

June 28, 2019

Steve E. Casey, VP, Construction & Engineering
New Cingular Wireless PCS, LLC
AT&T Legal Department – Network Operations – Small Cells (CA)
208 S. Akard Street
Dallas, TX 75202

Reference: Master Use and Occupancy Agreement between the City of San Diego and
New Cingular Wireless PCS, LLC, for Various Small Cell Sites

Dear Steve:

An original of the above-referenced Agreement for various Small Cell sites referred to in
Exhibit A of the Agreement, is enclosed for your records. The Agreement is effective as
of July 1, 2019.

If you have any questions, please contact me at (619) 235-5233.

Very truly yours,



Tracy A. Solis
Associate Property Agent

Enclosures



CITY OF SAN DIEGO
MASTER USE AND OCCUPANCY AGREEMENT

between

THE CITY OF SAN DIEGO

and

NEW CINGULAR WIRELESS PCS, LLC,
a Delaware limited liability company

for

Small Cell Installations on Various Poles

**CITY OF SAN DIEGO
MASTER SMALL CELL USE AND OCCUPANCY AGREEMENT**

This CITY OF SAN DIEGO MASTER USE AND OCCUPANCY AGREEMENT ("Master Agreement") is entered into by and between THE CITY OF SAN DIEGO, a California municipal corporation ("CITY") and NEW CINGULAR WIRELESS PCS, LLC, a Delaware limited liability company ("PERMITTEE") hereinafter collectively referred to as the "Parties," to be effective on the first day of the first month following the date of execution by CITY ("Effective Date"), once the Master Agreement is signed by the San Diego City Attorney.

RECITALS

- A. CITY is the record owner of certain public rights-of-way within the City of San Diego.
- B. PERMITTEE desires to erect, maintain and operate small wireless facilities within the CITY's public rights-of-way further defined below as "Communications Equipment."
- C. PERMITTEE is a commercial mobile radio service provider offering intrastate wireless telecommunications services within California that is registered with the California Public Utilities Commission ("PUC"), with a Wireless Identity Number (WIN) U-3060-C, and pursuant to that registration, PERMITTEE is authorized to do business and provide telecommunications services that the Communications Equipment enables under the California Public Utilities Code.
- D. CITY is willing to enter into this Master Agreement with PERMITTEE governing the right to use portions of CITY's public rights-of way, specifically CITY Street Light Poles and Signalized Poles (defined below), for the construction, operation and maintenance of the Communications Equipment (defined below) in order for PERMITTEE to provide better service to its customers.
- E. CITY and PERMITTEE previously entered into that certain Master Use and Occupancy Permit as of July 1, 2018 ("2018 Master Permit") pursuant to which CITY granted approval to PERMITTEE to install Communications Equipment on one hundred forty-four (144) City Street Light Poles (each a "2018 Master Permit Approved Site"); and
- F. CITY and PERMITTEE desire to terminate the 2018 Master Permit as of June 30, 2019, for all Approved Sites under that agreement, and to then include all of the 2018 Master Permit Approved Sites under this Master Agreement as of July 1, 2019, through the process set forth in Section 7 of this Master Agreement at which time this Master Agreement will supersede and replace in its entirety the 2018 Master Permit as to those Approved Sites, and the terms and conditions of this Master Agreement and the Use and Occupancy Permit will apply;
- G. Notwithstanding anything to the contrary contained in this Master Agreement, no provision contained herein shall be construed to mean that PERMITTEE is paying a use fee for any ground space portion of the public right-of-way.

- H. CITY and PERMITTEE share an interest in the accelerated deployment of an advanced wireless communications network to serve residents, visitors and businesses in San Diego and are entering into this Master Agreement to further such interest
- I. The Parties wish to enter into this Master Agreement to accelerate the deployment of such infrastructure and technology to allow PERMITTEE to serve San Diego's residents, businesses and visitors.

FOR VALUABLE CONSIDERATION, the sufficiency of which is hereby acknowledged, the Parties hereby agree to be bound as follows:

1. DEFINITIONS.

As used in this Master Agreement, the terms listed below are defined as follows:

- 1.1. "Approved Site" – a Site (defined below) for which all approvals required for construction or installation to commence have been obtained.
- 1.2. "Communications Equipment" – may consist of, but are not limited to, PERMITTEE's antennas, radios, mounting brackets, aerially mounted equipment enclosures, AC disconnects, switches, conduits, grounding plates, grounding wires, grounding pipes, coils, NEMA boxes, power sources, fiber optic cables, conduits, and shrouds installed by PERMITTEE, and more particularly described and depicted in the Master Structural Plan ("MSP") attached as Exhibit A.
- 1.3. "Emergency" – imminent or current network outage or danger to the public health, safety or welfare or property.
- 1.4. "Hazardous Substances" – those hazardous substances listed by the Environmental Protection Agency ("EPA") in regularly released reports and any other substances incorporated into the State of California's list of hazardous substances, and all types of petroleum-related substances and their chemical constituents.
- 1.5. "Permit Areas" – Up to a maximum of 1,500 Approved Sites (defined below), more particularly described and depicted in Exhibit A as updated from time to time.
- 1.6. "PERMITTEE's Operations" – PERMITTEE's development, occupancy, use, and/or maintenance of the Permit Areas.
- 1.7. "Signalized Pole" - any pole equipped with either vehicle signal indications, pedestrian signal indications, pedestrian pushbuttons, emergency vehicle preemption equipment, or any other components that comprise any part of a traffic signal/traffic control device that serves to control and direct traffic, including pedestrian traffic, by display of steady or flashing lighted indications.
- 1.8. "Site" – a Street Light Pole (defined below) or Signalized Pole, where the Communications Equipment may be installed pursuant to this Master Agreement and subsequent Use and Occupancy Permits ("UOPs") (defined below).

- 1.9. "Street Light Pole" – any Caltrans Type 15 pole (rounded, metal street light pole that has a luminaire arm and luminaire for the purpose of providing roadway lighting), the ownership of which shall be retained by the CITY.
- 1.10. "Use and Occupancy Permit" – an additional agreement entered into for one or more Approved Sites, in substantially the form attached hereto as Exhibit B, to install Communications Equipment on one or more Approved Sites which is approved by the CITY in accordance with Section 7.

2. USE OF PERMIT AREAS.

PERMITTEE shall use the Permit Areas solely for the purposes, with proper permits and approvals obtained, of installing, constructing, operating, modifying, upgrading, maintaining, repairing, and removing, all at PERMITTEE's sole cost and expense, the Communications Equipment ("Permit Use") only as provided in this Master Agreement.

- 2.1. Primary Purpose of Sites. Any Street Light Pole is for the primary purpose of providing lighting and in some instances traffic control, and any Signalized Pole is for the primary purpose of controlling and directing traffic, including pedestrian traffic, but any Site may have the secondary purpose of accommodating PERMITTEE's Operations at the Permit Area during the UOP Term.
- 2.2. Other Uses. PERMITTEE shall not operate the Communications Equipment or use the Permit Areas for other related or incidental activities of any kind without CITY's prior written consent, which consent shall be in CITY's sole discretion consistent with applicable law. Communications Equipment shall not interfere with the operation of the Street Light, or cause a safety-related visual impairment, distraction, or confusion to motorists.
- 2.3. No Nuisance. PERMITTEE shall not use the Permit Area in any manner which creates a nuisance, as defined in California Civil Code Section 3479.
- 2.4. No Limitation. Nothing contained in this Master Agreement shall be construed as a limitation, restriction or prohibition against CITY entering into agreements with other parties regarding the use of the Permit Areas, Sites or other facilities or the CITY issuing permits for the use of its rights-of-way.

3. RIGHT TO ENTER AND OCCUPY.

- 3.1. Grant. Subject to the terms and conditions of this Master Agreement, and the UOPs subsequently entered into by the Parties, CITY will grant permission to PERMITTEE, its officers, employees, agents, and contractors to enter upon and occupy the Permit Areas solely for the purpose of the Permit Use seven (7) days a week, twenty-four (24) hours a day.

- 3.2. License Only. This Master Agreement is a license to use CITY-owned property. It is not a lease; however, this Master Agreement and each UOP are binding contracts between the Parties.

4. TERM.

- 4.1. Term of Master Agreement. The term of this Master Agreement ("Term") shall be ten (10) years, commencing on the Effective Date. The Parties may enter into a Use and Occupancy Permit ("UOP") only during the first four (4) years of the Term of this Master Agreement.
- 4.2. Term of Subsequent Use and Occupancy Permits. The term of each Use and Occupancy Permit ("UOP Term") will be ten (10) years, commencing on the effective date of the particular UOP ("UOP Effective Date"). PERMITTEE shall provide the date on which it desires a particular UOP to be effective at the time of requesting the UOP, and CITY will include that effective date in the UOP, provided that such date is prior to PERMITTEE commencing any construction on the Approved Site(s). "Permit Year" shall mean each twelve (12) month period during the UOP Term, starting on the UOP Effective Date and terminating on the same day minus one day the following year, for example if the UOP's Effective Date was February 15, 2019, the first Permit Year would end on February 14, 2020. In no event will any UOP Term exceed ten (10) years. The terms and conditions of the Master Agreement shall be incorporated by reference in to each UOP.
- 4.3. Holdover. Any holding over by PERMITTEE after expiration or termination shall not be considered as a renewal or extension of this Master Agreement. The occupancy of the Site after expiration or termination shall continue, and all other terms and conditions of this Master Agreement shall continue in full force and effect; provided, however, CITY shall have the right to apply a reasonable increase in the Annual Fee as permitted by applicable law at that time, and to terminate the holdover at will. Calculation of all prorated rents under this section shall be based on a 30-day month. Notice of any such increase in Annual Fee shall be given in writing at least thirty (30) days prior to becoming effective.

5. ANNUAL FEE.

- 5.1 PERMITTEE shall pay to CITY an annual fee in the amount of two hundred and seventy dollars (\$270.00) per Approved Site ("Annual Fee"). However, if CITY's 2019 cost study determines that the CITY'S reasonable costs that are reasonably related to these deployments are less than two hundred and seventy dollars (\$270.00) CITY shall notify PERMITTEE in writing within thirty (30) days of the conclusion of the 2019 cost study, and going forward the Annual Fee shall be reduced to the amount of the CITY's reasonable costs as determined by the 2019 cost study.

- 5.2. Time and Place of Payment. The total Annual Fee for each UOP is due in advance on or before the first day of each UOP Permit Year during the UOP Term, except for the first UOP Permit Year which shall be paid within thirty (30) days of the UOP Effective Date (referred to hereinafter as the "Annual Payment"). The Annual Payment check shall be made payable to "City Treasurer" and delivered to the Office of the City Treasurer, Civic Center Plaza Building, 1200 Third Avenue, First Floor, San Diego, California 92101, or mailed with an invoice to:

The City of San Diego
Office of the City Treasurer
P.O. Box 129030
San Diego, California 92112-9030

PERMITTEE shall include CITY's customer account number for PERMITTEE on each of the checks used for the Annual Payment so CITY can apply the Annual Payment to the appropriate account. The place of payment may be changed at any time by CITY upon thirty (30) calendar days' written notice to PERMITTEE. Mailed Annual Payments shall be deemed paid upon the date the payments are postmarked by the postal authorities. If a postmark is illegible, the payment shall be deemed paid upon actual receipt by the City Treasurer. PERMITTEE assumes all risk of loss and responsibility for late payment charges if payments are made by mail.

- 5.3. Delinquent Payments. If PERMITTEE fails to pay the Annual Payment when due, PERMITTEE shall pay, in addition to the unpaid Annual Payment, five percent (5%) of the delinquent Annual Payment. If any portion of the Annual Payment is still unpaid fifteen (15) calendar days after the first day of the Permit Year, PERMITTEE shall pay an additional five percent (5%), for a total of ten percent (10%) of the delinquent Annual Payment, which is agreed by the Parties to be appropriate to compensate CITY for loss resulting from fee delinquency, including lost interest, opportunities, legal costs, and the cost of servicing the delinquent account. In no event shall the charge for late payments of the Annual Fee be less than twenty-five dollars (\$25). Acceptance of late charges and any portion of the late payment by CITY shall neither constitute a waiver of PERMITTEE's default with respect to late payment nor prevent CITY from exercising any other rights and remedies available at law or in equity.
- 5.4. Yearly Accounting for UOPs. PERMITTEE shall make one payment for the total Annual Fee owed under each Use and Occupancy Permit entered into under this Master Agreement. PERMITTEE shall provide an annual accounting with that payment to CITY separately identifying the UOP included in the payment, the number of Sites covered by that UOP, and the amount of the payment. It is the Parties intention that the Use and Occupancy Permits will be numbered sequentially for ease of reference as they are entered into. Failure to provide the yearly accounting for each UOP may result in penalties for delinquent Annual Payment and shall constitute a breach of this Master Agreement.

5.5. Financial Records. PERMITTEE shall maintain, in accordance with generally accepted accounting practices, complete and accurate financial records showing all receipts from its use of the Site and/or Permit Area. PERMITTEE shall make any and all of its records and accounts relating to its use of the Site or Permit Area available to CITY for inspection at a reasonable time and location within the City of San Diego so that CITY can determine PERMITTEE's compliance with this Master Agreement. PERMITTEE's failure to keep and maintain records and make them available for CITY inspection shall be a default of this Master Agreement subject to Section 30.1(b)(ii). PERMITTEE shall maintain all such financial records for a minimum period of five (5) years past the expiration or earlier revocation or termination of this Master Agreement. This section shall survive the expiration or earlier revocation or termination of this Master Agreement.

6. INSURANCE.

PERMITTEE shall not begin any work on any portion of the Permit Areas until it has: (a) provided to CITY insurance certificates reflecting evidence of all insurance required below; however, CITY reserves the right to request, and PERMITTEE shall submit, copies of any policy upon reasonable request by CITY; (b) obtained CITY approval of each insurance company or companies; and (c) confirmed with CITY that all policies contain the specific provisions required below. PERMITTEE's liabilities, including, but not limited to, PERMITTEE's indemnity obligations, under this Master Agreement, shall not be deemed limited in any way to the insurance coverage required herein. Maintenance of specified insurance coverage is a material element of this Master Agreement and PERMITTEE's failure to maintain or renew coverage or to provide evidence of renewal during the Term may be treated as a material breach of contract by CITY. PERMITTEE shall not modify any policy or endorsement thereto which increases CITY's exposure to loss for the Term.

6.1. Types of Insurance: At all times during the term of this Master Agreement, the PERMITTEE shall maintain insurance coverage as follows:

- a. Commercial General Liability (CGL). Insurance written on an ISO Occurrence form CG 00 01 07 98 or an equivalent form providing coverage at least as broad which shall cover liability arising from any and all personal injury or property damage in the amount of \$2 million per occurrence and subject to an annual aggregate of \$4 million. There shall be no endorsement or modification of the CGL limiting the scope of coverage for either insured vs. insured claims or contractual liability. All defense costs shall be outside the limits of the policy.
- b. Commercial Automobile Liability. For all of PERMITTEE's automobiles including owned, hired and non-owned automobiles, PERMITTEE shall keep in full force and effect automobile insurance written on an ISO form CA 00 01 12 90 or a later version of this form or an equivalent form providing coverage at least as broad for bodily injury and property damage for a combined single limit of \$1 million per occurrence. The insurance certificate shall reflect coverage for any automobile (any auto).

