance Standards for New Wireless Telecommunication Facilities That Are Not Co-Location Facilities*) for lighting, licensing, provision of a permanent power source, timely removal of the facility, and visual resource protection. There is no lighting proposed, proper licenses will be obtained from both the Federal Communications Commission (FCC) and the California Public Utilities Commission

(CPUC), the emergency power source will be a backup battery, visual impact will be minimal, and conditions of approval will require maintenance and/or removal of the facility when no longer in operation. Furthermore, road access to the project site is existing and no noise in excess of San Mateo County's Noise Ordinance will be produced. Conditions of Approval Nos. 9-13 were added to ensure compliance with the performance standards of this section (see Attachment A).

6. Compliance with Use Permit Findings

For the use permit to be approved by the Zoning Hearing Officer, the following findings must be made:

a. **That the establishment, maintenance and/or conducting of the use will not, under the circumstances of this particular case, be detrimental to the public welfare or injurious to property or improvements in said neighborhood.**

Cellular communications facilities, such as the maintenance modification included within this project, require the submittal and review of radio frequency (RF) reports to ensure that the RF emissions from the proposed antennas do not exceed the FCC public exposure limits. The applicant submitted a radio frequency report prepared by Sitesafe, Inc., dated October 14, 2016. The report analyzes the proposed Ingenu, Inc., equipment, manufactured by On-Ramp Wireless, and how it affects the cumulative radio frequency of the existing communication tower. The report states that the total composite site Maximum Permissible Exposure (MPE) at two meters above ground level is calculated to be 3.89%, which includes the maximum exposure percentage of 0.001% for the proposed co-location facility (see Attachment C). The report states that the proposed co-location facility would not result in public exposure of excessive RF energy levels as defined in 47 CFR 1.1307 of the FCC Rules and Regulations and that the facility is completely compliant. The report confirms that the existing communication tower complies and the proposed co-location facility will comply with the prevailing standards for limiting public exposure to radio frequency energy and thus, will not cause a significant impact on the environment.

To ensure the project complies with the standards for limiting public exposure to radio frequency energy, staff has included Condition of Approval No. 20, recommended by Sitesafe, Inc., to restrict access of the communication tower to communication industry professionals and approved personnel trained in radio-frequency safety.

With the discussion above, staff has determined that the proposed project will not have a negative environmental, health, or visual impact on persons or property within the project vicinity.

b. **That this telecommunication facility is necessary for the public health, safety, convenience or welfare of the community.**

Staff has determined that the continued operation of the existing communication tower and the proposed maintenance modification to install a co-location facility on the tower will allow for increased clarity, range, and capacity of the existing wireless networks and will therefore enhance services and benefit both public and private users. The continued operation of the communication tower is considered necessary for public health, safety, convenience and welfare. Staff believes no adverse effects to public health and safety would result from the continued operation of this facility.

B. ENVIRONMENTAL REVIEW

This project is categorically exempt pursuant to Section 15301, Class 1, of the California Environmental Quality Act (CEQA) related to the continued operation of an existing use.

C. REVIEWING AGENCIES

	Approve	Conditions	Deny
Building Inspection Section	X		
Department of Public Works	X		
Woodside Fire Protection District	X	X	

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Project Plans
C. RF Emissions Compliance Report prepared by Sitesafe, Inc., dated October 14, 2016
D. Photo Simulations
E. 10 Year Build Out Plan

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Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN 2016-00466 Hearing Date: April 20, 2017

Prepared By: Carmelisa Morales
Project Planner

For Adoption By: Zoning Hearing Officer

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. That this project is categorically exempt from environmental review, per Class 1, Section 15301, of the California Environmental Quality Act (CEQA) Guidelines for continued operation of an existing use.

Regarding the Use Permit, Find:

2. That the establishment, maintenance, and/or conducting of the use will not, under the circumstances of this particular case, be detrimental to the public welfare or injurious to the property or improvements in said neighborhood because the project will meet current Federal Communications Commission (FCC) standards as shown in the radio frequency radiation report and has been conditioned to maintain a valid FCC and California Public Utilities Commission (CPUC) license.

3. That the continued operation of the communication tower and installation of a co-location facility are necessary for the public health, safety, convenience, or welfare of the community in that the continued operation of the existing communication tower and installation of the proposed co-location facility will allow for increased clarity, range, and capacity of the existing wireless networks and will therefore enhance services and benefit both public and private users.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

1. This approval applies only to the proposal, documents, and plans described in this report and submitted to and approved by the Zoning Hearing Officer on April 20, 2017. Minor revisions or modifications may be approved by the Community Development Director if they are consistent with the intent of and in substantial conformance with this approval.

2. This use permit shall be for the proposed project only. Any change or change in intensity of use shall require an amendment to the use permit. Amendment to this use permit requires an application for amendment, payment of applicable fees, and consideration at a public hearing.

3. This permit shall be valid for ten (10) years until April 20, 2027. If the applicant seeks to renew this permit, renewal shall be applied for six (6) months prior to expiration with the Planning and Building Department and shall be accompanied by the renewal application and fee applicable at that time. Renewal of this permit shall be considered at a public hearing.

4. This permit does not allow for the removal of any trees. Removal of any trees with a diameter equal to or greater than 12 inches as measured 4.5 feet above the ground shall require a separate tree removal permit.

5. Existing landscaping must be maintained.

6. Once a use permit is obtained, the applicant shall obtain a building permit and build in accordance with the approved plans.

7. The communication tower and all future modifications to the communication tower shall be painted a non-glare medium intensity grey/blue color. Prior to the issuance of a building permit, the applicant shall submit color samples for the communication tower. Paint colors shall be subject to the review and approval of the Planning and Building Department. Color verification will be confirmed by the Current Planning Section prior to a final inspection for the building permit.

8. If technically practical and without creating any interruption in commercial service caused by electronic magnetic interference (EMI), floor space, tower space and/or rack space for equipment in a wireless telecommunication facility, the communication tower shall be made available to the County for public safety communication use.

9. The wireless telecommunications facility shall not be lighted or marked unless required by the FCC or the Federal Aviation Administration (FAA).

10. The applicant shall file, receive, and maintain all necessary licenses and registrations from the FCC, the CPUC and any other applicable regulatory bodies prior to initiating the operation of the co-location facility. The applicant shall supply the Planning and Building Department with evidence of each of these licenses and registrations. If any required license is ever revoked, the applicant shall inform the Planning and Building Department of the revocation within ten (10) days of receiving notice of such revocation.

11. The wireless telecommunication facility and all equipment associated with it shall be removed in its entirety by the applicant within 90 days if the FCC and/or CPUC license and registration are revoked or the facility is abandoned or no longer needed, and the site shall be restored and revegetated to blend with the

surrounding area. The owner and/or operator of the wireless telecommunication facility shall notify the County Planning Department upon abandonment of the facility. Restoration and revegetation shall be completed within two (2) months of the removal of the facility.

12. The applicant shall not enter into a contract with the landowner or lessee which reserves for one company exclusive use of structures on this site for telecommunications facilities.

13. Wireless telecommunications facilities shall be maintained by the permittee(s) and subsequent owners in a manner that implements visual resource protection requirements of Section 6512.2.E and F above (e.g., landscape maintenance and painting), as well as all other applicable zoning standards and permit conditions.

14. To reduce the impact of potential traffic hazards from service visits to the facility, the applicant shall ensure that no vehicles related to the service and/or maintenance of the cellular facility impede through traffic along Skyline Boulevard or other public right-of-ways.

15. To reduce the impact of construction activities within the public right-of-way and/or on neighboring properties, the applicant shall ensure that no construction-related vehicles impede through traffic along Skyline Boulevard and other public right-of-ways.

16. Road access shall be designed, constructed, and maintained over the life of the project to avoid erosion, as well as to minimize sedimentation in nearby streams.

17. During project construction, the applicant shall, pursuant to Chapter 4.100 of the San Mateo County Ordinance Code, minimize the transport and discharge of stormwater runoff from the construction site into storm drain systems by:

    a. Stabilizing all denuded areas and maintaining erosion control measures continuously between October 1 and April 30. Stabilizing shall include both proactive measures, such as the placement of hay bales or coir netting, and passive measures, such as revegetating disturbed areas with plants propagated from seed collected in the immediate area.

    b. Storing, handling, and disposing of construction materials and wastes properly, so as to prevent their contact with stormwater.

    c. Controlling and preventing the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-stormwater discharges to storm drains and watercourses.

    d. Avoiding cleaning, fueling, or maintaining vehicles on-site, except in a designated area where wash water is contained and treated.

e. Delineating with field markers clearing limits, easements, setbacks, sensitive or critical areas, buffer zones, trees, and drainage courses.

f. Protecting adjacent properties and undisturbed areas from construction impacts using vegetative buffer strips, sediment barriers or filters, dikes, mulching, or other measures as appropriate.

g. Performing clearing and earth-moving activities only during dry weather.

h. Limiting and timing application of pesticides and fertilizers to prevent polluted runoff.

i. Limiting construction access routes and stabilizing designated access points.

j. Avoiding tracking dirt or other materials off-site; cleaning off-site paved areas and sidewalks using dry sweeping methods.

k. The contractor shall train and provide instruction to all employees and subcontractors regarding the construction best management practices.

18. Construction equipment shall comply with the County's Energy Efficiency Climate Action Plan (EECAP) for construction vehicle idling as applicable considering the sensitive nature of the project area. Specifically, Bay Area Air Quality Management District Best Management Practices for Mitigating Criteria Air Pollutants and Precursors:

a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be two times per day.

b. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day.

d. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.

e. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.

f. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be check by a certified visible emissions evaluator.

g. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action with 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

19. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m., weekdays and 9:00 a.m. to 5:00 p.m., Saturdays. Said activities are prohibited on Sundays, Thanksgiving, and Christmas (San Mateo Ordinance Code Section 4.88.360).