- c. Workers' Compensation. For all of PERMITTEE employees who are subject to this Master Agreement and to the extent required by the applicable state or federal law, PERMITTEE shall keep in full force and effect a Workers' Compensation policy. That policy shall provide a minimum of \$1 million of employers' liability coverage, and PERMITTEE shall provide an endorsement that the insurer waives the right of subrogation against CITY and its respective elected officials, officers, employees, agents and representatives.
- 6.2. Deductibles: All deductibles on any policy shall be the responsibility of PERMITTEE and shall be disclosed to CITY at the time the evidence of insurance is provided.
- 6.3 Acceptability of Insurers: Except for the State Compensation Insurance Fund, all insurance required by this Master Agreement shall only be carried by insurance companies with a rating of at least "A-, VI" by A.M. Best Company, that are authorized by the California Insurance Commissioner to do business in the State of California, and that have been approved by CITY. CITY will accept insurance provided by non-admitted, "surplus lines" carriers only if the carrier is authorized to do business in the State of California and is included on the List of Eligible Surplus Lines Insurers (LESLI list). All policies of insurance carried by non-admitted carriers are subject to all of the requirements for policies of insurance provided by admitted carriers described herein.
- 6.4 Modification: To assure protection from and against the kind and extent of risk existing with PERMITTEE's Operations, CITY, at its reasonable discretion, may require the revision of amounts and coverage at any time by giving PERMITTEE thirty (30) days prior written notice. PERMITTEE shall also obtain any additional insurance required by CITY for new improvements, changed circumstances, or CITY'S reasonable re-evaluation of risk levels related to the Site.
- 6.5 Accident Reports: PERMITTEE shall immediately report to CITY any accident causing property damage or injury to persons on the Permit Areas or otherwise related to PERMITTEE's Operations. Such report shall contain the names and addresses of the involved parties, a statement of the circumstances, the date and hour of the accident, the names and addresses of any witnesses, and other pertinent information.
- 6.6 Required Endorsements: The following endorsements to the policies of insurance are required to be provided to CITY before any work is initiated under this Master Agreement.
- 6.6.1. Commercial General Liability Insurance Endorsements:
- i. Additional Insured: To the fullest extent allowed by law, including, but not limited to, California Insurance Code Section 11580.04, the policy or policies must be endorsed to include as an Additional Insured the City of San Diego and its respective elected officials, officers, employees, agents and representatives with respect to liability arising out of (a) ongoing operations performed by PERMITTEE or on PERMITTEE's behalf, (b) PERMITTEE's

products, (c) PERMITTEE's work, including, but not limited to, PERMITTEE's completed operations performed by PERMITTEE or on PERMITTEE's behalf, or (d) premises owned, leased, controlled or used by PERMITTEE.

- ii. Primary and Non-Contributory Coverage: The policy or policies must be endorsed to provide that the insurance afforded by the Commercial General Liability policy or policies is primary to any insurance or self-insurance of the City of San Diego and its elected officials, officers, employees, agents and representatives with respect to the operations of the named insured. Any insurance maintained by the City of San Diego and its elected officials, officers, employees, agents and representatives shall be in excess of PERMITTEE's insurance and shall not contribute to it.
- iii. Severability of Interest. The policy or policies must be endorsed to provide that PERMITTEE's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability and shall provide cross-liability coverage.

6.6.2. Automobile Liability Insurance Endorsements:

- i. Additional Insured: To the fullest extent allowed by law, including, but not limited to, California Insurance Code Section 11580.04, the policy or policies must be endorsed to include as an Additional Insured the City of San Diego and its respective elected officials, officers, employees, agents and representatives with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of PERMITTEE.
- ii. Severability of Interest. The policy or policies must be endorsed to provide that PERMITTEE's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability and shall provide cross-liability coverage.

7. SUBSEQUENT USE AND OCCUPANCY PERMITS.

Upon obtaining any necessary regulatory permits from the Development Services Department ("DSD"), or any other required permits, PERMITTEE shall provide a list of Sites for which it requires a UOP in order to move forward with the installation of the Communications Equipment. The CITY will execute a UOP in substantially the form attached hereto as Exhibit B, for any Approved Sites that comply with the Master Structural Plan attached hereto as Exhibit A. If the Communications Equipment does not comply with the Master Structural Plan, CITY shall review the request for a UOP according to the standards and timelines set forth for Minor Modifications and Major Modifications in Sections 10.2.1 and 10.2.2 of this Master Agreement.

PERMITTEE shall include all Sites in a particular polygon in one UOP, but may include more than one polygon if it chooses to do so. If there is a change in law that is required to be incorporated in future UOPs in order for the CITY to comply with that law, other than those affecting the rate of the Annual Fee, the length of the Term of this Master Agreement, or the UOP Term, the Parties agree that CITY will be permitted to incorporate any mandatory language required by such change of law into any future UOPs executed after the effective date of such change in law; or if such change in law does not have mandatory language associated with it, the Parties will meet and confer to determine the appropriate language to be added to any future UOPs in order to implement such change in law.

8. PERMITTEE'S RISK.

PERMITTEE shall bear all risks and liability arising out of or in any manner directly or indirectly connected with PERMITTEE's Operations and any damages to the improvements on, under, or in the vicinity of the Permit Areas resulting directly or indirectly thereby.

9. ACCEPTANCE OF PERMIT AREAS.

PERMITTEE represents and warrants that PERMITTEE will independently inspect the Site and Permit Area and make all tests, investigations, and observations necessary to satisfy itself of the condition of the Site and Permit Area and the suitability for the Permit Use. PERMITTEE acknowledges and agrees that PERMITTEE is not relying on any representation by CITY as to the condition of the Site or its suitability for the Permit Use, and PERMITTEE agrees that PERMITTEE is relying solely on its independent inspections, tests, investigations, and observations in entering into any UOPs pursuant to this Master Agreement. PERMITTEE acknowledges that the Site and Permit Area will be in the condition called for herein, that CITY has performed or will perform all work with respect to the Site and Permit Area that is necessary and/or required by this Master Agreement, and that PERMITTEE shall not hold CITY responsible for any defects, whether apparent or latent, in the Site and/or Permit Area. PERMITTEE accepts and assumes all risk of harm to all persons and property, including without limitation, PERMITTEE'S employees, from and defects within the Site and Permit Area, and shall be solely responsible therefor. PERMITTEE acknowledges that it has been or will be given the opportunity to investigate the Site and Permit Area for the presence of any Hazardous Substances, including, without limitation, the opportunity to perform soil borings and other tests. PERMITTEE shall notify CITY if PERMITTEE'S investigations indicate the presence of any Hazardous Substances on the Site and Permit Area. PERMITTEE waives any claims against CITY which may result from the presence of Hazardous Substances on the Site and Permit Area.

10. DEVELOPMENT OF SITES AND MODIFICATION OF PERMIT AREA.

- 10.1 Approved Sites. Prior to the execution of this Master Agreement, and at any time during the first four (4) years of the Term that PERMITTEE desires to add Sites to the Permit Area, PERMITTEE shall provide to CITY's Real Estate Assets Department a list of Approved Sites for which PERMITTEE has received all required permits and on which PERMITTEE is ready to install their Communications Equipment as depicted and described in the MSP attached hereto as Exhibit A. CITY shall prepare a UOP

substantially in the form of the UOP attached hereto as Exhibit B for the Parties execution. PERMITTEE acknowledges and understands that any requests for amendments to the Master Agreement, including those related to adding sites with equipment that is not depicted and described on the MSP, will be subject to appropriate environmental review subject to the California Environmental Quality Act ("CEQA").

- 10.2 Master Structural Plan. In lieu of site plans for each individual Site, PERMITTEE has provided to CITY, prior to the execution of this Master Agreement, a master design plan which contains full and complete design plans that show all of the Communications Equipment that PERMITTEE proposes to install or construct in the Permit Area, which is attached as Exhibit A. If during the Term, PERMITTEE desires to modify the Communications Equipment that is being placed on an Approved Site from what is shown in the approved MSP, PERMITTEE shall do the following:

10.2.1 Minor Modifications. If the new equipment is the same size or smaller in all dimensions and weighs the same or less than the equipment previously approved through the MSP (a "Minor Modification"), PERMITTEE may submit a form factor drawing with sufficient information for READ to determine the actual size, weight, location, and aesthetics of the new equipment in the Permit Area. PERMITTEE acknowledges that this form factor drawing, which may be sufficient for the CITY as the property owner to approve the amendment may not be sufficient for DSD to review and approve construction permits, and this requirement does not relieve PERMITTEE of its obligations to provide DSD staff with all required information for review and issuance of regulatory permits (construction, right-of-way, or any other type of permit determined necessary by DSD). Subject to the foregoing, the CITY will either consent to or deny consent, in its reasonable discretion, to the requested Minor Modification in writing within thirty (30) days of receiving the form factor drawing, provided that any applicable review required by CEQA has been completed and any associated appeal periods have run without an appeal being filed.

10.2.2 Major Modifications. If the new equipment is larger in any dimension than the previously approved equipment, or if the new equipment weighs more than the previously approved equipment (a "Major Modification"), PERMITTEE shall prepare a new MSP and submit that plan at the time the request for amendment of this Master Agreement is submitted to READ. Subject to the foregoing, the CITY will either consent to or deny consent, in its sole discretion consistent with applicable law, to the requested Major Modification in writing within thirty (30) days of receiving the new MSP, provided that any applicable environmental review required by CEQA has been completed and any associated appeal periods have run without an appeal being filed.

- 10.3 Timing of Development. PERMITTEE shall not develop any requested Site in the Permit Area unless and until this Master Agreement and a UOP for the Approved Site has been executed (or if applicable, amended) by the Parties. PERMITTEE shall develop each Site in the Permit Areas in accordance with the Master Structural Plan and any modifications authorized for the specific Approved Site(s) as attached to the UOP for those Approved Sites. CITY may, in its reasonable discretion, authorize changes to the Master Structural Plan, or specific site plans, provided the principal components thereof are not modified.

11. IMPROVEMENTS AND ALTERATIONS.

Other than as approved by the MSP depicted in Exhibit A, PERMITTEE shall not construct any improvements, structures, or installations in the Permit Areas, or make any alterations to the Permit Areas (with the exception of necessary maintenance and/or repairs that does not include swapping out or replacing any of the Communications Equipment) without CITY's prior written consent, which consent shall be in CITY's sole discretion consistent with applicable law or, when associated with a Minor Modification, such consent shall be in the CITY's reasonable discretion. This includes modifications that are considered "eligible facilities" under Section 6409 of the Middle Class Tax Relief and Job Creation Act. PERMITTEE shall not make any structural or architectural design alterations to approved improvements, structures, or installations in the Permit Areas without CITY's prior written consent, which consent shall be in CITY's sole discretion consistent with applicable law or, when associated with a Minor Modification, such consent shall be in the CITY's reasonable discretion. CITY shall not be obligated by this Master Agreement to make, or assume any expense for, any improvements or alterations.

- 11.1 Alterations to Communications Equipment. PERMITTEE shall not make any alterations, additions or improvements to the Communications Equipment except for routine maintenance that does not include swapping out or replacing any of the Communications Equipment, unless: (1) PERMITTEE obtains CITY's prior written consent, which consent shall be in CITY's discretion as set forth above for Minor or Major Modifications; (2) the alterations, additions, or improvements do not: (a) damage or interfere with any adjacent improvements in the Permit Areas or (b) interfere with third party communications signals operated in compliance with applicable law; and (3) the alterations, additions, or improvements comply with the requirements set forth in Exhibit C. Nothing in this Section shall be construed to eliminate PERMITTEE's obligation to obtain development and construction related permits and approvals for any alterations to the Communications Equipment that may be required by CITY's Development Services Department or any other governmental agency. CITY, in its proprietary capacity, through READ, retains the right to deny any request for modification or alteration of a Site as a proprietary right, even if CITY's DSD is required by federal law to approve or permit such a request.

- 11.2 Information to Permitting Authorities. In obtaining any required permits for improvements, structures, installations, and/or alterations in the Permit Areas, PERMITTEE shall inform permitting authorities, in writing, that the Permit Areas are CITY-owned property.
- 11.3 Repair and Restoration. Nothing in this Section shall relieve PERMITTEE of any obligation under this Master Agreement to maintain the Permit Areas in a decent, safe, healthy and sanitary condition, as required in this Master Agreement.
- 11.4 Emergency. In the event of an Emergency, as soon as practicable thereafter and not later than three (3) business days after having taken such action, PERMITTEE shall advise CITY in writing of the emergency work performed or the action taken with respect to any emergency modification or alteration of PERMITTEE's Communications Equipment. PERMITTEE shall acquire any necessary permits, if any, to cover the emergency work performed.
- 11.5 Accidental Damage by CITY. In the event CITY should cut or damage PERMITTEE's communication line, PERMITTEE agrees to perform all repairs expeditiously after notice thereof from CITY. Simultaneously, CITY agrees to cease any and all work to the affected portion of the Permit Areas for a maximum of twenty-four (24) hours or until PERMITTEE completes all repairs, whichever is less.

12. COMPETENT MANAGEMENT.

Throughout the Term, PERMITTEE shall provide competent management of the Permit Areas for the Permit Use to the reasonable satisfaction of CITY. "Competent management" shall mean demonstrated ability in the management and operation of Communication Equipment and related activities in a responsible manner and in accordance with industry standards.

13. COMPLIANCE WITH LAWS AND POLICIES.

- 13.1. General. PERMITTEE's Operations shall, at all times, comply with all applicable laws, statutes, ordinances, and regulations of CITY, county, state, and federal governments, at PERMITTEE's sole cost and expense. Upon receipt of the same, PERMITTEE shall comply with any and all notices issued by CITY under the authority of all laws, statutes, ordinances, or regulations.
- 13.2. Nondiscrimination/Equal Opportunity. PERMITTEE shall not discriminate in any manner against any person or persons on account of race, color, religion, gender, gender identity, gender expression, sexual orientation, medical status, national origin, age, marital status, or disability in PERMITTEE's Operations.

14. WATER QUALITY ASSURANCES.

- 14.1. CITY and PERMITTEE are committed to the implementation of controls (best management practices, or BMPs) to manage activities on the Site and Permit Area in a manner which aids in the protection of the City of San Diego's precious water resources. It is PERMITTEE's responsibility to identify and implement an effective combination of BMPs so as not to cause pollutant discharges to the storm drain system in violation of San Diego Storm Water Management and Discharge Control Ordinance (San Diego Municipal Code Section 43.0301 to 43.0312). Therefore, PERMITTEE shall at a minimum implement and comply, as applicable, with the Minimum Industrial and Commercial BMPs adopted under the San Diego Municipal Code Section 43.0307(a). It is ultimately PERMITTEE's responsibility to prevent pollutant discharges to the storm drain system. Therefore, PERMITTEE will identify and implement any additional BMPs that may be required to avoid the discharge of pollutants to the storm drain system.