20. To minimize public exposure to radio frequency energy, access to the communication tower is restricted to communication industry professionals and approved contract personnel trained in radio-frequency safety.

Woodside Fire Protection District

21. Address must have 4-inch minimum numbers on a contrasting background and be clearly posted and visible from the public roadway.

22. Permanent placarding required as required by Fire Code.

23. No combustible materials allowed within 5 feet of cell site.

24. All signage must be approved by Woodside Fire Protection District.

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ONRAMP WIRELESS

ONRAMP WIRELESS INC.
10301 MEANLEY DRIVE
SAN DIEGO, CA 92131

PROJECT: FIRST TIME INSTALL

CUSTOMER SITE NAME/NUMBER:

SKEGGS POINT/US-SFO-0009

CROWN CASTLE SITE NAME/BU NUMBER:

SKEGGS POINT/871823

SITE LOCATION:
15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0" SELF-SUPPORT TOWER

NOTE:
"PER CONDITION OF APPROVAL NO. 2 OF THE INITIAL USE PERMIT (UP90-17), THE UPPER 60 FOOT PORTION OF THE TOWER NEEDS TO BE PAINTED A NON-GLARE MEDIUM INTENSITY GREY/BLUE COLOR THAT HAS A NON-REFLECTIVE EXTERIOR & MINIMIZES VISUAL IMPACT & BLENDS IN WITH ITS ENVIRONMENT."

CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING	IBC 2015
MECHANICAL	IMC 2015
ELECTRICAL	NEC 2014

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: BY OTHERS

MOUNT ANALYSIS: BY OTHERS

CONSTRUCTION OF TYPE: VB
OCCUPANCY TYPE: U (UTILITY)
A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO PROPOSE AN ANTENNA MODIFICATION ON AN EXISTING WIRELESS SITE.

- INSTALL COMMSCOPE S-300 STAND OFF MOUNT
- INSTALL (1) L-COM HG2409U-PRO OMNI ANTENNA
- INSTALL (1) 1-5/8" FEEDLINE
- INSTALL NEW ICE BRIDGE
- INSTALL INDOOR BASE STATION
- INSTALL GPS ON (E) SHELTER WALL
- INSTALL POWER TO BASE STATION CABINET

LOCATION MAP

APN #: 067-340-080 NO SCALE

NAD83
LATITUDE: 37° 24' 38.503" N
LONGITUDE: 122° 18' 24.298" W

PROJECT INFORMATION

APPLICATION ID:	358686
JDE JOB NUMBER:	382115
JURISDICTION:	SAN MATEO COUNTY
CONTACTS:	JULIE BERGER - PROJECT MANAGER (480) 735-6921
CUSTOMER CONTACT:	ERIC RITTERSHOFER - PROGRAM MANAGER (858) 449-5692 MIKE RUSSELL - CONSTRUCTION MANAGER (760) 445-4300
A&E PROJECT MANAGER:	CASEY KACZMAREK CASEY.KACZMAREK@CROWNCASTLE.COM (949) 930-7461
A&E FIRM:	B+T GROUP 1717 S. BOULDER AVENUE, SUITE 300 TULSA, OK 74119 CAROLINE BLOUNT cblount@btgrp.com (918) 587-4630
ELECTRIC PROVIDER:	UNKNOWN
TELCO PROVIDER:	UNKNOWN

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	ENLARGED SITE PLAN
C-1.3	EQUIPMENT PLAN
C-2	TOWER ELEVATION & ANTENNA LAYOUT
C-3	EQUIPMENT DETAILS
C-4	MOUNT DETAILS
E-1	UTILITY ROUTING PLAN
E-2	SINGLE-LINE DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS

CALL CALIFORNIA ONE CALL
(800) 227-2600
CALL 3 WORKING DAYS
BEFORE YOU DIG!

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0"
SELF-SUPPORT TOWER

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/6/16	SMM	CONSTRUCTION	CLM
1	11/7/16	SMM	CONSTRUCTION	CLM
2	2/2/17	SMM	CONSTRUCTION	CLM
3	2/20/17	MDW	CONSTRUCTION	CLM

CROWN CASTLE

REGISTERED PROFESSIONAL ENGINEER
JOHN W. KELLY
NO. 17187
EXPIRES 06/30/17
CIVIL
STATE OF CALIFORNIA
2/20/17

B&T ENGINEERING, INC.

SHEET NUMBER: T-1
REVISION: 3

Attachment B

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE TOWER SITE" AND LATEST VERSION OF TIA 1019 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
13. NOTICE TO PROCEED- NO WORK TO COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
3. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8"ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. SLAB FOUNDATION DESIGN ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALLS.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.

5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

MASONRY NOTES:

1. HOLLOW CONCRETE MASONRY UNITS SHALL MEET A.S.T.M. SPECIFICATION C90, GRADE N. TYPE 1. THE SPECIFIED DESIGN COMPRESSIVE STRENGTH OF CONCRETE MASONRY (F'm) SHALL BE 1500 PSI.
2. MORTAR SHALL MEET THE PROPERTY SPECIFICATION OF A.S.T.M. C270 TYP. "S" MORTAR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. GROUT SHALL MEET A.S.T.M. SPECIFICATION C475 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
4. CONCRETE MASONRY SHALL BE LAID IN RUNNING (COMMON) BOND.
5. WALL SHALL RECEIVE TEMPORARY BRACING. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL GROUT IS FULLY CURED.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR-	
SUBCONTRACTOR-	GENERAL CONTRACTOR (CONSTRUCTION)
CARRIER-	ONRAMP WIRELESS INC.
TOWER OWNER-	CROWN CASTLE
OEM-	ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR AND CROWN CASTLE.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
N.T.S.	NOT TO SCALE
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

- SOLID GROUND BUS BAR (#5/0)
- SOLID NEUTRAL BUS BAR (#5/0)
- SUPPLEMENTAL GROUND CONDUCTOR
- 2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- CHEMICAL GROUND ROD
- TEST WELL
- DISCONNECT SWITCH
- METER
- EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
- MECHANICAL CONNECTION
- GROUNDING WIRE

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC. HILTI EPOXY ANCHORS ARE REQUIRED BY CROWN CASTLE.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
21. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER).
22. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHIN ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL; SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
24. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
25. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
28. INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "ONRAMP WIRELESS INC.".
29. ALL CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 TINNED SOLID IN 3/4" LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

NEC INSULATOR COLOR CODE

DESCRIPTION	PHASE/CODE LETTER	WIRE COLOR
240/120 1Ø	LEG 1	BLACK
	LEG 2	RED
AC NEUTRAL	N	WHITE
GROUND (EGC)	G	GREEN
VDC POS	+	*RED-POLARITY MARK AT TERMINATION
VDC NEG	-	*BLACK-POLARITY MARK AT TERMINATION
240V OR 208V, 3Ø	PHASE A	BLACK
	PHASE B	RED(ORG. IF HI LEG)
	PHASE C	BLUE
480V, 3Ø	PHASE A	BROWN
	PHASE B	ORANGE
	PHASE C	YELLOW

* SEE NEC 210.5(C)(1) AND (2)

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0"
SELF-SUPPORT TOWER

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/6/16	SMM	CONSTRUCTION	CLM
1	11/7/16	SMM	CONSTRUCTION	CLM
2	2/2/17	SMM	CONSTRUCTION	CLM
3	2/20/17	MDW	CONSTRUCTION	CLM

CROWN CASTLE

REGISTERED PROFESSIONAL ENGINEER
JOHN W. KELLY
NO. 71187
EXPIRES 06/30/17
CIVIL
STATE OF CALIFORNIA
2/20/17

B&T ENGINEERING, INC.

SHEET NUMBER: GN-1
REVISION: 3

Attachment B

1 OVERALL SITE PLAN

SCALE: 60' 30' 0 60' 1" = 60'-0" (FULL SIZE) 1" = 120'-0" (11x17)

N

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0"
SELF-SUPPORT TOWER

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/6/16	SMM	CONSTRUCTION	CLM
1	11/7/16	SMM	CONSTRUCTION	CLM
2	2/2/17	SMM	CONSTRUCTION	CLM
3	2/20/17	MDW	CONSTRUCTION	CLM

CROWN CASTLE

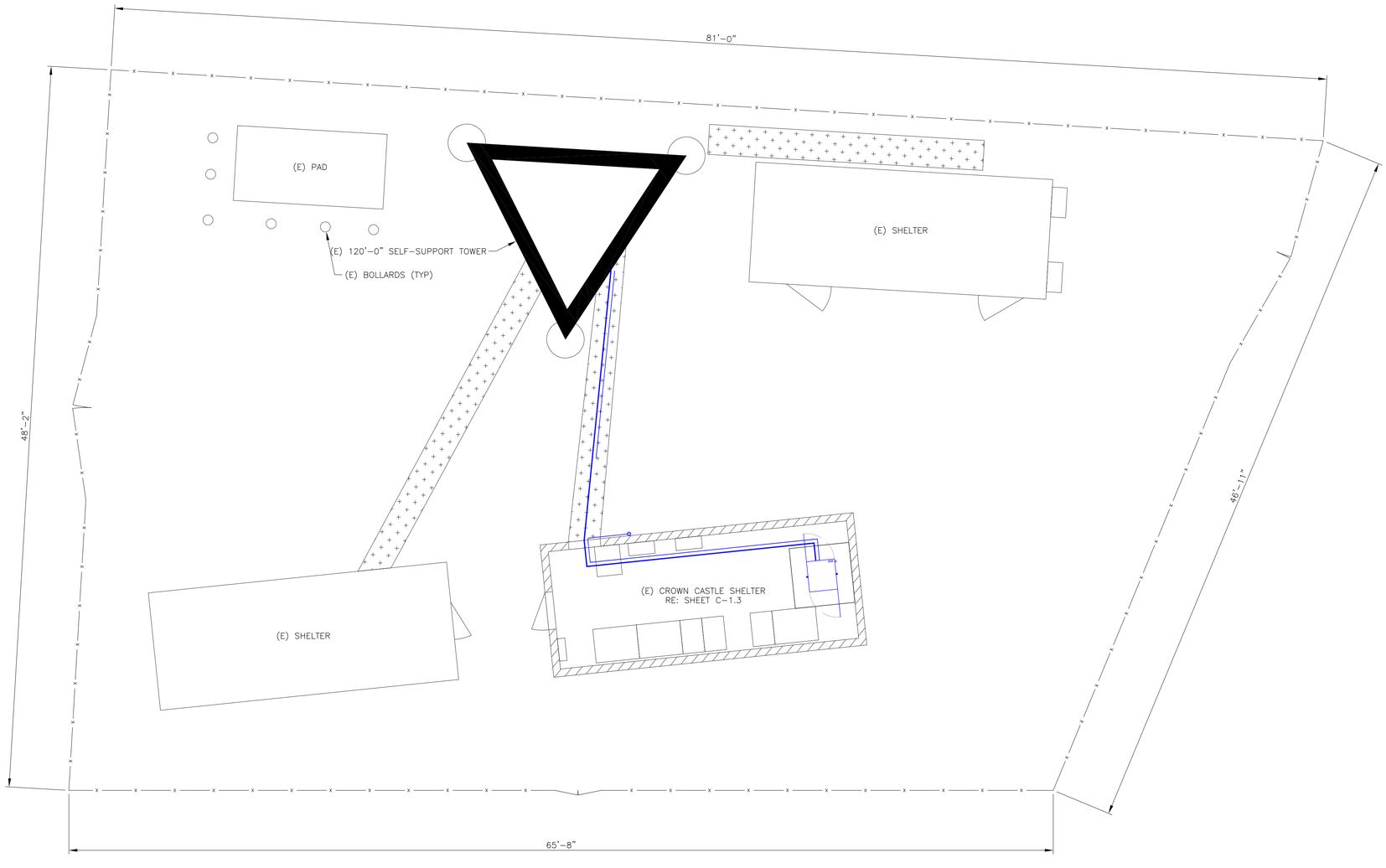
REGISTERED PROFESSIONAL ENGINEER
JOHN M. KELLY
NO. 71187
EXPIRES 06/30/17
CIVIL
STATE OF CALIFORNIA
2/20/17

B&T ENGINEERING, INC.

SHEET NUMBER: C-1.1

REVISION: 3

Attachment B



1 ENLARGED SITE PLAN

SCALE: 4' 3' 2' 1' 0 4' 1/4"=1'-0" (FULL SIZE) 1/8"=1'-0" (11x17)

N

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0"
SELF-SUPPORT TOWER

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/6/16	SMM	CONSTRUCTION	CLM
1	11/7/16	SMM	CONSTRUCTION	CLM
2	2/2/17	SMM	CONSTRUCTION	CLM
3	2/20/17	MDW	CONSTRUCTION	CLM

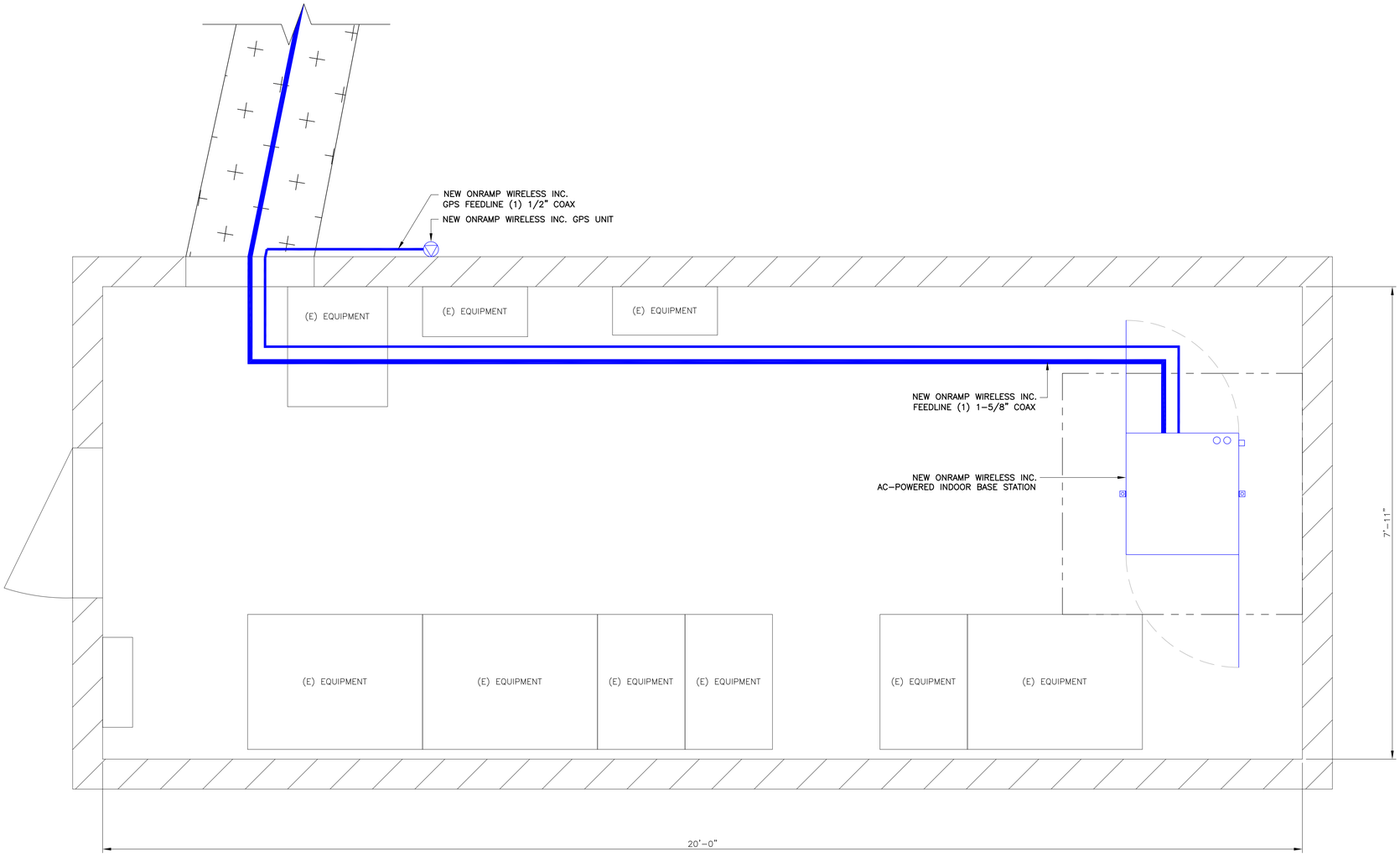
CROWN CASTLE

REGISTERED PROFESSIONAL ENGINEER
JOHN W. KELLY
NO. 71187
EXPIRES 06/30/17
CIVIL
STATE OF CALIFORNIA
2/20/17

B&T ENGINEERING, INC.

SHEET NUMBER: C-1.2 **REVISION:** 3

Attachment B



1 EQUIPMENT PLAN

SCALE: 1' 6" 0 1' 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

N

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0"
SELF-SUPPORT TOWER

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ISSUED FOR:

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1	11/7/16	SMM	CONSTRUCTION	CLM
2	2/2/17	SMM	CONSTRUCTION	CLM
3	2/20/17	MDW	CONSTRUCTION	CLM

CROWN CASTLE

REGISTERED PROFESSIONAL ENGINEER
JOHN W. KELLY
NO. 11187
EXPIRES 06/30/17
CIVIL
STATE OF CALIFORNIA
2/20/17

B&T ENGINEERING, INC.