15. TELECOMMUNICATIONS PROVISIONS.

- 15.1. Entire Installation. PERMITTEE warrants that the Communications Equipment listed in Exhibit A constitutes the entire installation at each Site within the Permit Areas. PERMITTEE shall update Exhibit A from time to time as any changes to the Communications Equipment are made, or within thirty (30) calendar days after CITY's demand for such an update. No changes to the Communications Equipment shall be made without first obtaining written approval by CITY as further provided under this Master Agreement.
- 15.2. Radio Frequency Radiation. PERMITTEE shall maintain any radio frequency ("RF") radiation associated with the Communications Equipment within the levels allowed by federal regulations set forth in Section 1.1310 of Title 47 of the Code of Federal Regulations and the Federal Communications Commission's ("FCC") OET Bulletin 65. Any portion of the Permit Areas casually accessible by the general public or by any worker at ground level shall be maintained below limits stated for General Population/Uncontrolled Exposure. PERMITTEE shall report to CITY any portion of the Permit Areas discovered by PERMITTEE to exceed these federally mandated limits. PERMITTEE shall defend and hold CITY harmless for any liabilities, fines or other penalties claimed or imposed against CITY that result from the existence of excessive levels of radiation that are caused by PERMITTEE's Operations; provided, however, that the duty to indemnify shall not extend to any liabilities, fines, or other penalties claimed or imposed against the CITY arising from CITY's established sole negligence or willful misconduct. Hazardous RF radiation levels may be encountered when climbing on antenna structures (refer to FCC OET Bulletin 65). Any Communications Equipment installed within the Permit Areas may, at times, require shutdown to allow scheduled maintenance on antenna structures. PERMITTEE shall allow shutdown periods when required for this scheduled maintenance (which shall not include Emergencies), provided CITY shall give prior notice to PERMITTEE of these shutdowns and ensure that these shutdowns do not occur during peak hours of operation. Protection of employees performing service on buildings, roofs, air-conditioning

equipment, water tanks, communications equipment, or any other maintenance work is a primary concern. Any areas in which these employees may be subjected to radiation levels that exceed the General Population/Uncontrolled Exposure limits must be clearly identified as required by CAL-OSHA. PERMITTEE shall provide CITY with written shutdown procedures, contact names, and telephone numbers. PERMITTEE shall notify CITY, in writing, of any changes to the shutdown procedures, contact names, or telephone numbers at least ten (10) calendar days prior to such a change. Once the installation is complete, the PERMITTEE shall perform an on-air test and provide documentation to demonstrate that the Communications Equipment is operating within federally mandated limits. After the initial test, the PERMITTEE shall perform an on-air test within fifteen days of CITY requesting such a test.

- 15.3. Radio Frequency Interference. PERMITTEE warrants that all Communications Equipment installations, modifications, operation, and maintenance will not result in degraded performance or RF interference to any existing uses of the Site, by fulfilling the requirements of Exhibit C, which may be updated from time to time by the Parties.
- 15.4. Industry Standards. PERMITTEE shall perform all Communications Equipment installations, modifications, operation, and maintenance in adherence to industry standards set by the "Standards and Guidelines for Communications Sites" Motorola R56© Manual, or any succeeding regulations or standards. In addition to the requirements of the Motorola R56© publication, installations on CITY property shall comply with the following supplemental requirements:
 - 15.4.1. PERMITTEE shall remove all of its trash and debris from the Permit Areas at the end of each workday and on completion of each project;
 - 15.4.2. Tower and structure climbing shall be done in compliance with all CAL-OSHA requirements and General Orders promulgated by the CPUC; and
 - 15.4.3. All transmitters shall have all necessary protection, such as cavity filtering and transmitter isolators, to eliminate any RF degradation of the receive signal to any other user within the Permit Areas.
- 15.5. Collocation. PERMITTEE shall not access any third party wireless communication facility or CITY-owned communications equipment (including any towers) within the Permit Areas without CITY's prior written consent, and if applicable a third-party owner's written consent.
- 15.6. Interference with CITY Operations or Public Use. PERMITTEE's Operations shall not unreasonably interfere with CITY operations or public use of CITY-owned property.

16. WASTE, DAMAGE, OR DESTRUCTION.

PERMITTEE shall immediately give notice to CITY of any fire or any other material damage that PERMITTEE has knowledge of that occurs on or within the Permit Areas that occurs either during or after the completion of construction of approved improvements. If PERMITTEE causes any damage to any portion of the Permit Areas that puts any portion of the Permit Area into a condition which is not decent, safe, healthy, and sanitary PERMITTEE shall make, or cause to be made, full repair of the damage and restore the Permit Areas to the condition which existed prior to the damage; or, at CITY's option, PERMITTEE shall clear and remove from the Permit Areas all debris resulting from the damage and restore the Permit Areas in accordance with plans and specifications previously submitted to and approved by CITY, in writing, in order to replace in kind and scope the operation which existed prior to the damage. PERMITTEE shall commence preliminary steps toward performing repairs and/or restoration of the Permit Areas as soon as practicable, but no later than ten (10) calendar days after the occurrence of the fire or damage, and shall complete the required repairs and/or restoration of the Permit Areas within sixty (60) calendar days after such occurrence. Failure to timely repair damage to the Site and/or Permit Areas will be considered a default under the Master Agreement.

17. HAZARDOUS MATERIALS.

PERMITTEE shall not allow the illegal installation, storage, utilization, generation, sale or release of any Hazardous Substance or otherwise regulated substances in, on, under or from the Permit Areas by any of PERMITTEE's officers, employees, agents, contractors, invitees and guests. PERMITTEE and PERMITTEE's officers, employees, agents, contractors, invitees and guests shall not install, store, utilize, generate or sell any Hazardous Substance on the Permit Areas without CITY's prior written consent. PERMITTEE shall, prior to initiating any operations, obtain all required permits from applicable regulatory agencies, including without limitation the San Diego County Department of Environmental Health, local fire agencies, the San Diego County Department of Weights and Measures, the San Diego County Air Pollution Control District, and the San Diego Regional Water Quality Control Board. Installing, utilizing, storing, or any other presence of a Hazardous Substance includes boxes, bags, bottles, drums, cylinders; above or below ground tanks, equipment with tanks, or any other type of container, equipment or device which holds or incorporates a Hazardous Substance or hazardous waste.

- 17.1. **Release.** For all purposes of this Master Agreement, a "release" shall include without limitation any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or otherwise disposing of a Hazardous Substance.
- 17.2. **Remediation.** If PERMITTEE's occupancy, use, development, maintenance, or restoration of the Permit Areas results in a release of a Hazardous Substance, PERMITTEE shall pay all costs of remediation and removal to CITY's satisfaction for unrestricted reuse of the Permit Areas, and in accordance with all applicable laws, rules, and regulations of governmental authorities.

- 17.3. Removal. If PERMITTEE or PERMITTEE's officers, employees, agents, contractors, invitees and guests have received approval and permits to store, utilize, generate or install, or otherwise bring Hazardous Substances to the Permit Areas, PERMITTEE shall remove all Hazardous Substances in any type of container, equipment or device from the Permit Areas immediately upon or prior to the expiration or earlier termination of this Master Agreement. CITY reserves the right to conduct inspections of the Permit Areas and/or request documentation demonstrating the legal removal and/or disposal of the hazardous materials, wastes or other containers, equipment or devices from the Permit Areas. PERMITTEE shall be responsible for any and all costs incurred by CITY to remove any container, equipment or device requiring disposal or removal as required by this provision.
- 17.4. Indemnity. PERMITTEE shall protect, defend, indemnify, and hold CITY harmless from any and all claims, costs, and expenses related to environmental liabilities resulting from PERMITTEE's occupancy, use, development, maintenance, or restoration of the Permit Areas, including without limitation: (i) costs of environmental assessments; (ii) costs of regulatory remediation oversight; (iii) costs of remediation and removal; (iv) any necessary CITY response costs; (v) all fines, penalties or fees assessed by any regulatory agency; (vi) damages for injury to natural resources, PERMITTEE's officers, employees, invitees, guests, agents or contractors, or the public; and (vii) all costs of any health assessments or health effect studies; provided, however, that PERMITTEE's duty to indemnify and hold harmless shall not include any established liability arising from the sole negligence or willful misconduct of CITY, its elected officials, officers, representatives, agents and employees.
- 17.5. Notice of Release. If PERMITTEE knows or has reasonable cause to believe that a Hazardous Substance has been released on, from or beneath any portion of the Permit Areas, PERMITTEE shall immediately notify CITY and any appropriate regulatory or reporting agency pursuant to California Code of Regulations Title 19 and any other applicable laws or regulations. PERMITTEE shall deliver a written report thereof to CITY within three (3) days after receipt of the knowledge or cause for belief and submit any required written reports to regulatory or reporting agencies as required by regulation or law. If PERMITTEE knows or has reasonable cause to believe that such substance is an imminent release or is an imminent substantial danger to public health and safety, PERMITTEE shall take all actions necessary to alleviate the danger. PERMITTEE shall immediately notify CITY in writing of any violation, notice to comply, or notice of violation received or the initiation of environmental actions or private suits related to the Permit Areas.
- 17.6. Environmental Assessment. Upon reasonable cause to believe that PERMITTEE's occupancy, use, development, maintenance, or restoration of the Permit Areas resulted in any Hazardous Substance being released on, from or beneath any portion of the Permit Areas, CITY may cause an environmental assessment under regulatory oversight of the suspect area to be performed by a professional environmental consultant registered with the State of California as a Professional Engineer, Certified Engineering Geologist or Registered Civil Engineer. The environmental assessment shall be obtained at PERMITTEE's sole cost and expense, and shall establish what, if any,

Hazardous Substances have more likely than not been caused by PERMITTEE's occupancy, use, development, maintenance, or restoration of any affected portion of the Permit Areas, and in what quantities. If any such Hazardous Substances exist in quantities greater than allowed by CITY, county, state or federal laws, statutes, ordinances or regulations, or require future restricted re-use of the Permit Areas, then the environmental assessment shall include a discussion of such substances with recommendations for remediation and removal necessary to effect unrestricted re-use and in compliance with those laws or statutes, and estimates of the cost of such remediation or removal. PERMITTEE shall cause, or if PERMITTEE fails to do so within a reasonable period of time, as determined by CITY in its sole discretion, then CITY may cause, the remediation and/or removal recommended in the environmental assessment such that unrestricted re-use of the Permit Areas and compliance with environmental laws and regulations are achieved, and PERMITTEE shall pay all costs and expenses therefor.

18. SIGNS.

PERMITTEE shall only post signs required by federal, state, or local regulations, including, without limitation, safety signs required by OSHA, FAA, CPUC and/or FCC. PERMITTEE shall not erect or display any banners, pennants, flags, posters, signs, decorations, marquees, awnings, or similar devices or advertising within the Permit Areas without CITY's prior written consent, which consent shall be in CITY's sole discretion. If any such unauthorized item is found within the Permit Areas, PERMITTEE shall remove the item, at PERMITTEE's sole cost and expense, upon forty-eight (48) hours' notice by CITY, or CITY may then enter the Permit Areas and remove the item at PERMITTEE's sole cost and expense. PERMITTEE shall post a clearly marked sign at each Site within the Permit Areas indicating PERMITTEE's name and emergency telephone number.

19. MAINTENANCE OF PERMIT AREAS.

PERMITTEE shall, at its sole cost and expense, continuously maintain the Permit Areas throughout the Term. In doing so, PERMITTEE shall, at its sole cost and expense, make all repairs, restoration, and replacements (including structural repairs and restoration of damaged or worn improvements) necessary to maintain and preserve the Permit Areas in a decent, safe, healthy, and sanitary condition, reasonable wear and tear excepted. All such maintenance, repairs, restoration, and replacements shall be completed to the satisfaction of CITY, in conformance with the Master Structural Plan set forth in Exhibit A, and in compliance with all applicable codes and standards of CITY, state, and federal agencies.

- 19.1. CITY Maintenance. CITY reserves the right to perform any needed routine maintenance within the Permit Areas at any time without providing notice to PERMITTEE, including, but not limited to, the replacement of light bulbs on a Site. However, should CITY perform non-routine maintenance, including, but not limited to, the replacement of a Site, CITY shall provide PERMITTEE with at least forty-eight (48) hours' notice prior to commencing the work (except in the event of an emergency, in which case, no prior notice shall be required, but CITY shall give PERMITTEE notice in compliance with Exhibit D), and PERMITTEE shall comply with all applicable safety requirements issued

by CITY to ensure the safety of CITY personnel performing such maintenance within the Permit Areas. In the event CITY's non-routine maintenance includes replacing a Site, CITY shall give thirty (30) days advance notice to PERMITTEE so that PERMITTEE may remove its Communications Equipment prior to the replacement of the Site.

- 19.2. Maintenance Procedures for Parties. The Parties shall comply with the emergency maintenance procedures set forth in Exhibit D, including the requirement to notify the other Party, in writing, of any changes to its emergency contacts and telephone numbers. PERMITTEE shall provide and install an emergency shut-off switch which will terminate electrical service to PERMITTEE's Communications Equipment, with the switch to be used only as set forth in Exhibit D.

20. ENTRY AND INSPECTION.

CITY may, at any time, enter the Permit Areas for the purpose of viewing and ascertaining the condition of the Permit Areas, or to protect CITY's interest in the Permit Areas, or to inspect the operations conducted within the Permit Areas. If CITY's entry or inspection discloses that any portion of the Permit Areas is not in a decent, safe, healthy, and sanitary condition, (reasonable wear and tear excepted), CITY may, after ten (10) days written notice to PERMITTEE, have any necessary maintenance work done in order to keep the Permit Areas in a decent, safe, healthy, and sanitary condition, all at PERMITTEE's sole cost and expense, and PERMITTEE shall promptly pay any and all costs incurred by CITY in having the necessary maintenance work done. If at any time CITY determines that any portion of the Permit Areas is not in a decent, safe, healthy, and sanitary condition, CITY may, in its reasonable discretion, without additional notice, require PERMITTEE to file with CITY a faithful performance bond to assure prompt correction of any condition which is not decent, safe, healthy, and sanitary. The bond shall be in an amount adequate, in CITY's opinion, to correct the unsatisfactory condition. PERMITTEE shall pay all costs associated with the bond. The rights reserved in this Section shall not create any obligation on CITY or increase CITY's obligations elsewhere in this Master Agreement. As part of its standard practice, PERMITTEE shall schedule a pre-construction and post-construction inspection for each Site within the Permit Area.

21. UTILITIES.

PERMITTEE shall order, obtain, and pay for all utilities, including installation and service charges, in connection with PERMITTEE's Operations. All electric utilities shall be installed underground unless such utilities are aerial on existing poles and shall only be used by PERMITTEE for PERMITTEE's Operations.

22. TAXES.

PERMITTEE shall pay, before delinquency, all taxes, assessments, and fees assessed or levied upon PERMITTEE or the Permit Areas, including the land, any buildings, structures, machinery, equipment, appliances, or other improvements or property of any nature whatsoever erected, installed or maintained by PERMITTEE, or levied by reason of PERMITTEE's Operations, including any licenses or permits. PERMITTEE acknowledges that this Master Agreement may create a possessory interest subject to property taxation, and that PERMITTEE may be subject to the payment of taxes levied on that interest. PERMITTEE shall pay all such possessory interest taxes. PERMITTEE's payment for such taxes, assessments, and/or fees shall not reduce any payment due CITY.

23. SUPERIOR INTERESTS.

This Master Agreement is subject to all liens, encumbrances, covenants, conditions, restrictions, reservations, contracts, permits, licenses, easements, and rights-of-way pertaining to the Permit Areas, whether or not of record. PERMITTEE shall obtain all licenses, permits, and agreements from such third parties as may be or become necessary or reasonably advisable to allow PERMITTEE's use of the Permit Areas, relative to any such superior interest. If PERMITTEE's use of the Permit Areas is or becomes inconsistent or incompatible with a preexisting superior interest, PERMITTEE shall take such actions and pay all costs and expenses necessary to remove such inconsistency or incompatibility to the satisfaction of the holder of the superior interest.

24. ENCUMBRANCES.

PERMITTEE shall not permit any encumbrance related to PERMITTEE's Operations. CITY may, in its reasonable discretion, consent to such an encumbrance if exclusively related to PERMITTEE's development of the Permit Areas. If an encumbrance is placed on any portion of the Permit Areas, PERMITTEE shall diligently seek and obtain, at its sole cost and expense, the removal of the encumbrance as soon as possible upon completion of the development, if the encumbrance was authorized by CITY, or, if unauthorized, immediately upon CITY's demand.