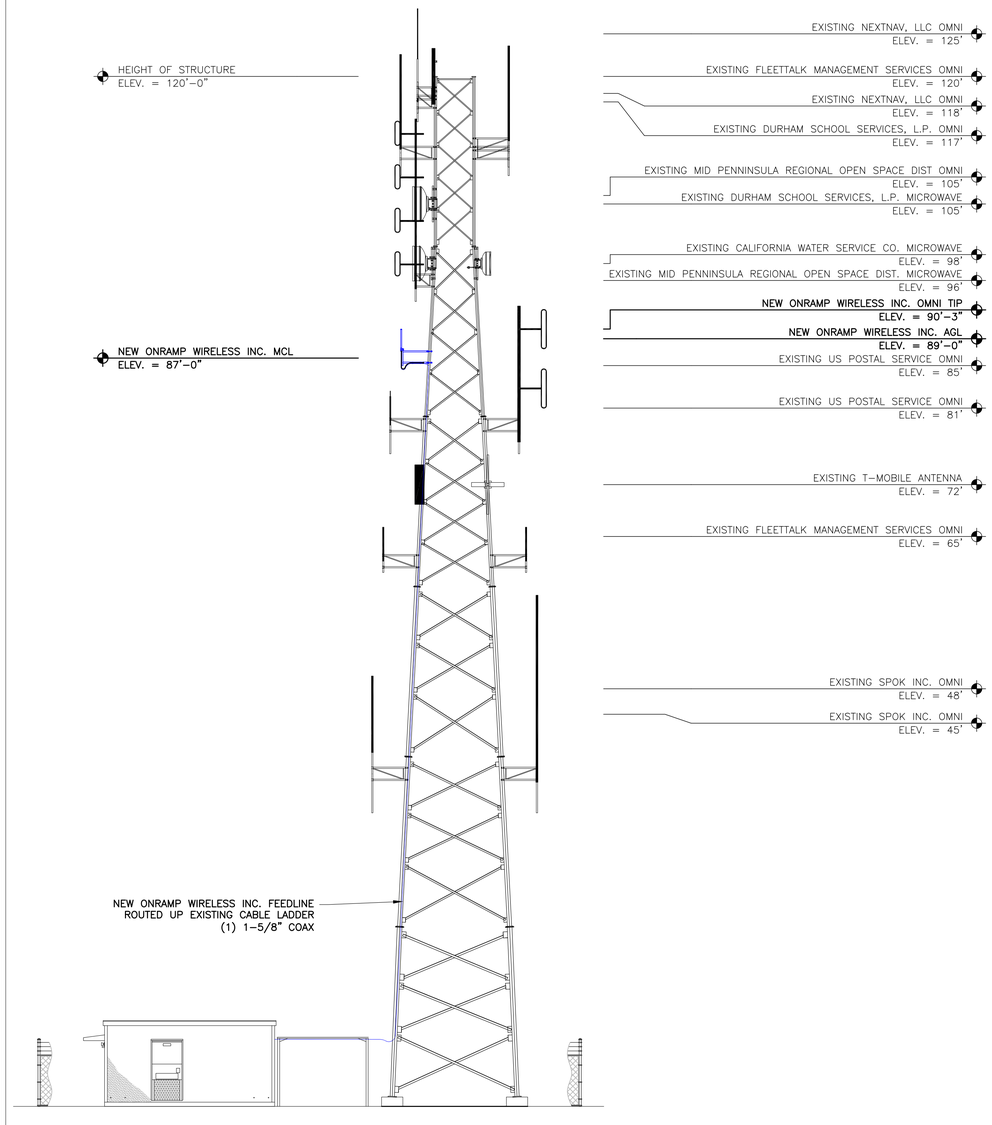
SHEET NUMBER: C-1.3

REVISION: 3

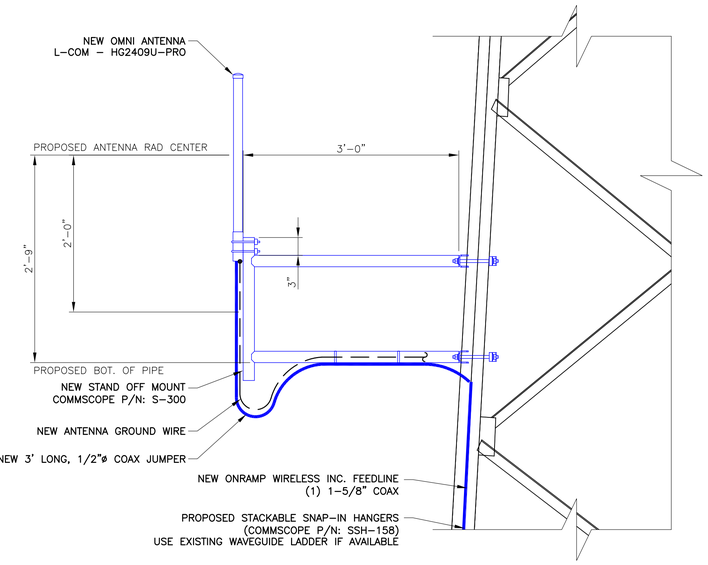
Attachment B

RF SCHEDULE							
ITEM	MANUFACTURER	PART NUMBER	SUPPLIER	QUANTITY	LENGTH	RAD CENTER	AZIMUTH
OMNI ANTENNA	L-COM	HG2409U-PRO	CUSTOMER	1	32"	89'-0"	40°
GPS	PCTEL	GPS-TMG-SP1-40-NCB	CUSTOMER	1	N/A	12'-0"	N/A
SURGE SUPPRESSOR	POLYPHASER	AL-LSXM-MA	CUSTOMER	1	N/A	N/A	N/A
COAX	COMMSCOPE	AVA7-50 (1) 1-5/8"	CONTRACTOR	1	110'-0"±	N/A	N/A
GPS COAX	COMMSCOPE	LDF4-50A 1/2"ø	CONTRACTOR	1	35'-0"±	N/A	N/A
COAX JUMPER (ANTENNA)	COMMSCOPE	LDF4-50A 1/2"ø	CONTRACTOR	1	3'-0"±	N/A	N/A
COAX JUMPER (SHELTER)	COMMSCOPE	LDF4-50A 1/2"ø	CONTRACTOR	1	12'-0"±	N/A	N/A

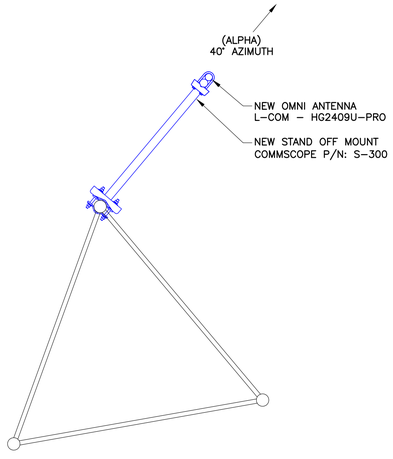
1. CONTRACTOR SHALL SUPPLY ALL CONNECTORS WHICH ARE TO BE COMMSCOPE, N TYPE.
2. MINIMIZE LENGTH OF JUMPERS.



1 FINAL TOWER ELEVATION
SCALE: NOT TO SCALE



2 NEW ANTENNA ELEVATION
SCALE: NOT TO SCALE



3 NEW ANTENNA LAYOUT
SCALE: NOT TO SCALE

N

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

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WOODSIDE, CA 94062

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SHEET NUMBER: C-2
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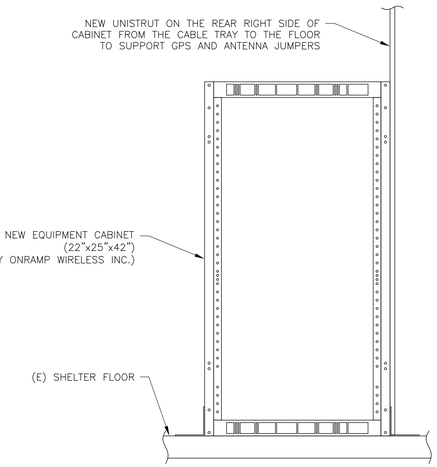
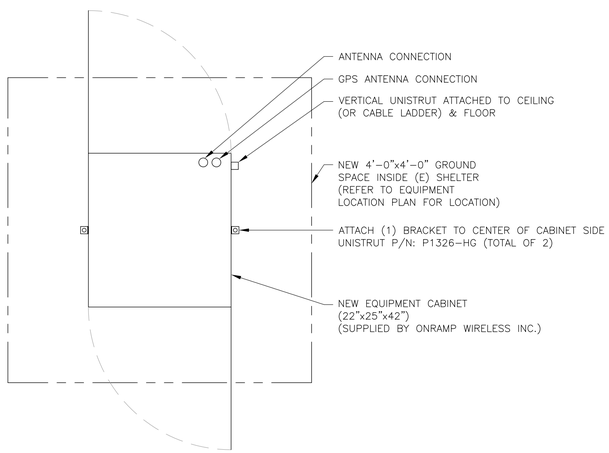
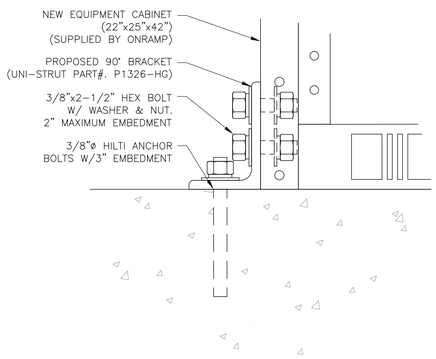
Attachment B



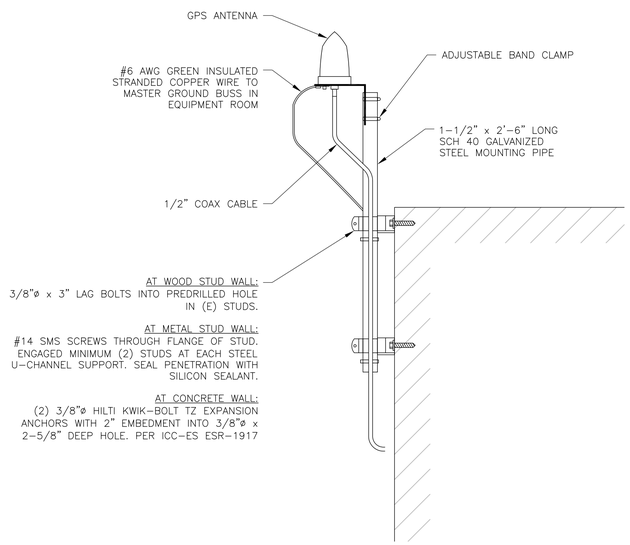
1 EQUIPMENT CABINET DETAIL
SCALE: NOT TO SCALE



2 CABINET MOUNT DETAIL
SCALE: NOT TO SCALE



3 GPS ANTENNA ATTACHMENT DETAIL
SCALE: NOT TO SCALE



ONRAMP WIRELESS

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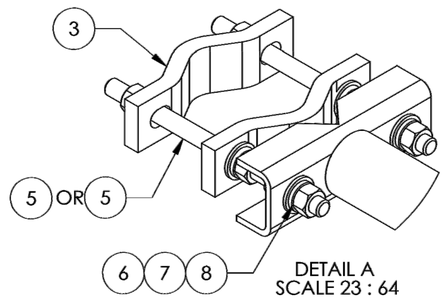
SHEET NUMBER: C-3
REVISION: 3