- 24.1. Liens. PERMITTEE shall, at all times, protect, defend, indemnify, and hold CITY harmless from and against any and all claims for labor or materials in connection with PERMITTEE's Operations, and all costs of defending against such claims, including, without limitation, reasonable attorneys' fees. If PERMITTEE's Operations result in a lien or notice of lien being filed against any portion of the Permit Areas, PERMITTEE shall, within thirty (30) calendar days after such filing, either: (a) take all actions necessary to record a valid release of the lien; or (b) deliver to CITY a bond, cash, or other security acceptable to CITY in an amount sufficient to pay in full all claims of all persons seeking relief under the lien.

25. ASSIGNMENT AND SUBLICENSING.

- 25.1 **Assignment.** The rights and obligations assumed by each of the Parties under this Master Agreement shall not be assigned or otherwise transferred, in whole or in part, without the written prior consent of the other Party which consent will not be unreasonably withheld, delayed or conditioned.
- 25.2 **Sublicensing.** PERMITTEE shall not sublicense, in whole or in part, the Site, or any right or appurtenant privilege to the Site, or attempt to transfer any other interest or right to use the Permit Area, in whole or in part, the Site or any right or appurtenant privilege to the Site, without CITY'S prior written consent, which consent shall be in CITY'S sole discretion following disclosure of any information required by San Diego Charter section 225, and shall require additional compensation as required by San Diego Council Policy 700-10 at the time of the request. The provision of capacity, bandwidth or grant of use in the Communications Equipment, or any portion thereof, to another person shall not constitute a breach of this Section 25 or require consent, provided that PERMITTEE shall at all times retain control over the entire Communications Equipment, remains fully responsible for compliance with the terms of this Master Agreement, does not allow any entity to physically occupy the Site or Permit Area, and does not allow installation of additional equipment not included in the MSP.
- 25.3 **Provisions Binding on Successors.** Except as otherwise provided in this Master Agreement, all of the terms, covenants, and conditions of this Master Agreement shall apply to, benefit, and bind the successors and assigns of the respective parties, jointly and individually.

26. INDEMNIFICATION.

PERMITTEE shall protect, defend, indemnify, and hold CITY, its elected officials, officers, and employees harmless from and against any and all claims asserted or liability established for damages or injuries to any person or property, including injury to PERMITTEE's officers, employees, agents, contractors, invitees and guests, which arise out of or are in any manner directly or indirectly connected with this Master Agreement or PERMITTEE's occupancy, use, development, maintenance, or restoration of the Permit Areas, including damages arising out of release of hazardous materials, and all expenses of investigating and defending against same, including without limitation reasonable attorney fees and costs; provided, however, that PERMITTEE's duty to indemnify and hold harmless shall not include any established liability arising from the sole negligence or willful misconduct of CITY, its elected officials, officers, representatives, agents and employees. CITY may, at its election, conduct the defense or participate in the defense of any claim related in any way to this indemnification. If CITY chooses at its own election to conduct its own defense, participate in its own defense, or obtain independent legal counsel in defense of any claim related to this indemnification, PERMITTEE shall pay all reasonable costs related thereto, including without limitation reasonable attorney fees and costs.

27. OTHER GOVERNMENTAL ACTIONS.

By entering into this Master Agreement, neither CITY nor the City Council is obligating itself to PERMITTEE or to any other governmental agent, board, commission, or agency with regard to any other discretionary action relating to the development, occupancy, use, or maintenance of the Permit Areas. Discretionary action includes, but is not limited to, rezonings, variances, environmental clearances, or any other governmental agency approvals that may be required for PERMITTEE's Operations. PERMITTEE shall diligently seek, at its sole cost and expense, all entitlements and actions from both CITY and other governmental agencies with jurisdiction over the Permit Areas, as may be necessary for PERMITTEE's Operations.

28. CITY'S RESERVATION OF RIGHTS.

- 28.1. Resources. CITY reserves all rights, title, and interest in any and all subsurface natural gas, oil, minerals, and water on or within the Permit Areas.
- 28.2. Use. CITY may grant and use easements or establish and use rights-of-way over, under, along, and across the Permit Areas for utilities, thoroughfares, or access as CITY deems advisable, in its sole discretion for the public good.
- 28.3. Entry. CITY may enter the Permit Areas at any time to develop or make repairs to municipal resources and services.

29. REASSIGNMENT OF SPACE.

CITY may reassign PERMITTEE to an equivalent amount of space in a different location within the Permit Areas or different Site acceptable to PERMITTEE, if and when reasonably necessary due to: (i) construction, expansion, repair, relocation, or maintenance of a street or other public improvement project; or (ii) maintenance, upgrade, expansion, replacement, or relocation of CITY traffic light poles and/or traffic signal light system; or (iii) permanent closure of a street or sale of CITY property; or (iv) projects and programs undertaken to protect or preserve the public health or safety; or (v) activities undertaken to eliminate a public nuisance; or (vi) duty otherwise arising from applicable law. PERMITTEE will, at the direction of CITY, relocate its Communications Equipment at PERMITTEE's sole cost and expense not later than one hundred eighty (180) days after receiving written notice from CITY. This Section shall not apply to underground vault sites. PERMITTEE shall cooperate with CITY and its contractors during any such relocation or any renovation, repair, or other alteration of the Permit Areas. During physical relocation of the Communications Equipment to the relocation site, CITY will work with PERMITTEE to reasonably attempt to secure an alternative CITY-approved site for PERMITTEE to operate temporary installed communications equipment, which will be installed and maintained at PERMITTEE's sole cost and expense. CITY warrants that every effort will be made to ensure continuous, uninterrupted broadcast and/or receiving capability during any such activity. If any relocation is not satisfactory to PERMITTEE, then PERMITTEE may, in its sole discretion, terminate this Master Agreement or the specific Approved Site or Permit Area upon thirty (30) calendar days' written notice to CITY, without further obligation therefor.

30. REVOCATION AND TERMINATION.

30.1. Revocation by CITY.

- d. Revocable License. This Master Agreement and all subsequent Use and Occupancy Permits are not a lease; they are a license to use CITY-owned property. However, this Master Agreement and each subsequent Use and Occupancy Permit are binding contracts between the Parties. The Parties hereby acknowledge and agree that CITY, as the licensor, may revoke this Master Agreement and any or all UOPs associated with it, at will and at any time during the Term. However, CITY agrees that CITY will not exercise its right to revoke this Master Agreement and all of the UOPs associated with it at will unless CITY determines, that PERMITTEE is in default of this Master Agreement as set forth in Section 30.1(b)(i)-(ii), which default is pervasive and consistent, and has affected more than one-half of all of the UOPs then issued, or PERMITTEE is in default as set forth in Section 30.1(b)(iii)-(vi). CITY further agrees not to revoke a specific UOP except in the event of default as set forth in Section 30.1(b)(i)-(ii) provided that such default is related to the specific UOP, and such revocations shall not impact this Master Agreement or any other UOPs that have been issued under it. Upon default, CITY may thereafter, in its sole discretion, exercise its right to revoke this Master Agreement and such UOPs at will and at any time during the Term, as provided in this Section. If CITY exercises its right to revoke this Master Agreement and such UOPs, CITY will provide PERMITTEE written notice of the revocation, and upon PERMITTEE's receipt of the notice, PERMITTEE shall promptly cease PERMITTEE's Operations and remove PERMITTEE's improvements and personal property from the Permit Areas (pursuant to Section 30 of this Master Agreement).
- e. Events of Default. Each of the following shall constitute an event of default under this Master Agreement or a subsequent UOP:
 - i. PERMITTEE's failure to make any payment required under this Master Agreement or a subsequent UOP when due,, if the failure continues for twenty (20) calendar days following written notice of the failure by CITY;
 - ii. PERMITTEE's breach of any of its obligations under this Master Agreement or a subsequent UOP, other than those requiring payment to CITY, and PERMITTEE either:
 - a. fails to cure the breach within thirty (30) calendar days following written notice from CITY;
 - b. if such breach is not curable within thirty (30) calendar days following written notice from CITY, fails to promptly commence to cure the breach and to diligently pursue the cure to completion; or

- c. PERMITTEE uses any portion of the Permit Areas for any unauthorized purpose.
 - iii. PERMITTEE voluntarily files any petition under any bankruptcy or insolvency act or law;
 - iv. PERMITTEE has involuntarily filed against it any petition under any bankruptcy or insolvency act or law and the matter is not dismissed by a court of competent jurisdiction within ninety (90) calendar days of filing;
 - v. PERMITTEE is adjudicated a bankrupt; or
 - vi. PERMITTEE makes a general assignment for the benefit of creditors.
- 30.2 Termination by PERMITTEE. PERMITTEE may terminate this Master Agreement or a subsequent UOP, or remove any Communications Equipment thereby terminating PERMITTEE's right to use the corresponding Site(s) or Permit Area(s), for any reason upon thirty (30) days prior written notice to CITY. Upon PERMITTEE's termination, PERMITTEE shall promptly cease PERMITTEE's Operations and remove the Communications Equipment from the affected Permit Areas (pursuant to Section 30 of this Master Agreement).
- 30.3 No Obligation. CITY shall not be obligated for any loss, financial or otherwise, which may be incurred by PERMITTEE as a result of CITY's revocation or PERMITTEE's termination of this Master Agreement. PERMITTEE expressly waives any claim for expense or loss which PERMITTEE might incur as a result of CITY's revocation or PERMITTEE's termination of this Master Agreement.
- 30.4 Cumulative Remedies. CITY's rights and remedies under this Master Agreement are cumulative and shall not limit or otherwise waive or deny any of its respective rights or remedies at law or in equity.
- 30.5 Waiver. The property constituting the Permit Areas is publicly owned and held in trust for the benefit of CITY's citizens. The failure of either Party to insist upon the strict performance of any of the other Party's obligations under this Master Agreement, in one or more instances, shall not be construed as a waiver of any such obligation, and the same shall remain in full force and effect. The waiver of a default shall not be a waiver of any other default. Any waiver of a default must be in writing and executed by the non-defaulting Party to constitute a valid and binding waiver. A Party's delay or failure to exercise a right or seek a remedy shall not be deemed a waiver of that or any other right or remedy under this Master Agreement, at law or in equity. The exercise of any particular right or the use of any particular remedy for any default shall not waive the use of any other right or remedy for the same default or for another or later default. CITY's acceptance of any Annual Fee shall not be a waiver of any default preceding such payment. The failure to discover a default or take prompt action to require the cure of any default shall not result in an equitable estoppel, but the Parties may, at any and all

times, require the cure of the default.

- 30.6 Effect of Termination of Specific Approved Site or Permit Area. Following the early revocation or termination of a specific Approved Site or Permit Area by either CITY or PERMITTEE, no Annual Fee will be due to the CITY for that Approved Site or Permit Area.

31 REMOVAL OF IMPROVEMENTS AND PERSONAL PROPERTY.

- 31.2 Improvements. Upon the expiration or termination of this Master Agreement or upon the termination of a specific Site or Permit Area, PERMITTEE shall, at PERMITTEE's sole cost and expense, remove the Communications Equipment, its improvements, trade fixtures, structures, installations, and/or additions (except Street Light Poles that were installed by PERMITTEE) as soon as practicable, but in no event later than one hundred twenty (120) calendar days after the expiration or earlier termination of this Master Agreement or a subsequent Use and Occupancy Permit. If any removal of such improvements, trade fixtures, structures, installations, and/or additions by PERMITTEE results in damage to any portion of the Permit Areas, PERMITTEE shall repair all such damage at PERMITTEE's sole cost and expense. If PERMITTEE fails to remove any such improvements, trade fixtures, structures, installations, and/or additions identified by CITY, CITY may, at its option, remove them at PERMITTEE's sole cost and expense.
- 31.3 Personal Property. Upon expiration of this Mater Agreement (without the Parties execution of a new permit or agreement for the Permit Areas) or upon earlier revocation or termination of this Master Agreement or any specific Use and Occupancy Permit subsequently issued for Approved Sites, PERMITTEE shall remove machines, appliances, equipment (other than trade fixtures), and other items of personal property installed by the expiration or earlier revocation or termination of this Master Agreement. If any removal of such personal property by PERMITTEE results in damage to any portion of the Permit Areas, PERMITTEE shall repair all such damage at PERMITTEE's sole cost and expense. Any such items which PERMITTEE fails to remove shall be deemed abandoned and become CITY's property free of all claims and liens, or CITY may, at its option, remove such items at PERMITTEE's sole cost and expense.
- 31.4 Performance Bond. PERMITTEE shall obtain and provide CITY on a yearly basis proof of security in the form of a performance bond in the amount of one thousand dollars (\$1,000.00) per Site, in favor of CITY, to cover the cost to dismantle or remove PERMITTEE's Communications Equipment ("Removal Performance Bond") constructed, installed or erected by PERMITTEE or PERMITTEE's sublicensees, contractors, or subcontractors within the Permit Areas. The Removal Performance Bond shall be for a term of one (1) year and shall be continuously renewed, extended or replaced so that it remains in place for the entire Term of this Master Agreement or the expiration of all subsequent UOPs issued under this Master Agreement, whichever occurs later; or until PERMITTEE's secured removal obligations are performed to the satisfaction of CITY, if that occurs sooner than the expiration or termination of either the Master Agreement or all subsequent UOPs. In order to ensure continuous renewal of the

Removal Performance Bond with no lapse, each bond shall be extended or replaced at least one month in advance of its expiration date. Removal costs may, at CITY's reasonable discretion, be reevaluated at the conclusion of the fifth (5th) year of the Term of this Master Agreement to ensure sufficient funds for removal. PERMITTEE shall adjust the amount of the Removal Performance Bond at CITY's request. Failure to secure the Removal Performance Bond and all renewals and extensions thereof shall constitute breaches of the PERMITTEE under this Master Agreement.

32 NOTICES.

Any notice required or permitted to be given under this Master Agreement shall be in writing and may be served personally, sent by United States mail, postage prepaid, or sent by reliable overnight courier, addressed to the Parties as follows, or to any mortgagee, trustee, or beneficiary, as applicable, at the appropriate address designated, in writing, by the respective party:

If to PERMITTEE:

New Cingular Wireless PCS, LLC
Attn; Tower Asset Group – Lease Administration
AT&T Site Name: AT&T- City of San Diego Master Agreement For
Small Cells (CA)
1025 Lenox Park Blvd. NE, 3rd Floor
Atlanta, GA 30319

Tower Asset Group – Lease Administration Phone #: 1 - (877) 231-5447

Tenant Network Operations Center Phone #: 1 - (800) 832-6662
[For Maintenance & Emergencies]

with a copy to:

New Cingular Wireless PCS, LLC
Attn: AT&T Legal Department – Network Operations
AT&T Site Name: AT&T- City of San Diego Master Agreement For
Small Cells (CA)
208 S. Akard Street
Dallas, TX 75202

If to CITY:

City of San Diego
Real Estate Assets Department
Attn: Real Estate Assets Director
1200 Third Avenue, Suite 1700, MS 51A
San Diego, CA 92101-4155
Contact phone # 619-236-6020

If to CITY's Transportation Stormwater:

City of San Diego
Streets Division
Attn: Deputy Director
2781 Caminito Chollas
San Diego, CA 92105
Maintenance contact phone # (619) 527-7500 (Station 38)

- 32.2 Address Changes. Any Party entitled or required to receive notice under this Master Agreement may, by like notice, designate a different address to which notices shall be sent.
- 32.3 When Effective. Notice shall be effective upon personal service, or five (5) calendar days after deposit in the United States mail.

33 MISCELLANEOUS PROVISIONS.

- 33.2 Governing Law. This Master Agreement shall be governed, construed, and enforced in accordance with the laws of the State of California, and the United States, without regard to the conflict of law provisions thereof. Venue for any action under this Master Agreement shall be the state and federal courts located in San Diego County.
- 33.3 Entire Understanding. This Master Agreement, including all Exhibits attached hereto, contains the entire understanding of the Parties. CITY and PERMITTEE agree that there is no other written or oral understanding between them with respect to PERMITTEE's Operations. Each Party has relied on its own examination of the Permit Areas, advice from its own attorneys, and the warranties, representations, and covenants within the Master Agreement itself. Each party agrees that no other party, agent, or attorney of any other party has made any promise, representation, or warranty whatsoever which is not contained in this Master Agreement. The failure or refusal of any party to read this Master Agreement or other documents, inspect the Permit Areas, and obtain legal or other advice relevant to this transaction shall constitute a waiver of any objection, contention, or claim that might have been based on such actions.
- 33.4 No Affiliation. Nothing contained in this Master Agreement shall be deemed or construed to create a partnership, joint venture, or other affiliation between the Parties, or between CITY and any other entity or party, or cause CITY to be responsible in any way for the debts or obligations of PERMITTEE or any other party or entity.
- 33.5 Standard of Conduct. PERMITTEE and its employees shall, at all times, conduct themselves and PERMITTEE's Operations in a creditable manner and in accordance with industry standards.
- 33.6 Joint and Several Liability. If PERMITTEE is comprised of more than one person or legal entity, such persons and entities, and each of them, shall be jointly and severally liable for

the performance of each and every obligation of PERMITTEE under this Master Agreement.

- 33.7 Unavoidable Delay. If the performance of any act required of CITY or PERMITTEE under this Master Agreement is directly prevented or delayed by reason of strikes, lockouts, labor disputes, unusual governmental delays, acts of God, fire, floods, epidemics, freight embargoes, or other causes beyond the reasonable control of the Party required to perform an act, that Party shall be excused from performing that act for a period equal to the period of the prevention or delay. If CITY or PERMITTEE claims the existence of such a delay, the Party claiming the delay shall notify the other party, in writing, of that fact within ten (10) calendar days after the beginning of any such claimed delay and the Parties shall prepare and sign an appropriate document acknowledging any extension of time under this Section.
- 33.8 CITY's Consent or Approval. Whenever required under this Master Agreement, CITY's consent or approval shall mean the written consent or approval of CITY's Mayor or his designee, unless otherwise expressly provided. CITY's discretionary acts hereunder shall be made at the Mayor's discretion, unless otherwise expressly provided.
- 33.9 Agreement Modifications. This Master Agreement shall not be modified, altered, or amended unless the modification, alteration, or amendment is in writing and signed by the Parties.
- 33.10 Cost Recovery. CITY collects various fees to offset the administrative costs incurred for CITY staff services. CITY shall process each of PERMITTEE's service requests upon receipt of PERMITTEE's payment of the applicable fee. The fee schedule, which is on file with the Office of the City Clerk, may be updated from time to time in CITY's sole discretion.
- 33.11 Survival. Any obligation under this Master Agreement that requires a party's performance of that obligation after the expiration or earlier revocation or termination of this Master Agreement shall survive such expiration, revocation, or termination.
- 33.12 Number and Gender. In this Master Agreement, words in the singular number shall include the plural, and *vice versa*, as appropriate to the context. Words of either gender shall include the other gender.

- 33.13 Publicity. Marketing, advertising, promotional materials (e.g., marketing collateral), press releases or other public announcements regarding this Master Agreement, the activities hereunder, any Exhibit, any specific agreement or any agreement or amendment executed hereunder attached hereto, shall be made only after receiving the prior written consent of the other Party, except as required by law, in which case the other Party shall be consulted to the extent reasonably practicable as to the content and timing of such release, announcement or statement. Notwithstanding the foregoing, each Party may generally describe the collaborative nature of the relationship with the other Party in presentations, and proposals.
- 33.14 Attorneys' Fees. Other than as provided in Section 26 (Indemnification) in any suit or proceeding relating to this Master Agreement each Party shall be responsible for its own costs and fees incurred in connection with the suit or proceeding unless otherwise required by law.
- 33.15 Severability. This Master Agreement will be enforced to the fullest extent permitted by applicable law. If any provision of this Master Agreement is held to be illegal, invalid or unenforceable to any extent, then such provision shall be excluded to the extent of such illegality, invalidity or unenforceability; all other provisions hereof shall remain in full force and effect; and, to the extent permitted and possible, the excluded provision shall be deemed replaced by a provision that is valid and enforceable and that comes closest to expressing the intention of such excluded provision. If application of this Severability provision should materially and adversely affect the economic substance of the transactions contemplated hereby, the Party adversely impacted, in its sole discretion, shall be entitled to either (i) compensation for such adverse impact or (ii) shall have the right to terminate the Master Agreement upon thirty (30) days advance written notice, provided such notice is given within sixty (60) days of the determination of illegality, invalidity or unenforceability. The foregoing remedies are only available to the adversely impacted Party if the reason for the illegality, invalidity or unenforceability of a term is not due to misconduct of the Party seeking compensation or termination.
- 33.16 Counterparts. The Parties may sign this Master Agreement in counterparts, each of which will be considered an original, but all of which will constitute the same agreement. Facsimile and portable document format (PDF) signatures shall be binding as if original.
- 33.17 No Third-Party Beneficiaries. This Master Agreement and any separate agreements created pursuant to this Agreement are solely for the benefit of the CITY and PERMITTEE. They are not intended to benefit any other third parties.
- 33.18 Construction of Document. The parties acknowledge that this document shall not be construed in favor of or against the drafter by virtue of said Party being the drafter and that this Master Agreement shall not be construed as a binding offer until signed by both Parties.
- 33.19 Captions. The captions preceding the Sections of this Master Agreement are intended only for convenience of reference and in no way define, limit, or describe the scope of this Agreement or the intent of any provision hereof.

33.20 Authority to Execute and Deliver Agreement. Each individual executing this Master Agreement on behalf of another person or legal entity represents and warrants that he or she is authorized to execute and deliver this Master Agreement on behalf of such person or entity in accordance with duly adopted resolutions or other authorizing actions which are necessary and proper and under such legal entity's articles, charter, bylaws, or other written rules of conduct or governing agreement, and that this Master Agreement is binding upon such person or entity in accordance with its terms. Each person executing this Master Agreement on behalf of another person or legal entity shall provide CITY with evidence, satisfactory to CITY, that such authority is valid and that such entity is a valid, qualified corporation, limited liability company, partnership, or other unincorporated association, in good standing in its home state, and that such entity is qualified to do business in the State of California.

33.21 Exhibits Incorporated. All Exhibits referenced in this Master Agreement are incorporated into this Master Agreement by this reference.

33.22 Order of Precedence. The order of precedence between and among this Master Agreement and its Exhibits, which are or will be attached hereto and incorporated herein by reference, with respect to a conflict between the same subject matter, shall be as follows, but provided that the prevailing term shall apply only to (i) the conflicting terms and (ii) the extent necessary to resolve the conflict:

1. This Master Agreement;
2. Exhibits to this Master Agreement

IN WITNESS WHEREOF, this Master Agreement is executed by CITY and PERMITTEE, to be effective as of the Effective Date.

Date: 6/19/19

THE CITY OF SAN DIEGO, a California municipal corporation

By [Signature]
Cybele Thompson
Director, Real Estate Assets

Date: 6/18/19

NEW CINGULAR WIRELESS PCS, LLC,
a Delaware limited liability company

By: AT&T Mobility Corporation
Its: Manager

By [Signature]
(Print Name) Steve E. Casey
(Title) Area Vice President Construction and Engineering

ENVIRONMENTAL ANALYSIS SECTION:

CEQA Exemption 15301 (Existing Facilities) and 15303 (New Construction)

Date: 6/19/2019

By Jeff Symanski

Name: JEFF SZYMANSKI
Title: Senior Planner

APPROVED AS TO FORM:

Date: 6/27/18

MARA W. ELLIOTT, City Attorney

By Melissa Ables
Melissa Ables, Deputy City Attorney

Exhibit A: Master Structural Plan

Approval



THE CITY OF SAN DIEGO
Development Services Department
1222 First Avenue, San Diego, CA 92101-4154

8/15/18 7:50 am

Page 1 of 1

L64A-005

Project Information

Project Nbr: 593784 Title: AT&T Master Plan 2016 CBC
Project Mgr: Doringo, Berric (619)446-5115 Bdoringo@sandiego.gov



Approval Information

Approval Nbr: 20 87690 Type: Master Plan, Establish Status: Issued
Issued: 05/17/2018 7:35 am Issued By: Bourachi, Saad Permit Holder: AT&T, - AT&T Wireless
Completed: Completed By: Owner Occupied: ☐ Overridden: ☐
Extension Qty: 0 Extended By: Cancel Reason:
Scope: For Master Plan Establishment under 2016 CBC for 2 types of AT&T Micro-Cellular Antennas and associated equipment to be mounted to new light poles and existing type 15, type 15D, type 21 and type 15 TS street light poles within the public right of way. Precancel Status:
Land Doc Type:
Recorded Map No.:
Recorded Date:



Job Location (1222 01ST AV [Pending])

Address	Assessor Parcel
1222 01ST AV [Pending]	533-433-2800

Fee Worksheet

Fee	Quantity	Unit	Category
Records-Com/MDU(Calcs&Std)	1.00	Each	Issuance Fees

Exhibit B: Form of Use and Occupancy Permit

**_____
USE AND OCCUPANCY PERMIT PURSUANT
TO THE TERMS OF THE MASTER USE AND OCCUPANCY AGREEMENT**

This _____ USE AND OCCUPANCY PERMIT PURSUANT TO THE TERM OF THE MASTER USE AND OCCUPANCY AGREEMENT (UOP) which is entered into this _____ ("Effective Date"), by and between the City of San Diego, a California municipal corporation ("CITY"), and NEW CINGULAR WIRELESS PCS, LLC, a Delaware limited liability company ("PERMITTEE").

RECITALS

A. CITY and PERMITTEE entered into that certain Master Use and Occupancy Agreement dated and effective as of _____ ("MUOA"), pursuant to which PERMITTEE is allowed to install specific Communications Equipment as shown in the Master Structural Plan which is attached as Exhibit A to the MUOA, on up to 1,500 CITY Sites at certain Permit Areas.

B. The MUOA sets forth the general terms and conditions under which the CITY will prepare and execute subsequent UOPs to provide PERMITTEE a license to attach its equipment to Approved Sites once PERMITTEE has obtained all necessary regulatory permits to install, construct, maintain and operate on specific Approved Sites.

C. The MUOA also establishes the process by which PERMITTEE will request UOPs, including the type of information PERMITTEE must provide, and the standard for review of that request and the timelines for processing such a request.

D. Exhibit A of the MUOA is an approved Master Structural Plan which describes the equipment that will be placed on the Site and the location on the Site where the equipment will be installed. The MUOA also contains provisions that allow PERMITTEE to request modifications to the authorized Communications Equipment and sets forth the standard and timing requirements for reviewing and processing request for modifications.

E. Prior to entering into this UOP, the Parties have executed _____ UOPs under the MUOA, which include a total of _____ Approved Sites.

C. PERMITTEE and CITY now desire to enter into this UOP authorize PERMITTEE to enter upon, install, construct, maintain and operate its Communications Equipment within the Permit Areas on the Approved Sites, attached hereto as Exhibit A, in compliance with all of the terms and conditions as set forth herein and in the MUOA;

NOW THEREFORE, for valuable consideration, the sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. Grant. Subject to the terms of this UOP and the terms of the MUOA which are all incorporated into this UOP by this reference without the necessity of restating those terms and conditions, CITY hereby grants to PERMITTEE, its officers, employees, agents, and contractors the right to enter upon and occupy the Permit Areas on the Approved Sites as more particularly identified in Exhibit A attached hereto, solely for the purpose of the Permit Use seven (7) days a week, twenty-four (24) hours a day.
2. UOP Term. The term of this UOP shall commence on the Effective Date of this UOP, and shall terminate ten (10) years following that date minus one day, for example, if the UOP has an Effective Date of February 15, 2020, the UOP shall terminate on February 14, 2030.
3. Authorized Communications Equipment. PERMITTEE acknowledges that the Communications Equipment being installed is in compliance with and authorized by the Master Structural Plan attached to the MUOA as Exhibit A. [Alternative language to be inserted if the foregoing statement is not applicable: PERMITTEE acknowledges that it has requested a _____ (Minor/Major) Modification from the MSP, and acknowledges and warrants that the Communications Equipment being installed pursuant to this UOP complies with and is more particularly depicted in Exhibit B to this UOP.)
4. Defined Words and Phrases. Capitalized words and phrases in this UOP not otherwise defined herein shall have the meaning given to those terms in the MUOA.
5. Survival of the Incorporation of MUOA. The terms and conditions of the MUOA as incorporated herein shall be applicable and enforceable by either Party as a term and condition of this UOP, regardless of the expiration of the MUOA itself.
6. Authority to Execute and Deliver UOP. Each individual executing this UOP on behalf of another person or legal entity represents and warrants that he or she is authorized to execute and deliver this UOP on behalf of such person or entity in and accordance with duly adopted resolutions or other authorizing actions which are necessary and proper and under such legal entity's articles, charter, bylaws, or other written rules of conduct or governing agreements, and that this UOP is binding upon such person or entity in accordance with its terms. Each person executing this UOP on behalf of another person or legal entity shall provide CITY with evidence, satisfactory to CITY, that such authority is valid and that such entity is a valid, qualified corporation, limited liability company, partnership, or other unincorporated association, in good standing in its home state, and that such entity is qualified to do business in the State of California.
7. Signed in Counterparts. This UOP may be executed in one or more counterparts, all of which taken together shall constitute one and the same original document and shall become effective when one or more counterparts have been signed by each of the parties.

IN WITNESS WHEREOF, this UOP is executed by CITY and PERMITTEE, to be effective as of the Effective Date.

Date: _____

THE CITY OF SAN DIEGO, a California municipal corporation

By _____
Cybele L. Thompson
Director, Real Estate Assets

Date: _____

NEW CINGULAR WIRELESS PCS, LLC,
a Delaware limited liability company

By: AT&T Mobility Corporation
Its: Manager

By _____
(Print Name) _____
(Title) _____

ENVIRONMENTAL ANALYSIS SECTION:

Date: _____

By _____

Name: _____
Title: _____

APPROVED AS TO FORM:

Date: _____

MARA W. ELLIOTT, City Attorney

By _____
_____, Deputy City Attorney

Exhibit A: Approved Sites List

Exhibit B: Depiction of Authorized Communication Equipment (Only needs to be attached if different from MSP)

Exhibit C: Interference Protection Requirements

1. **Interference.** Anytime during the term of this Master Agreement, PERMITTEE may be required to provide an intermodulation report ("Report") to CITY. This Report shall include the calculation parameters used to compile the Report, all intermodulation "hits," a brief description of the results of the intermodulation calculations, a list of possible interference situations that may result from the proposed equipment, transmission frequencies that are currently being operated on-site, and similar or other relevant data from the licensees and/or users operating on-site. The information required to compile this report, including transmit frequencies currently operated on-site, may require collection of data from other licensees operating on-site. A list of other licensees within the Permit Areas can be obtained from CITY. CITY is not responsible for any omitted data provided for the purpose of creating this Report. If required, the Report shall be provided to CITY's General Services Department, Communications Division, and Senior Communications Engineer.
2. **Pre-installation Notification.** PERMITTEE shall notify all licensees and/or users operating within the Permit Areas of any proposed installation and/or modification at least fourteen (14) calendar days prior thereto. A list of all licensees and/or users operating within the Permit Areas may be obtained from CITY and used to compile a notification list. The notification shall be in the form of a letter to each listed licensee and/or user operating within the Permit Areas, giving a technical data summary of the proposed new and/or modified equipment and/or installation to be installed within the Permit Areas, and shall specify the approximate date of the installation or modification. An additional notification letter shall be sent to CITY's Communication Engineer at CITY's General Services Department, Communications Division. This letter shall include a list of all licensees and/or users notified. PERMITTEE shall make complete arrangements and conduct all tests and operations in accordance with all applicable Federal (including FCC) Rules and Regulations.
3. **Radio Frequency Interference to CITY Radio Equipment.** The radio equipment use proposed by PERMITTEE shall not directly or indirectly result in degraded lawful technical performance of CITY's existing radio equipment installed within the Permit Areas or used in the general area. Resulting degraded technical performance in this instance includes, but is not limited to: (a) detectable or measurable received intermodulation; (b) audio distortion or noise; and (c) receiver desensitization in excess of 3.0 dB with respect to 12dB SINAD test.
4. **Modifications to Equipment.** Modifications to transmitting equipment (including, but not limited to, those which change effective radiated power, transmitter frequency, transmitter modulation, and/or transmitter spurious and harmonic emissions) may require re-notification to existing licensees and/or users operating within the Permit Areas, as well as a new Report.