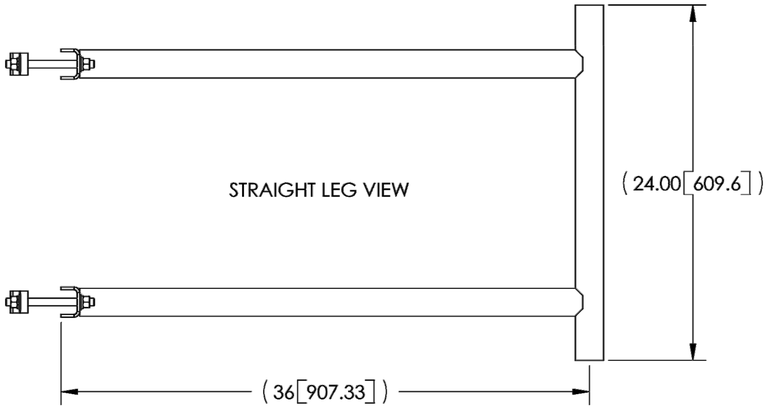
Attachment B

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	S300.01	36" STANDOFF WELDMENT	1	22.99 LBS
2	SH01	HARDWARE KIT (ITEMS 3-8)	1	
3	SCP10	SMALL DISH CLAMP HALF	4	1.20 LBS
4	MT-379-6	1/2" X 6" GALV THREADED ROD	4	0.33 LBS
5	MT-379-8	1/2" X 8" GALV THREADED ROD	2	0.44 LBS
6	GWF04A	1/2" GALV FLAT WASHER (A325)	14	0.02 LBS
7	GWL-04	1/2" GALV LOCK WASHER	14	0.01 LBS
8	GN04A	1/2" GALV HEX NUT (A325)	14	0.14 LBS

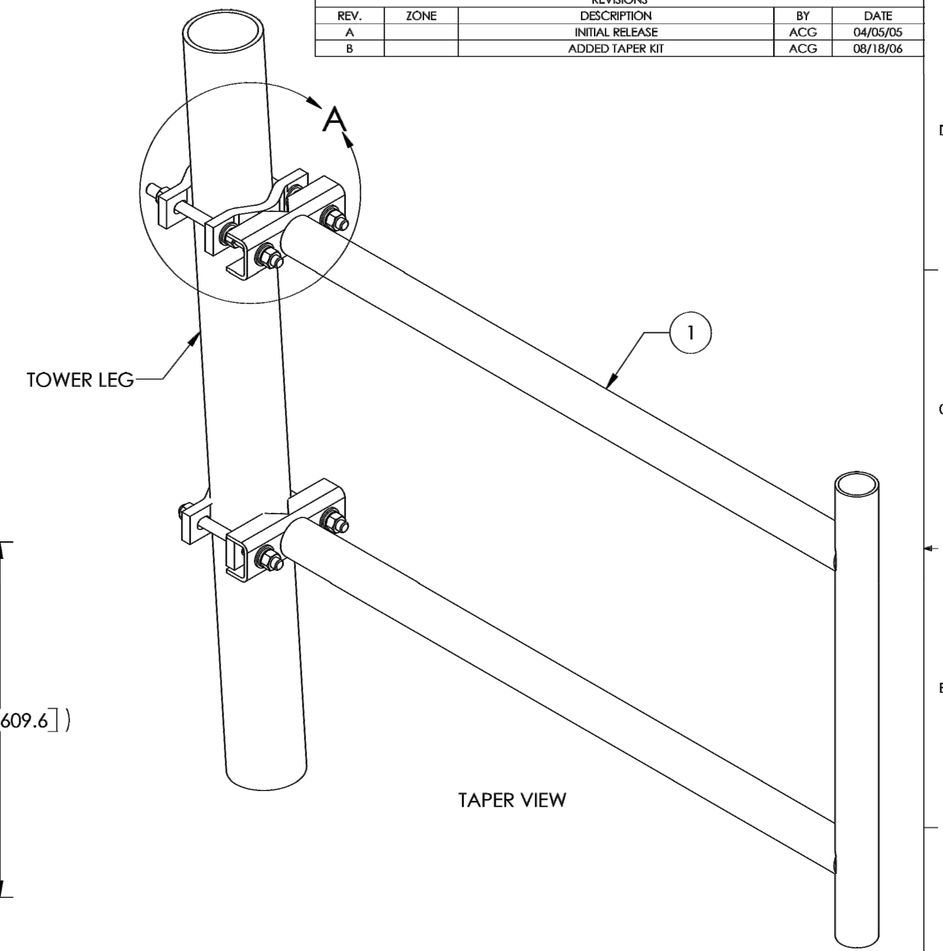
REVISIONS				
REV.	ZONE	DESCRIPTION	BY	DATE
A		INITIAL RELEASE	ACG	04/05/05
B		ADDED TAPER KIT	ACG	08/18/06



DETAIL A
SCALE 23 : 64



STRAIGHT LEG VIEW



TAPER VIEW

NOTES:
1. FITS ∅1½" O.D. TO ∅3½" O.D. ROUND TOWER LEGS.
2. ADDITIONAL CLAMP SETS THAT ADAPT TO LARGER ROUND LEGS, ANGLE LEGS, OR TAPERED MEMBERS MAY BE PURCHASED SEPARETELY.

ALL DIMENSIONS ARE IN INCHES U.O.S.
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.X = ± .06 ANGLES ±2°
.XX = ± .03 FRACTIONS ±1/32
.XXX= ± .010
REMOVE BURRS AND BREAK EDGES .005
DO NOT SCALE THIS PRINT

DESIGN BY: ACG	SHEET: 1 of 1	PART NUMBER: S-300	
CHECKED BY: TP	SCALE: NTS	DESCRIPTION: 36" STAND-OFF BRACKET	
DATE: 04/05/05	DRAWING: A36, A53	DRAWING TYPE: ASSEMBLY DRAWING	
REVISION: B	FINISH: GALV A123	ANDREW® ORLAND PARK, IL. 60462 U.S.A.	
	WEIGHT: 55.00 LBS		

1 COMMSCOPE S-300 STAND-OFF ARM
SCALE: N.T.S.

ONRAMP WIRELESS

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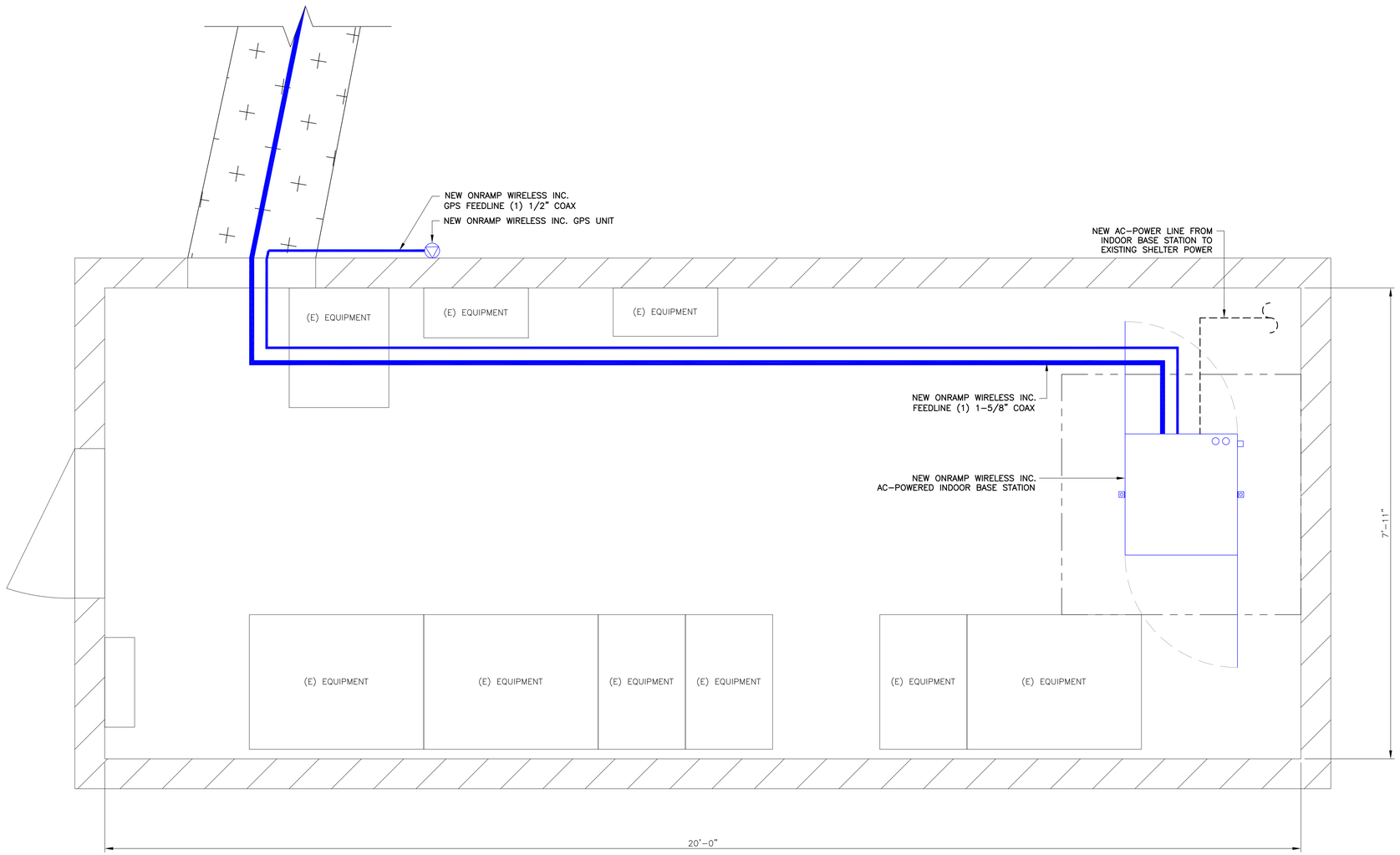
B&T ENGINEERING, INC.

SHEET NUMBER: C-4
REVISION: 3

Attachment B



1 UTILITY ROUTING PLAN

SCALE: 1' 6" 0 1' 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

N

ONRAMP WIRELESS

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B&T ENGINEERING, INC.