5. Resulting Interference. Should an interference problem occur within the Permit Areas (or surrounding area) as a result of any new and/or modified equipment and/or installation, PERMITTEE shall initiate mutually agreeable actions among the affected parties to mitigate or resolve the interference problem. If harmful interference cannot be resolved, CITY may recognize the prior right of other authorized users and, in CITY's sole discretion, withhold consent or disallow use of the new and/or modified equipment and/or installation, pending settlement of the interference problems between PERMITTEE and other authorized users.
6. No Obligation by CITY for Loss. CITY shall not be obligated for any loss, financial or otherwise, which may be incurred by PERMITTEE as a result of the foregoing interference protection requirements, and PERMITTEE expressly waives any claim for expense or loss which PERMITTEE might incur as a result of CITY's enforcement thereof.

Exhibit D: Emergency Maintenance Procedures

If PERMITTEE discovers that any of the Communications Equipment is damaged, PERMITTEE shall immediately notify CITY's Station 38 at (619) 527-7660.

If CITY discovers that any of the Communications Equipment is damaged, CITY shall immediately notify PERMITTEE's Network Operation Call Center at (800) 832-6662.

CITY may require any replacement Communications Equipment to be relocated, as provided for in this Master Agreement.

If the Communications Equipment causes any interference to CITY's telecommunications equipment and/or system, CITY may require such Communications Equipment to be removed permanently and replaced at another location, as provided for in this Master Agreement.

If CITY's telecommunications and/or lighting systems require emergency repair or maintenance by CITY, CITY shall employ use of PERMITTEE's emergency shut off switch, per Section 19.2, and notify PERMITTEE immediately at the number above.

PERMITTEE shall not unreasonably interfere with pedestrian or vehicle traffic while installing or maintaining the Communications Equipment.

If a party changes its emergency contact telephone information, that party shall immediately notify the other party of the new contact information at the telephone number provided above, and, within ten (10) calendar days, provide the other party with written notice of the new contact information, in accordance with this Master Agreement.

2018 CALIFORNIA BUILDING CODE
2018 CALIFORNIA TITLE 24
2018 CALIFORNIA FIRE CODE
2018 CALIFORNIA ENERGY CODE
2018 CALIFORNIA MECHANICAL CODE
2018 CALIFORNIA ELECTRICAL CODE
2018 CALTRANS STANDARD PLANS
2015 ASHRAE STANDARDS
NA-777-0 CODE

IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL
PREVAIL

ENGINEER: BLACK & VEATCH CORPORATION
10083 WILLOW CREEK RD, SUITE 300
SAN DIEGO, CA 92131

CONTACT: ROBERT WESTHOFF
(614) 753-3223

POWER COMPANY:	SOCAL
TELEPHONE COMPANY:	AT&T
WATER OWNER:	CITY OF SAN DIEGO
BY ENGINEER:	CHRISTIAN SOTO (661) 461-0970
ZONING AGENT:	TIM GROVES (619) 274-3376
CONSTRUCTION MANAGER:	ALBERT PICARDI (619) 277-8255
ENGINEER OF RECORD:	NGEL VERA/ENR (619) 438-8117

INSTALL (2-3) RADIOS AND ASSOCIATED HARDWARE
INSTALL (1) CONSOLE ANTENNA AND ASSOCIATED HARDWARE
INSTALL (1) CUTOFF
REMOVE AND REPLACE CONCRETE POLE WITH STEEL POLE WHEN APPLICABLE

APPROVED
RAFAEL LAROS
JUN 16 2015

583784

~~UNSTUDY PLAN (MSP)~~

5:16:2013

67-5974



at&t

KEVIN MCGEE (858) 232-3996

**AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
CITY OF SAN DIEGO**

PTS# 593784

BUILDING DEVELOPMENT REVIEW
ON STRUCTURAL

DISCUSSION
STEPHEN LEPPER, D-5-16-18

→ MASTER PLAN FOR ID TYPES
OF ANTENNAS MOUNTED TO LIGHT POLES
→ 2016 CBL

[illegible]

3933 PACE CENTER BLVD
SAN DIEGO, CA 92121

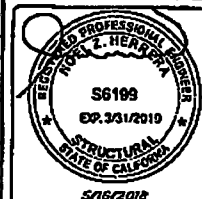


BLACK & VEATCH

GLACE & HEATH CORPORATION
10089 WILLOW CREEK RD
SUITE #350
SAN DIEGO, CA 92131

PTS NUMBER
593784

0	09/16/78	REVISED PLS COMMENTS
3	09/17/78	REVISED PER COMMENTS
1	09/20/78	REVISED PER COMMENTS
0	03/15/79	SUBS FOR APPROVAL
B/F	D/E	DESCRIPTION

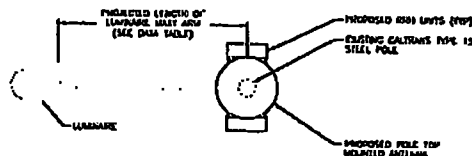


AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

TITLE SHEET

SAFETY ALARMS

COVER



LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H RISE	MIN O.D. AT POLE	NOMINAL THICKNESS	P
6'-0"	7'-6"	2-1/4"	0.1118"	TYPE 15
8'-0"	7'-6"	3-1/2"		21'-0"
10'-0"	7'-6"	3-1/2"		27'-0"
12'-0"	7'-6"	3-1/2"		33'-0"
14'-0"	7'-6"	3-1/2"		39'-0"

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

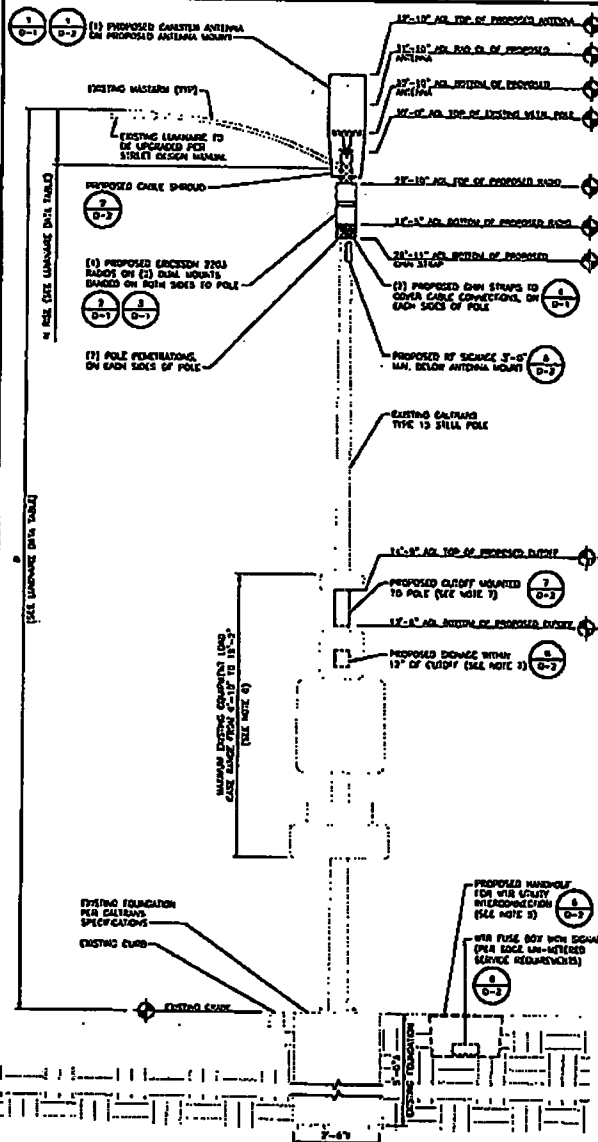
AT&T SMALL CELL (CRAN) PROJECT MASTER STRUCTURAL PLAN
 ALSO THEREFORE PROPOSES A NEW WIRELESS INSTALLATION ON A
 METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CRAN ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) RADIO UNIT & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (lbs) PER UNIT	TOTAL WEIGHT (lbs)
1	POLE ARM-3750-12P ON EQUAL ANTENNA	33.3	33.3
1	CRAN ANTENNA-7200	14.6	14.6
1	ANTENNA TOP MOUNT BRACKET	3.2	3.2
1	ANTENNA BELLEVUE MOUNT	7	7
1	CABLE SHROUD	6	6
2	CRAN STRAP	5	10
1	PROPOSED PFSB125 CUTOFF	12	12
TOTAL			109.9

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

1. A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE DIRT AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET LIGHT POLE DEFLECTS ASSESSMENT IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET LIGHT POLE WILL FULLY COMPLY WITH THE ASSIGNED 2015. THEREFORE, THE EXISTING STREET LIGHT POLE IS DEEMED SUFFICIENT FOR THE PROPOSED LOAD CASES.
2. THE GENERAL CONTRACTOR WILL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
3. A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL TOWER MARKED SHALL BE PLACED IN THE CUT-OFF LOAD CENTER, MARKS ON ANTENNA.
4. ELECTRICAL CONDUIT SHALL BE CHASED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CAL-COPV.

ENGINEER OF RECORD

ASSUMPTION NOTES

1. ALL PROPOSED EQUIPMENT TO BE PARTIAL TO EXISTING POLE.
2. WET REQUIREMENT - PROJECT TO COMPLY WITH WET REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AGL ON THE POLES THAT ARE LOCATED TO THE WEST OF 4-8 PER PLANNING REQUIREMENT. IN SUCH SCENARIO, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE ORIGINAL HEIGHT OF 105' SHALL BE IMPLEMENTED.
3. EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATION ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
4. NO CHIPPING OF FOUNDATION.
5. HAND HOLE AND WTR CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
6. ACTUAL EXISTING SPACING AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
7. POLE MOUNTED CUTOFF AND ASSOCIATED SPACING ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.



5735 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



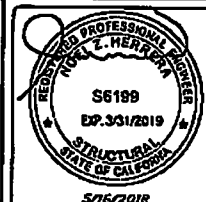
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10005 WILLOW CREEK RD
SUITE 4250
SAN DIEGO, CA 92131

PFS NUMBER

593784

REV	DATE	DESCRIPTION
1	04/15/19	REVISED FOR COMMENTS
2	04/15/19	REVISED FOR COMMENTS
3	04/15/19	REVISED FOR COMMENTS
4	04/15/19	REVISED FOR COMMENTS
5	04/15/19	REVISED FOR COMMENTS
6	04/15/19	REVISED FOR COMMENTS
7	04/15/19	REVISED FOR COMMENTS
8	04/15/19	REVISED FOR COMMENTS
9	04/15/19	REVISED FOR COMMENTS
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17	04/15/19	REVISED FOR COMMENTS
18	04/15/19	REVISED FOR COMMENTS
19	04/15/19	REVISED FOR COMMENTS
20	04/15/19	REVISED FOR COMMENTS



IF A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE ORDER
OF A LICENSED PROFESSIONAL ENGINEER,
TO SIGN THE CONTRACT.

AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 15 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
SCHEMATIC

SHEET NUMBER

MS15-1

GENERAL NOTES

6.1 Base Plate & Anchorage

6.1.1 Section

6.1.1 Section

Design Data

Maximum Factored Bending Moment (at column or girder)	$M_u = 31.17$	kip-ft	per Section 6.2.1
Maximum Factored Axial Load	$P_u = 844$	kips	per Section 6.2.1
Concrete Compressive Strength	$f'_c = 3$	ksi	assumed
Yield Strength of Base Plate	$F_y = 36$	ksi	
Base Plate Length	$L = 17$	in	
Base Plate Width	$B = 12$	in	
Modulus of Elasticity of Concrete	$E_c = 4,030$	ksi	Sec. A3.3.2
Base Plate Thickness	$t_p = 1.0$	in	
Anchor Rod & Nut Diameter	$d_a = 1.25$	in	

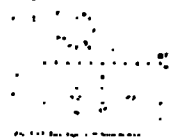


Fig. 6.1.1 Base Plate & Anchor Rod

Design Properties of Base Plate & Anchor Rod

Equivalent Eccentricity	$e = 0.17$	ft	Eq. 12.10
Maximum Bending Stress	$f_b = 18.0$	ksi	Sec. 6.1
Maximum Bending Moment	$M_u = 31.17$	kip-ft	Eq. 12.10
Concrete Eccentricity	$e_c = 0.0$	ft	Eq. 12.10
Base Plate Design Method	Base Plate Method		Sec. 12.10.1
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10

Base Plate Design

Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10
Base Plate Thickness	$t_p = 1.0$	in	Eq. 12.10

6.2 Anchor Rods

6.2 Anchor Rods

Design Data

Maximum Factored Tension	$T_u = 16$	kips	per Section 6.2.1
Maximum Factored Shear	$V_u = 1.47$	kips	per Section 6.2.1
Number of Bolts in Both Tension & Shear	$N = 4$		
Factored Tension per Anchor Rod	$T_{ur} = 4$	kips	
Factored Shear per Anchor Rod	$V_{ur} = 0.37$	kips	
Anchor Rod Diameter	$d_a = 1$	in	(assumed)
Yield Strength of Anchor Rod	$F_y = 36$	ksi	(A36 assumed)
Ultimate Tensile Strength of Anchor Rod	$F_u = 58$	ksi	(A36 assumed)

Design Properties of Anchor Rods

Minimum Unstressed Area of Anchor Rod	$A_s = 0.78$	in ²	Sec. A3.3.1
Minimum Tensile Stress of Anchor Rod	$f_t = 4150$	ksi	Table A3.2
Minimum Shear Stress of Anchor Rod	$f_v = 20.75$	ksi	Table A3.2
Required Shear Stress of Anchor Rod	$f_{vr} = 0.47$	ksi	Sec. A3.3.1-125
Minimum Factor for Shear and Tension	$\phi = 0.75$		Sec. A3.3.1-125
Minimum Tensile Stress Modified to Include Shear Stress	$F_{tr} = 4150$	ksi	Sec. A3.3.1-125
Minimum Tensile Strength of Anchor Rod	$A_s = 0.78$	in ²	Eq. A3.2
Factored Tensile Strength of Anchor Rod	$A_s = 0.78$	in ²	Eq. A3.2
Stress Ratio	$R = 0.016$		Eq. A3.2

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Properties

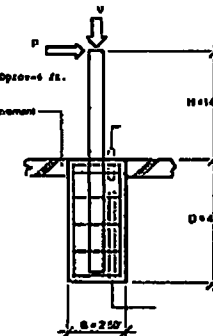
Lateral Force	$P = 0.85$	kip	
Vertical Force	$V = 0.01$	kip	
Height above grade of Lateral Force	$H = 10.31$	ft	
Diameter of Pier	$D = 2.59$	ft	
Lateral Soil Bearing Capacity	$S_b = 0.10$	ksi	Table 1806.2
Vertical Soil Bearing Capacity	$S_v = 1.00$	ksi	Table 1806.2
Transverse Load Factor	$F = 2.00$		Section 1806.3
Final Depth	$D_{req} = 2.51$	ft	

Anchor Rod Location

$$D_{req} = (4.25 P / H) S_b D^3 \quad (IBC 2012 Eq. 18-2)$$

Lateral Soil Bearing Capacity	$F_b = 0.10$	ksi	
Allowable lateral pressure at "D"	$S_b = P / S = D$	ksi	
Required Calculated Depth	$D_{req} = 4.93$	ft	Option 6 ft.

Vertical Soil bearing Check	(Section 1807.3.2.3)		
$Q_{ult} = (0.61 + 4.81) \times 4.93 \times 0.15 / 4.01$			
$= 0.85$	kip		



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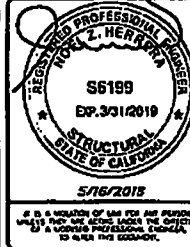
BLACK & VEATCH

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10000 WILLOW CREEK RD
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SAN DIEGO, CA 92121

PIS NUMBER

593784

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1	04/10/18	REVISED PER COMMENTS
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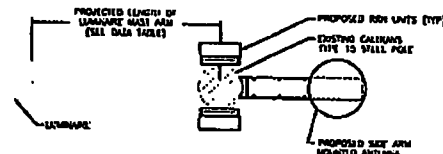


AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 15 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS15-3





LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H RISE	MIN O.D. AT POLE	NOMINAL THICKNESS	P
8'-0"	3'-0"	3-1/2"	0.1188"	17'-0"
8'-0"	3'-0"	3-1/2"		17'-0"
10'-0"	3'-0"	3-1/2"		17'-0"
12'-0"	3'-0"	3-1/2"		17'-0"
13'-0"	3'-0"	3-1/2"		17'-0"

STEEL POLE PLAN VIEW

NO SCALE

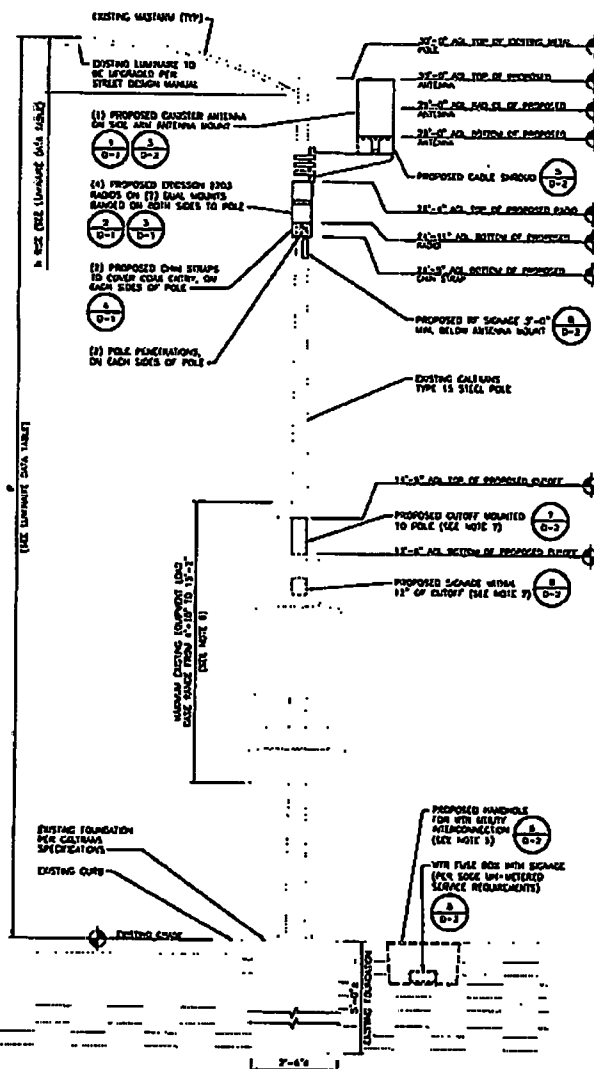
PROJECT DESCRIPTION

- AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:
- INSTALL (1) CONSOLE ANTENNA & ASSOCIATED MOUNT/HARDWARE
 - INSTALL (1) RADIO UNIT & ASSOCIATED MOUNT/HARDWARE
 - INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (lbs) PER UNIT	TOTAL WEIGHT (lbs)
1	NOE AZON-27120-12P OR EQUAL ANTENNA	33.3	33.3
1	DRICKSON BRUS-2203 RADIO	14.4	14.4
1	SIDE ARM ANTENNA MOUNT BRACKET	25	25
1	ANTENNA GLENE MOUNT	7	7
1	CABLE SHROUD	6	6
2	SHUN STOP	5	10
1	FACTORYCORP. PFM0122 CUTOFF	17	17
	TOTAL		122.9

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

- A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE QUART AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET POLE DUTY ASSESSMENT IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET POLE WILL FULLY COMPLY WITH THE AASHTO 2010. THEREFORE, THE EXISTING STREET LIGHT POLE IS DEEMED SUFFICIENT FOR THE PROPOSED LOAD CASES.
- THE CENTRAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD OBJECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
- A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL STATION NUMBER SHALL BE PLACED IN THE CUT-OFF END CENTER, RADIOS OR ANTENNA.
- ELECTRICAL CONDUIT SHALL BE CRIMPED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CAL-REGSA.

ASSUMPTION NOTES

- ALL PROPOSED EQUIPMENT TO BE PHOTOS TO MATCH EXISTING POLE.
- WET REQUIREMENT - PROJECT TO COMPLY WITH WET REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AGL ON THE POLES THAT ARE LOCATED TO THE WEST OF 4-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN TO MATCH WITH THE OVERALL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
- EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
- NO CHIPPING OF FOUNDATION.
- WIND POLE AND WET CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
- ACTUAL EXISTING SHROUD AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
- POLE MOUNTED CUTOFF AND ASSOCIATED SHROUD ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



3735 PACIFIC CENTER BLVD
SAN DIEGO, CA 92131



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SAN DIEGO, CA 92131

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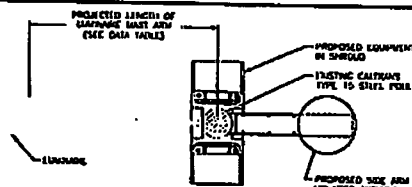
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AT&T SMALL CELL (CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 15 STREET LIGHT POLE WITH SIDE ARM ANTENNA MOUNT AND PICO RADIO EQUIPMENT SCHEMATIC

SHEET NUMBER

MS15-7



LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H RISE	MIN. O.D. AT POLE	NOMINAL THICKNESS	P
5'-0"	2'-0"	2-1/2"	0.1186"	TYPE 15
6'-0"	2'-5"	3-1/2"		24"-8"
8'-0"	3'-0"	4-1/2"		24"-8"
10'-0"	3'-5"	5-1/2"		24"-8"
12'-0"	4'-0"	6-1/2"		24"-8"
14'-0"	4'-5"	7-1/2"		24"-8"

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

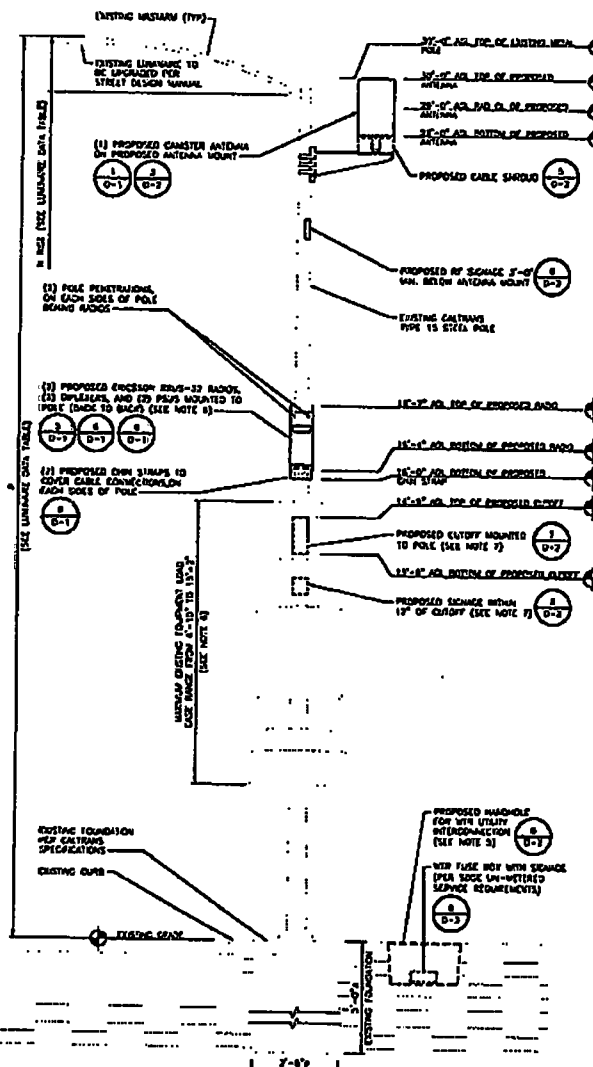
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A WIRELESS LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CARRIER ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (2) RADIO UNITS & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (lbs) PER UNIT	TOTAL WEIGHT (lbs)
1	ACE RCM-27120-12" OR EQUAL ANTENNA	33.3	33.3
2	EMERSON BRU-33 RADIO & PSU AC DB UNIT	62.21	124.42
2	RF'S FPLA2000H-AC DUPLEXER	2.1	4.2
1	SIDE ARM ANTENNA MOUNT BRACKET	23	23
1	ANTENNA SLAVE MOUNT	2	2
1	CABLE SHROUD	8	8
2	CABLE STRAP	3	6
1	RADIO CONCEALMENT SYSTEM	3	3
1	FACTORYSOL PYS0102 CUTOFF	12	12
	TOTAL		218.03

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

1. A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE BUILT AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET POLE DEFLECTS ASSESSMENT IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET LIGHT POLE IS DEEMED SATISFACTORY FOR THE PROPOSED LOAD CASES.
2. THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
3. A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL STATION MANAGER SHALL BE PLACED IN THE CUTOFF EOOD COUNTER, BASED ON ANTENNA.
4. ELECTRICAL CONDUIT SHALL BE ORIENTED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CALIFORNIA.

ENGINEER BY RECORD

ASSUMPTION NOTES

1. ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
2. WOF REQUIREMENT - PROJECT TO COMPLY WITH WOF REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AGL ON THE POLES THAT ARE LOCATED IN THE WEST OF 1-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIO, THE MASTER STRUCTURAL PLAN COINCIDENT WITH THE OVERALL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
3. EQUIPMENT MUST BE INSTALLED PER THE APPROPRIATE CONFIGURATION ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
4. NO CHIPPING OF FULCRUM.
5. WIND POLE AND WIND CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
6. ACTUAL EXISTING SEWAGE AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
7. POLE MOUNTED CUTOFF AND ASSOCIATED SEWAGE ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.



5236 PHOENIX CENTER BLVD
SAN DIEGO, CA 92131



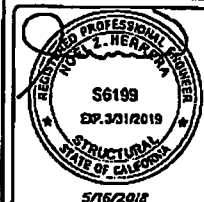
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AT&T SMALL CELL (CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 15 STREET LIGHT POLE WITH SIDE ARM ANTENNA MOUNT AND MICRO RADIO EQUIPMENT SCHEMATIC

SHEET NUMBER

MS15-10



3735 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



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10089 WILLOW CREEK RD
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5/16/2015

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AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 15 STREET
LIGHT POLE WITH SIDE
ARM ANTENNA MOUNT AND
MICRO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS15-12

6.5 Base Plate & Anchorage

6.5.1 Base Plate

60CS JRG:ALX

Design Data

Maximum Factored Bending Moment per Anchor Rods	$M_u = 26.12$ kips	ref. Analysis 8 Design Section 6.2.1
Maximum Factored Axial Load	$P_u = 170$ kips	ref. Analysis 8 Design Section 6.2.1
Concrete Compressive Strength	$f'_c = 3$ ksi	assumed
Yield Strength of Base Plate	$F_y = 36$ ksi	
Base Plate Length	$A_1 = 12$ in	
Base Plate Width	$B = 12$ in	
Minimum F_u for Compression	$F_u = 430$ ksi	Sec. 6.5.2.2
Base Plate Thickness	$t_p = 12$ in	
Anchor Rod Length	$L_a = 120$ in	



FIG. 6.5.1 Base plate and anchor rods

Design Method: See Fig. 6.5.1, Section 6.5.2.1

Equivalent Eccentricity	$e = 26$ in	Eq. 6.5.2.1
Maximum Bending Stress	$f_b = 166$ ksi	Sec. 6.5
Maximum Bending Moment	$M_u = 26.12$ kips	Eq. 6.5.2.1
Concrete Strength	$f'_c = 3$ ksi	Eq. 6.5.2.1

Base Plate Design Method
Small Moment: $M_u \leq P_u e$
Large Moment: $M_u > P_u e$

Design Method: Large Moment Base Plate Sec. 6.5.2.2

Design Method: Large Moment Base Plate Sec. 6.5.2.2

Design Method: Large Moment Base Plate Sec. 6.5.2.2

Design Method: Large Moment Base Plate Sec. 6.5.2.2

Design Method: Large Moment Base Plate Sec. 6.5.2.2

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Design Method: Large Moment Base Plate Sec. 6.5.2.2

Design Method: Large Moment Base Plate Sec. 6.5.2.2

Design Method: Large Moment Base Plate Sec. 6.5.2.2

6.5.2 Anchorage Check

60CS JRG:ALX

Design Data

Maximum Factored Bending	$M_u = 22$ kips	ref. Section 6.5.1
Maximum Factored Shear	$V_u = 1.84$ kips	ref. Section 6.2.1
Number of Bars of Each Tension & Shear	$N = 4$	
Factored Tension per Anchor Rod	$T_{u,rod} = 0.8$ kips	
Factored Shear per Anchor Rod	$V_{u,rod} = 0.46$ kips	
Anchor Rod Diameter	$D = 1.25$ in	(assumed)
Yield Strength of Anchor Rod	$F_y = 36$ ksi	(ASTM assumed)
Ultimate Tensile Strength of Anchor Rod	$F_u = 58$ ksi	(ASTM assumed)

Reinforcement and Steel Properties: See Section 6.5.2.1

Adjusted Unstressed Area of Anchor Rod	$A_{un} = 1.25$ in ²	Sec. 6.5.2.1
Adjusted Tensile Strength of Anchor Rod	$T_{u,rod} = 43.50$ kips	Table 6.5.2
Adjusted Shear Strength of Anchor Rod	$V_{u,rod} = 26.12$ kips	Table 6.5.2
Required Shear Stress of Anchor Rod	$f_{v,rod} = 0.38$ ksi	Sec. 6.5.2.1-125
Required Factor for Shear and Tension	$\phi = 0.75$	Sec. 6.5.2.1-125
Adjusted Tensile Strength of Anchor Rod	$T_{u,rod} = 43.50$ kips	Sec. 6.5.2.1-125
Adjusted Tensile Strength of Anchor Rod	$T_{u,rod} = 43.50$ kips	Eq. 6.5.2
Adjusted Tensile Strength of Anchor Rod	$T_{u,rod} = 43.50$ kips	Eq. 6.5.2
Adjusted Tensile Strength of Anchor Rod	$T_{u,rod} = 43.50$ kips	Eq. 6.5.2

Prior with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Data

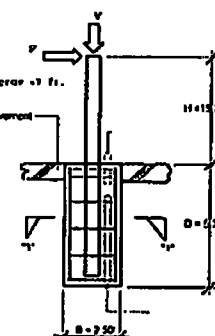
Lateral Force	$P_u = 1.75$ kips
Vertical Force	$V_u = 0.83$ kips
Height above grade of Lateral Force	$H = 15.71$ ft
Diameter of Pier	$D = 2.50$ ft
Lateral Soil Bearing Capacity	$S_u = 0.10$ ksf
Vertical Soil bearing Capacity	$S_v = 1.50$ ksf
Transfer Load factor	$P_u = 2.00$
Final Depth	$D_{final} = 0.33$ ft

Available Equation

$D_{min} = (4.25 \text{ ft} / 12) \leq D_{max}$ (IBC 2012 Eq. 18-2)

Lateral Soil Bearing Capacity $F_u S_u = 0.20$ ksf
Allowable lateral pressure at "D": $S_u = F_u S_u D = 1.07$ ksf
Required Calculation Depth $D_{min} = 0.33$ ft = Error = 1 ft.