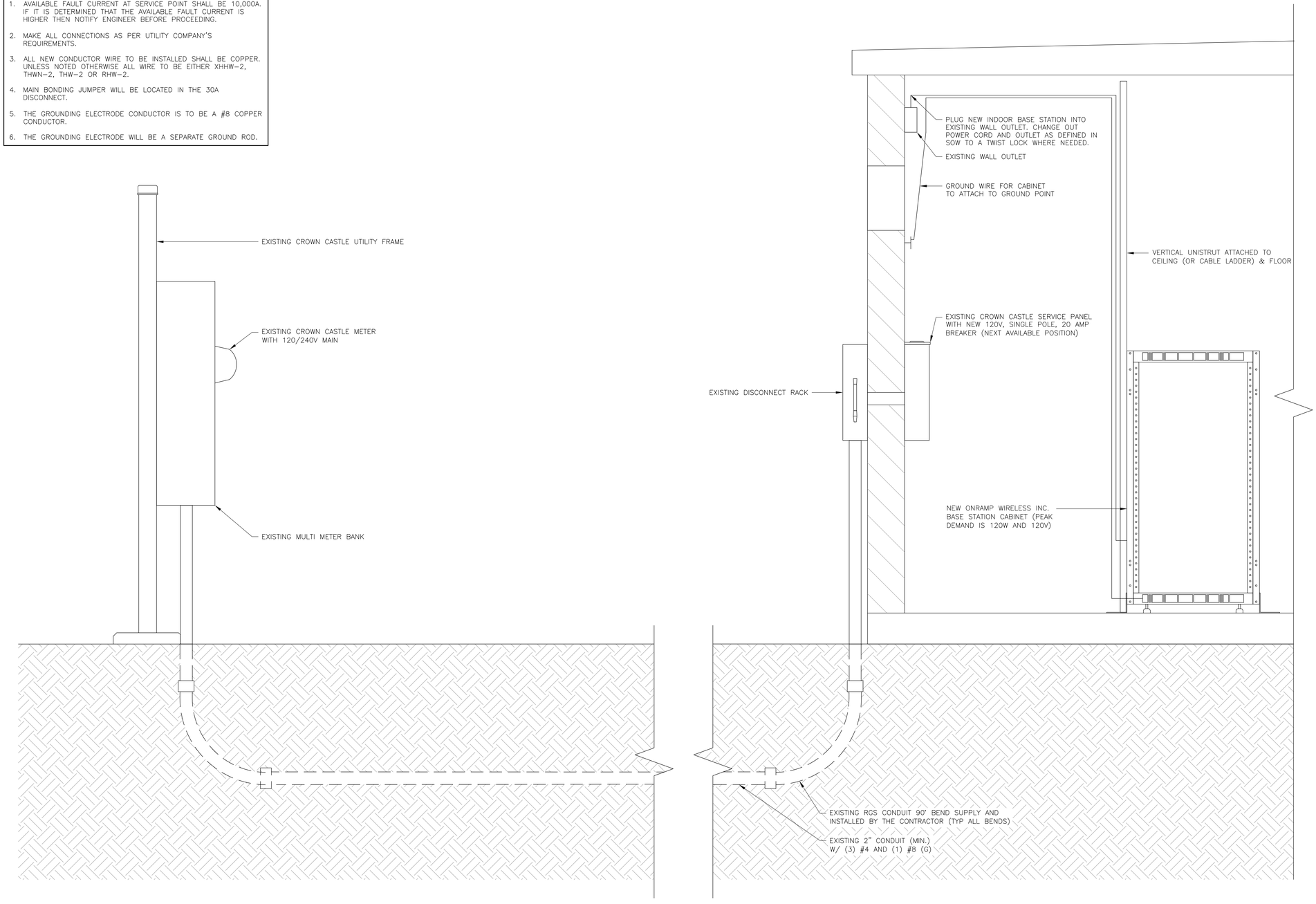
SHEET NUMBER: E-1

REVISION: 3

Attachment B

NOTE:

1. AVAILABLE FAULT CURRENT AT SERVICE POINT SHALL BE 10,000A. IF IT IS DETERMINED THAT THE AVAILABLE FAULT CURRENT IS HIGHER THEN NOTIFY ENGINEER BEFORE PROCEEDING.
2. MAKE ALL CONNECTIONS AS PER UTILITY COMPANY'S REQUIREMENTS.
3. ALL NEW CONDUCTOR WIRE TO BE INSTALLED SHALL BE COPPER. UNLESS NOTED OTHERWISE ALL WIRE TO BE EITHER XHHW-2, THWN-2, THW-2 OR RHW-2.
4. MAIN BONDING JUMPER WILL BE LOCATED IN THE 30A DISCONNECT.
5. THE GROUNDING ELECTRODE CONDUCTOR IS TO BE A #8 COPPER CONDUCTOR.
6. THE GROUNDING ELECTRODE WILL BE A SEPARATE GROUND ROD.



1 RISER DIAGRAM
SCALE: NOT TO SCALE

ONRAMP WIRELESS

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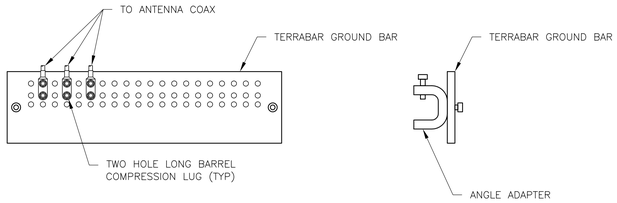
B&T ENGINEERING, INC.

SHEET NUMBER: E-2

REVISION: 3

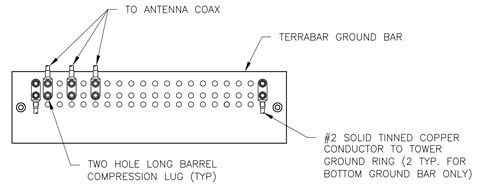
Attachment B



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.
4. GROUND BAR TO BE TIN PLATED.
5. IF NO EXISTING GROUND BAR, USE STAINLESS STEEL ANGLE ADAPTERS TO GROUND CABLE GROUND KITS.

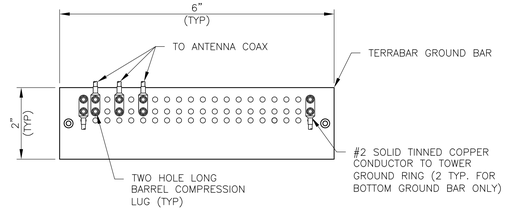
1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.
4. INSTALL GROUND BARS AT 75 FT. INTERVAL MAXIMUM.
5. GROUND BAR TO BE TIN PLATED.
6. IF NO EXISTING GROUND BAR, USE STAINLESS STEEL ANGLE ADAPTERS TO GROUND CABLE GROUND KITS.

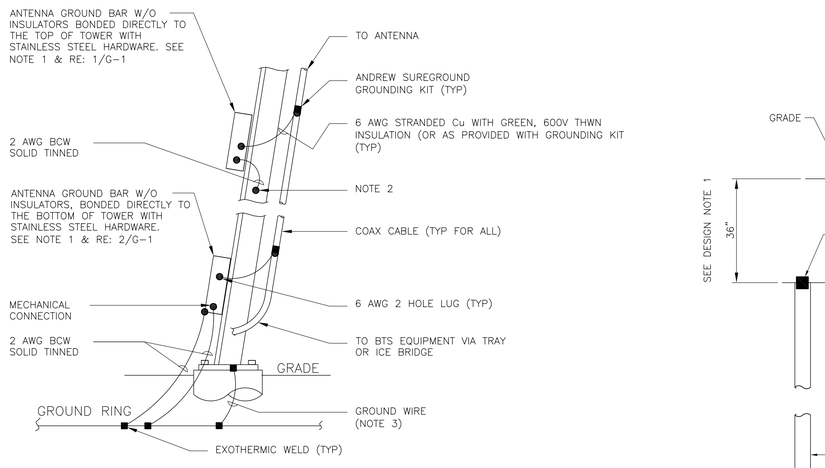
2 TOWER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR TO BE TIN PLATED

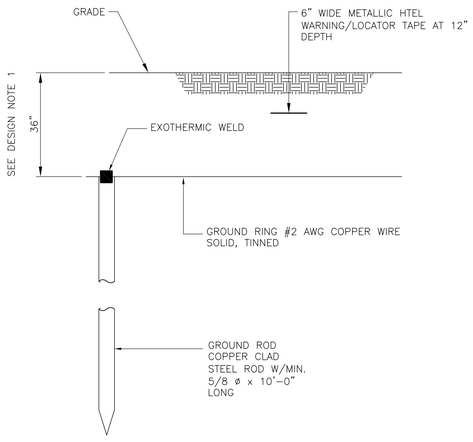
3 SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

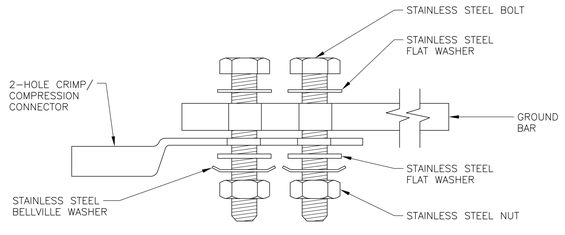
1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE 2/0 AWG. STRANDED IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM 8 FEET TO 10 FEET.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

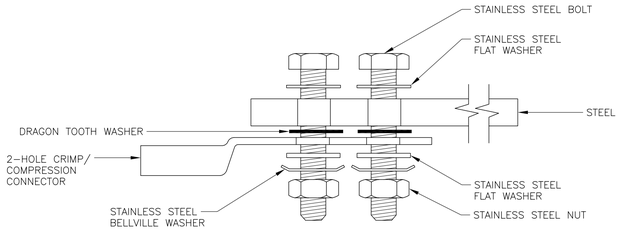


1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL

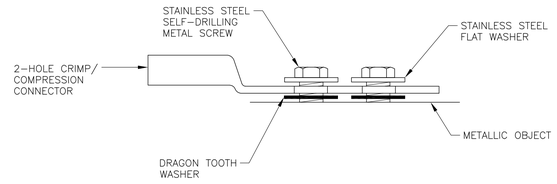
5 GROUND ROD DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS



SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

6 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

ONRAMP WIRELESS

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CROWN CASTLE

REGISTERED PROFESSIONAL ENGINEER
JOHN M. KELLY
NO. 71187
DATE NOV 17
CIVIL
STATE OF CALIFORNIA
2/20/17

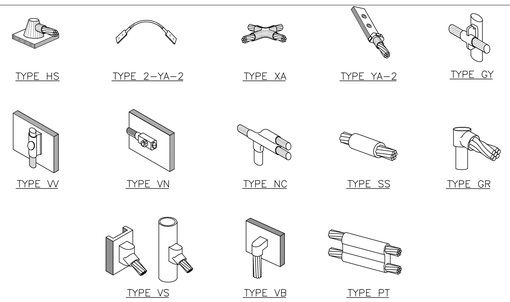
B&T ENGINEERING, INC.

SHEET NUMBER: G-1
REVISION: 3

Attachment B

NOTE:

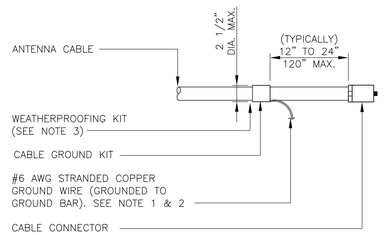
HOME RUN GROUND LEADS ARE NOT PERMITTED ON CROWN CASTLE SITES. ALL TOWER GROUNDS ARE TO BE MECHANICAL IN NATURE. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION CAD-WELDING ON THE TOWER ARD/OR IN THE AIR ARE NOT PERMITTED.



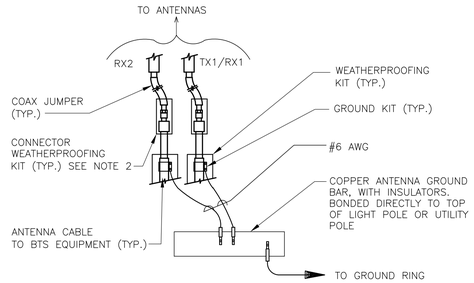
NOTE:

ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH PROJECT MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.



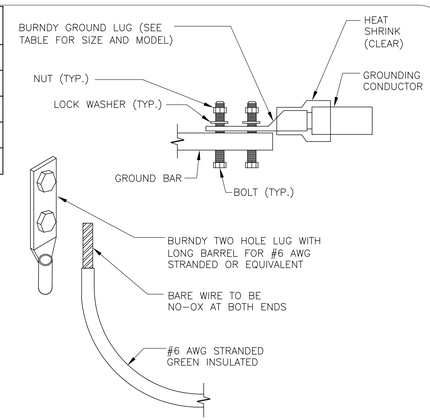
NOTES:
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.

WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT

NOTES:

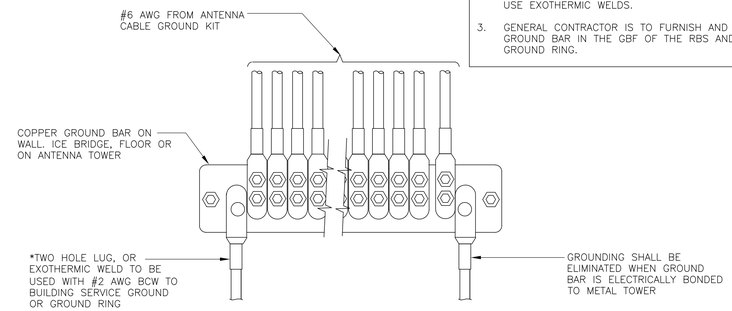
1. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.
2. COPPER SHIELD, ANTIOX, CR NO-OX OR EQUIVALENT SHALL BE PLACE WHERE ALL DISSIMILAR METALS CONNECT.
3. ALL LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.



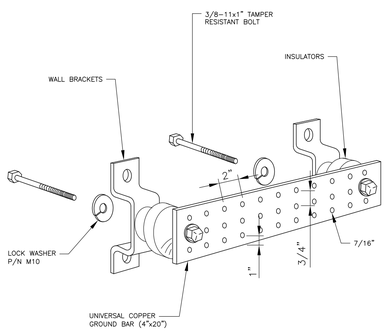
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE

NOTES:

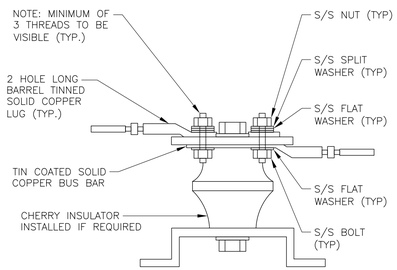
1. ANTENNA GROUNDING BARS NOT TO USE INSULATORS.
2. GROUND BARS AT BOTTOM OF TOWERS SHALL ONLY USE EXOTHERMIC WELDS.
3. GENERAL CONTRACTOR IS TO FURNISH AND INSTALL A 2x6-HOLE GROUND BAR IN THE GBF OF THE RBS AND TIE-IN TO EXISTING GROUND RING.



3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE

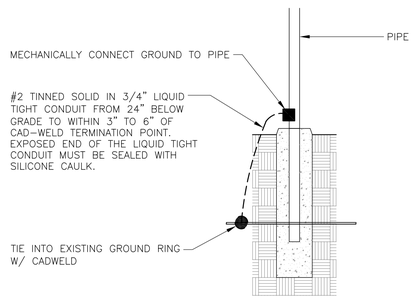


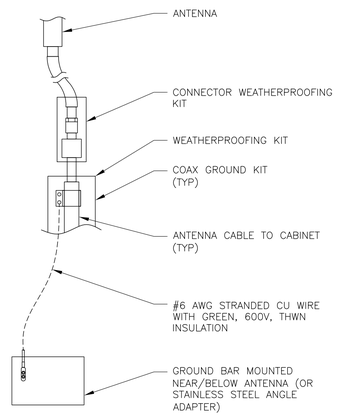
4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



NOTES:
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUS BARS PRIOR TO MATING AND BOLTING.

5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE





6 GROUND BAR DETAIL
SCALE: NOT TO SCALE

7 LUG DETAIL
SCALE: NOT TO SCALE

8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

9 TYPICAL GROUNDING RISER DIAGRAM
SCALE: NOT TO SCALE

ONRAMP WIRELESS

BU #: **871823**
SKEGGS POINT

15010 SKYLINE BLVD.
WOODSIDE, CA 94062

EXISTING 120'-0"
SELF-SUPPORT TOWER

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/6/16	SMM	CONSTRUCTION	CLM
1	11/7/16	SMM	CONSTRUCTION	CLM
2	2/2/17	SMM	CONSTRUCTION	CLM
3	2/20/17	MDW	CONSTRUCTION	CLM

CROWN CASTLE

REGISTERED PROFESSIONAL ENGINEER
JOHN W. KELLY
NO. 71187
EXPIRES 06/30/17
CIVIL
STATE OF CALIFORNIA
2/20/17

B&T ENGINEERING, INC.

SHEET NUMBER: G-2

REVISION: 3

Attachment B

SITESAFE
RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of On-Ramp Wireless

Crown Castle BUN: 871823
Application ID: 358686
Site Name: Skeggs Point
Address: 15010 Skyline Blvd
Woodside, CA 94062
10/14/2016

Report Status:

On-Ramp Wireless Is Compliant.

Klaus Bender
Registered Professional Engineer (Electrical)
State of California, 18131, Expires 2017-June-30
Date Signed: 2017-February-03

Prepared By:

Sitesafe, Inc.

200 North Glebe Road, Suite 1000 Arlington, VA 22203 Voice 703-276-1100 Fax 703-276-1169

Attachment C

Engineering Statement in Re:
Electromagnetic Energy Analysis
On-Ramp Wireless
Woodside, CA 94062

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, Inc. in Arlington, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle (See attached Site Summary and Carrier documents), and that On-Ramp Wireless's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "Skeggs Point" ("the site"); and

That On-Ramp Wireless proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by On-Ramp Wireless and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure and, the antennas used are highly directional oriented at angles at or just below the horizontal and, that the energy present at ground level is typically so low as to be considered insignificant and have not been included in this analysis; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

Attachment C

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of On-Ramp Wireless's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed On-Ramp Wireless operation is no more than 0.001% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 3.89% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that On-Ramp Wireless's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

Crown Castle BUN: 871823
Skeggs Point
Site Summary

Carrier	Area Maximum Percentage MPE
Commlabs Inc	0.032 %
Double D Transportation	0.022 %
Durham School Services	0.009 %
Durham Transportation	0.017 %
FleetTalk Mgmt Services	0.885 %
Mid Peninsula Open Space Dist	0.374 %
On-Ramp Wireless (Proposed)	0.001 %
T-Mobile	0.943 %
US Postal Service	0.001 %
US Postal Service	0.25 %
USA Mobility	1.356 %
Composite Site MPE:	3.89 %

Attachment C

Commlabs Inc
Skeggs Point
Carrier Summary

Frequency:	915	MHz
Maximum Permissible Exposure (MPE):	610	µW/cm^2
Maximum power density at ground level:	0.19219	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.03151	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Laird Tech	OD0-11	126	70	183	0.192193	0.031507	0.192193	0.031507

Attachment C

Double D Transportation
Skeggs Point
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	µW/cm^2
Maximum power density at ground level:	0.12911	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.02247	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Antel	BCD-85010	104	0	100	0.129113	0.022468	0.129114	0.022468

Attachment C

Durham School Services
Skeggs Point
Carrier Summary

Frequency:	859	MHz
Maximum Permissible Exposure (MPE):	572.67	µW/cm^2
Maximum power density at ground level:	0.05154	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.009	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (µW/cm^2)	Percent of MPE	Max Power Density (µW/cm^2)	Percent of MPE
Antel	BCD-85010	118	0	100	0.050486	0.008816	0.051538	0.009

Attachment C

SITESAFE RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

Durham Transportation
Skeggs Point
Carrier Summary

Frequency:	860	MHz
Maximum Permissible Exposure (MPE):	573.33	µW/cm^2
Maximum power density at ground level:	0.09475	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.01653	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (µW/cm^2)	Percent of MPE	Max Power Density (µW/cm^2)	Percent of MPE
Antel	BCD-85010	112	0	80	0.094748	0.016526	0.094748	0.016526

Attachment C

FleetTalk Mgmt Services
Skeggs Point
Carrier Summary

Frequency:	150	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	1.77054	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.88527	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	OGB4-900D	123	230	100	0.390972	0.195486	0.390972	0.195486
Kathrein-Scala	OGB4-900D	65	330	100	1.54572	0.77286	1.54572	0.77286

Attachment C

Mid Peninsula Open Space Dist
Skeggs Point
Carrier Summary

Frequency:	151	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.74877	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.37438	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (µW/cm^2)	Percent of MPE	Max Power Density (µW/cm^2)	Percent of MPE
TELEWAVE	ANT150D	105	240	200	0.205318	0.102659	0.48005	0.240025
TELEWAVE	ANT150D	108	150	125	0.122266	0.061133	0.282565	0.141282

Attachment C

On-Ramp Wireless (Proposed)
Skeggs Point
Carrier Summary

Frequency:	2400	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	0.00555	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.00056	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
LCOM	HG2409UPRO	87	0	4	0.005551	0.000555	0.005551	0.000555

Attachment C

SITESAFE RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

T-Mobile
Skeggs Point
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	9.4287	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.94287	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density (µW/cm^2)	Percent of MPE	Max Power Density (µW/cm^2)	Percent of MPE
RFS	APX16DWV-16DWVS-C-A20	72	340	2536	4.81988	0.481988	6.042509	0.604251
RFS	APX16DWV-16DWVS-C-A20	72	70	2536	4.81988	0.481988	6.042509	0.604251
RFS	APX16DWV-16DWVS-C-A20	72	140	2536	4.81988	0.481988	6.042509	0.604251

Attachment C

US Postal Service
Skeggs Point
Carrier Summary

Frequency:	2400	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	0.00756	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.00076	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
LCOM	HG2412U	81	80	4	0.003885	0.000389	0.007556	0.000756

Attachment C

US Postal Service
Skeggs Point
Carrier Summary

Frequency:	450	MHz
Maximum Permissible Exposure (MPE):	300	µW/cm^2
Maximum power density at ground level:	0.75116	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.25039	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Sinclair	SD210D-SF2P4SNM	88	0	100	0.591907	0.197302	0.751163	0.250388

Attachment C

SITESAFE RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

USA Mobility
Skeggs Point
Carrier Summary

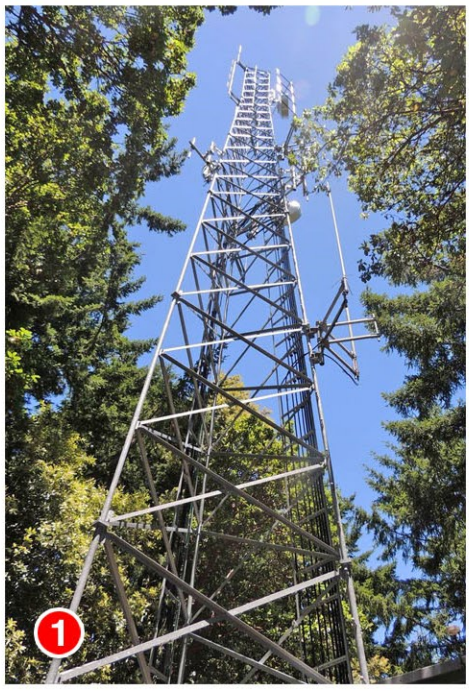
Frequency:	931	MHz
Maximum Permissible Exposure (MPE):	620.67	µW/cm^2
Maximum power density at ground level:	8.41488	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	1.35578	%

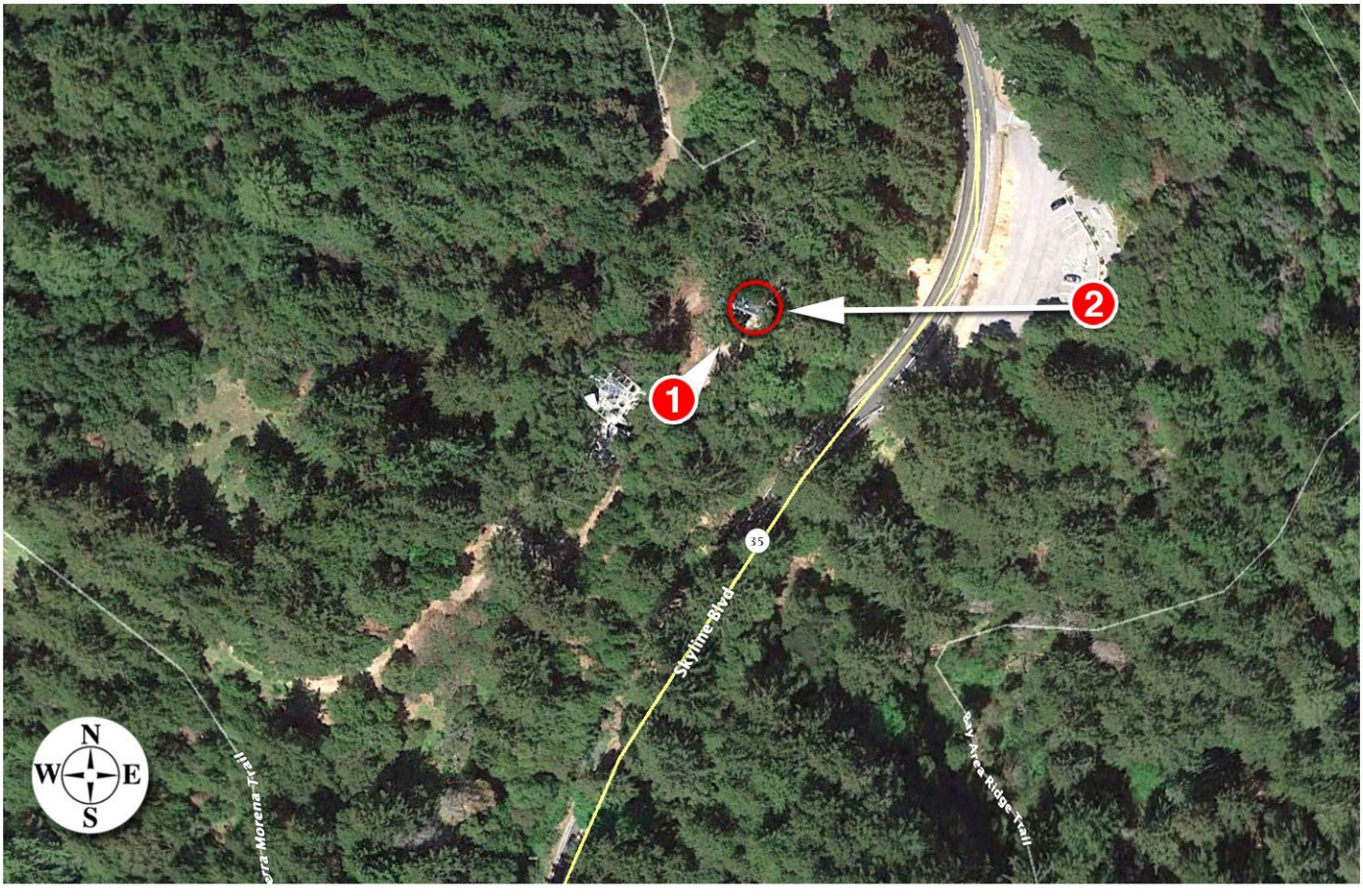
					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	DB806Y	45	70	312	8.414882	1.355781	8.414882	1.355781

Attachment C

SITESAFE RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

Attachment D





CROWN CASTLE

11/02/16

Skeggs Point **Site # 871823** **Aerial Map**

~~15500 Skyline Blvd.~~
Woodside, CA

15010 SKYLINE BLVD, WOODSIDE, CA 94062 Applied Imagination 510 914-0500

CROWN CASTLE

11/02/16

Skeggs Point **Site # 871823**

~~15500 Skyline Blvd.~~
~~Woodside, CA~~

15010 SKYLINE BLVD, WOODSIDE, CA 94062

Looking Northeast from Site

View #1

Applied Imagination 510 914-0500

CROWN CASTLE

11/02/16

Skeggs Point **Site # 871823**

~~15500 Skyline Blvd.~~
~~Woodside, CA~~

15010 SKYLINE BLVD, WOODSIDE, CA 94062

Looking West from Skyline Blvd.

View #2

Applied Imagination 510 914-0500

CROWN CASTLE

Crown Castle
4301 Hacienda Drive, Ste. 410
Pleasanton, CA 94588

Daniel Pierce
Real Estate Specialist
Tel (925) 737-1097

February 1, 2017

RE: **Site ID:** 871823
Cell tower equipment upgrade
Planning application package – Ingenu Inc.

Address: 15010 SKYLINE BLVD, WOODSIDE, CA 94062

Ingenu Inc. proposes to install (1) omni antenna & (1) indoor base station.

10 Year Build Out Plan

Ingenu is looking to co-locate to a tower where co-location is obviously encouraged as Ingenu will become the 9th different customer on this existing facility.

Tower location - 15010 SKYLINE BLVD, Woodside, CA 94062.

Max tower height – 120 ft.

Sincerely,

Daniel Pierce
Real Estate Specialist, West Area
T: 925.737.1097 |

CROWN CASTLE
4301 Hacienda Drive, Suite 410, Pleasanton, CA 94588

Attachment E