Vertical Soil bearing Check (Section 1807.3.2.3) eqd. parameter
 $D_{min} = (0.83 + 4.91 + 0.35 + 0.13) / 4.91 = 0.67$ ft
16.7% ≤ 1.00 ksf



MS15D-1

MS15D-2



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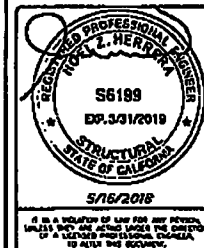
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**AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN**

EXISTING TYPE 15D STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS15D-3

6.6 Base Plate Anchorage

6.6.1 Base Plate

ASCE 318-05

Design Data

Maximum Factored Downward Moment per Moment Magnifier	$M_u = 27.50$ k-ft	Ref. Analysis & Design Section 6.2.1
Maximum Factored Axial Load	$P_u = 131$ kips	Ref. Analysis & Design Section 6.2.1
Concrete Compressive Strength	$f'_c = 3$ ksi	(assumed)
Yield Strength of Base Plate	$F_y = 36$ ksi	
Base Plate Length	$L = 12$ in	
Base Plate Width	$B = 12$ in	
Yield Strength of Steel in Compression	$F_y = 36$ ksi	Sec. 6.6.2
Base Plate Thickness	$t_p = 1.5$ in	
Anchor Rod Edge Distance	$e_{min} = 1.25$ in	

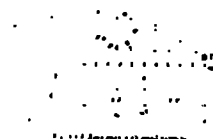


Fig. 6.6.1 Base plate anchorage details

Design Factored Axial Load (Unfactored Base Plate)

Concrete Compressive Strength	$f'_c = 3$ ksi	Eq. 6.6.2
Maximum Bearing Stress	$f_{pu} = 100$ ksi	Sec. 6.6
Maximum Bearing Pressure	$f_{pu} = 100$ ksi	Eq. 6.6.2
Concrete Compressive Strength	$f'_c = 3$ ksi	Eq. 6.6.2

Base Plate Design Method
Total Moment = M_u
Large Moment = M_u

Base Plate Design Method

Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2
Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2

Base Plate Design Method

Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2
Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2

Base Plate Design Method

Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2
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Base Plate Design Method

Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2
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Base Plate Design Method

Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2
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Base Plate Design Method

Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2
Base Plate Design Method	$f'_c = 3$ ksi	Eq. 6.6.2

Base Plate Design Method

6.6.2 Base Plate

ASCE 318-05

Design Data

Maximum Factored Tension	$T_u = 27$ kips	Ref. Section 6.2.1
Maximum Factored Compression	$C_u = 131$ kips	Ref. Section 6.2.1
Number of Bars in Base Plate & Shear	$n = 4$	
Factored Tension per Anchor Rod	$T_{ur} = 6.75$ kips	
Factored Compression per Anchor Rod	$C_{ur} = 32.75$ kips	
Anchor Rod Diameter	$d = 1.25$ in	(assumed)
Yield Strength of Anchor Rod	$F_y = 36$ ksi	(ASCE assumption)
Minimum Tensile Strength of Anchor Rod	$F_t = 58$ ksi	(ASCE assumption)

Embedded Length and Steel Reinforcement Connections

Minimum Embedded Length of Anchor Rod	$A_s = 1.25$ in	Sec. 12.11.1
Minimum Tensile Strength of Anchor Rod	$F_t = 58$ ksi	Table 21.2
Minimum Shear Strength of Anchor Rod	$F_v = 36$ ksi	Table 21.2
Minimum Shear Strength of Anchor Rod	$F_v = 36$ ksi	Sec. 21.10.1-125
Minimum Shear Strength of Anchor Rod	$F_v = 36$ ksi	Sec. 21.10.1-125

Minimum Tensile Strength of Anchor Rod	$F_t = 58$ ksi	Eq. 21.2
Minimum Tensile Strength of Anchor Rod	$F_t = 58$ ksi	Eq. 21.2
Minimum Tensile Strength of Anchor Rod	$F_t = 58$ ksi	Eq. 21.2

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Parameters

Lateral Force	$P = 1.0$ kips	
Vertical Force	$V = 0.85$ kips	
Height above grade of Lateral Force	$H = 15.21$ ft	
Diameter of Pier	$D = 2.50$ ft	
Lateral Soil Bearing Capacity	$S = 0.10$ ksf	Table 1800.2
Vertical Soil bearing Capacity	$Q_{ult} = 1.00$ ksf	Table 1800.2
Transfer Load factor	$F = 2.00$	Section 1800.3.1
Tied Depth	$D_{tr} = 0.35$ ft	

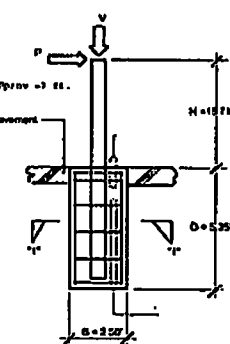
Applicable Equations

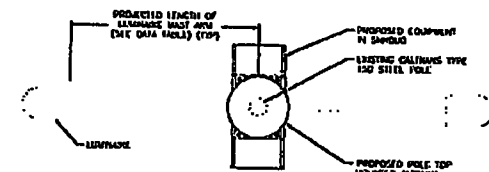
$Q_{ult} = 1.475 P (1 + 0.5 S)$ (BC 2012 Eq. 18.2)

Lateral Soil Bearing Capacity
Allowable lateral pressure at 12"
Required Calculated Depth

Vertical Soil bearing Check
 $Q_{ult} = (0.85 + 4.91 + 5.35 + 0.75) / 4.91$
 $= 0.97$ ksf

1.50 ksf
OK





LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H RISE	MIN. O.D. AT POLE	NOMINAL THICKNESS	P
6'-0"	3'-0"	3-1/2"	0.1186"	TYPE 150
8'-0"	3'-6"	3-1/2"		37'-0"
10'-0"	3'-9"	3-1/2"		37'-0"
12'-0"	4'-0"	3-1/2"		37'-0"

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

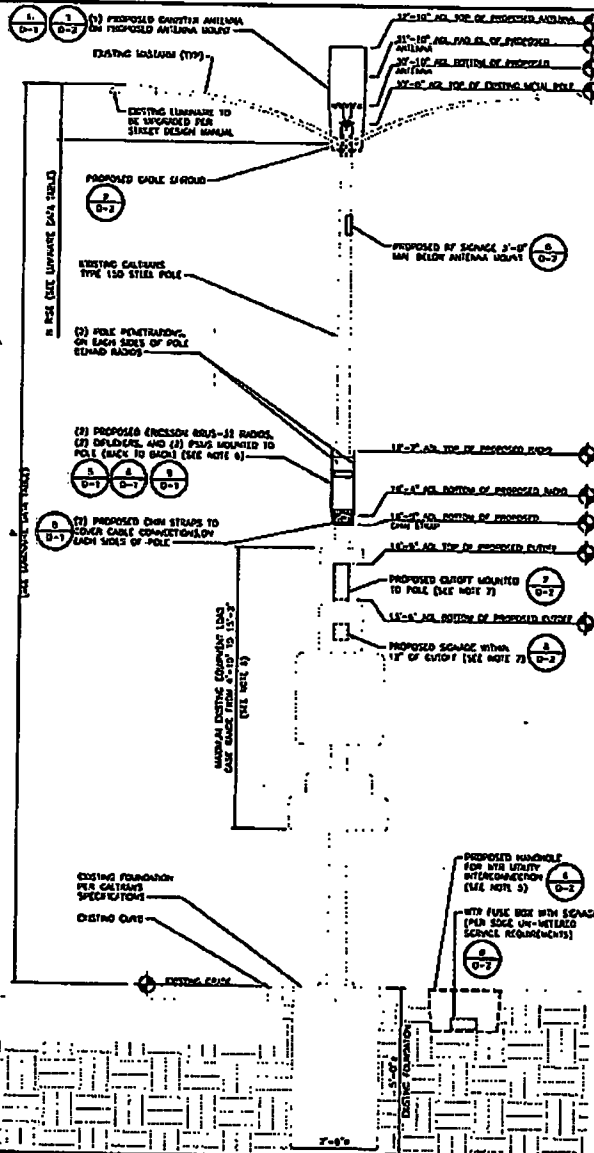
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CARRIER ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (2) RADIO UNITS & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CARRIER TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (LBS) PER UNIT	TOTAL WEIGHT (LBS)
1	ACE HCOM-27120-TTP ON EQUIN ANTENNA	33.5	33.5
2	ERIKSSON RUM-32 RADIO & IPW AC 60 UNIT	63.81	127.62
2	IPW FORKHOUSING-AC DIPLEXER	3.1	6.2
1	ANTENNA TOP MOUNT BRACKET	27	27
1	ANTENNA SLEEVE MOUNT	7	7
1	CABLE SADDLE	6	6
2	CABLE STRAP	0	0
1	RADIO CONCEALMENT SYSTEM	3	3
1	PACTECSON PPS10123 CARRIER	12	12
	TOTAL		225.87

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

- A STRUCTURAL ANALYSIS HAS BEEN PERFORMED. THE EXISTING STREET LIGHT IS ASSIGNED TO BE TESTED AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET LIGHTS ASSIGNED TO BE NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET LIGHT POLE WILL FULLY COMPLY WITH THE ASHMO 2013. THEREFORE, THE EXISTING STREET LIGHT POLE IS DEEMED SUFFICIENT FOR THE PROPOSED LOAD CASES.
- THE GENERAL CONTRACTOR SHOULD NOTIFY THE AGENCIES IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
- A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL SATION NUMBER SHALL BE PLACED IN THE CUT-OFF LEAD CENTER, RADIOS ON ANTENNA.
- ELECTRICAL CONDUIT SHALL BE COORDINATED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUE AND THE ELECTRICAL SAFETY ORDER OF CAL-EDSA.

ASSUMPTION NOTES

- ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
- WOT REQUIREMENT - PROJECT TO COMPLY WITH WOT REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' A.S.D. ON THE POLES THAT ARE LOCATED TO THE WEST OF 1-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE OVERALL HEIGHT OF LESS THAN 30' SHALL BE IMPLEMENTED.
- EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATION ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
- NO CHIPPING OF FOUNDATION.
- WIND HOLE AND WTE CARRIER LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
- ACTUAL EXISTING SOURCE AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
- POLE CARRIER CARRIER AND ASSOCIATED SERVICE, ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



3730 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



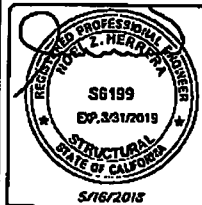
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10001 WILSON CENTER RD
SUITE 1300
SAN DIEGO, CA 92131

PIS NUMBER

593784

REV	DATE	DESCRIPTION
1	01/11/10	ISSUED PER COMMENTS
2	01/11/10	REVISED PER COMMENTS
3	01/11/10	REVISED PER COMMENTS
4	01/11/10	REVISED PER COMMENTS
5	01/11/10	REVISED PER COMMENTS



IF A VIOLATION OF LAW FOR ANY PURPOSE, UNLESS ANY ACTION UNDER THE PROVISION OF A LICENSED PROFESSIONAL ENGINEER, TO AVOID THIS VIOLATION.

AT&T SMALL CELL (CRAN) PROJECT MASTER STRUCTURAL PLAN

EXISTING TYPE 150 STREET LIGHT POLE WITH POLE TOP ANTENNA MOUNT AND MICRO RADIO EQUIPMENT SCHEMATIC

SHEET NUMBER

MS15D-4

Site Information: Address: San Diego, CA
Description: 30' Generic Existing Steel Light Pole
Type 15D
Loading Scenario: Micro-2

Applicable Codes: AASHTO 2015

Analysis Results

Existing Steel Light Pole Stress Ratio with Proposed Equipment: 71.4% Pass
Existing Steel Light Pole Service Deflection Ratio with Proposed Equipment: 99.6% Pass
Existing Concrete Pier Foundation: 61.7% Pass

ASSUMPTIONS, EXPLANATIONS, AND NOTES

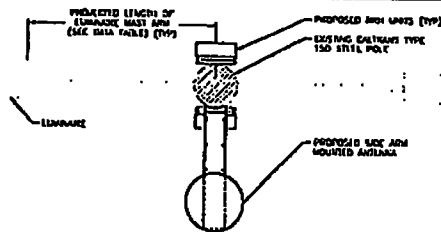
1. This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing proposed equipment loading, and pole data. If the information is not current and correct, the results should be considered obsolete and further analysis will be required.
2. Black & Veatch assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to missing, corroding, degrading and/or deteriorating components, equipment manufacturing and/or construction, and improper pole maintenance.
3. Black & Veatch assumes no responsibility for modifications completed prior to or hereafter in which Black & Veatch was not directly involved. These modifications include but are not limited to replacing or strengthening pole components, installing or removing antenna mounting components, installing or removing utility components, and changing loading conditions.
4. This analysis assumes that the pole structural components and mounts, including all third parties and associated hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above specifications.
5. This analysis assumes that all existing and/or proposed equipment mounts on the tower will have adequate capacity to support the existing and proposed equipment loading.
6. Fatigue does not govern the design of common light poles per AASHTO Sect. E11.4.
7. At the time of this structural analysis, exact details were not available for the following items:
 - hardware (type & model, weight & dimensions)
 - foundation (depth and quantity, soil parameters)
 - sagging on poles were assumed

POLE DATA			
Type of Material	Steel - 50 ksi	(N/A)	WIPER (WIPER)
Bottom Pole Diameter	8 in		
Top Pole Diameter	144.75 in		
Pole Thickness	0.375 in		
Height of Pole	30 ft		
LOADING DATA			
Type of Mount	Micro-2	(N/A)	
Antenna Diameter	18.75 in		
Antenna Height	0.120 in		
Weight of Arm	72 lb		
Horizontal Length of Arm	12.00 ft		
Total Length of Arm	12.5 ft		

Alterations made to the loading and/or pole data on the previous sheet shall be submitted to the engineer for review. The engineer shall verify the accuracy of the data and the adequacy of the design. The engineer shall also verify the adequacy of the design for the altered conditions. The engineer shall also verify the adequacy of the design for the altered conditions.

COMPLEMENTARY DATA

Equipment & Appurtenances	Loading in Proposed	Dimensions (in)			Weight (lb)	Effective Projected Area (sq ft)		Location
		W	H	D		Front	Side	
Top Pole	Existing	8	8	8	45	1.50	1.50	Top
Antenna Mount	Proposed	18	48	18	400	4.50	4.50	Top
Antenna	Proposed	18	48	18	400	4.50	4.50	Top
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LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H RISE	MIN. O.D. AT POLE	NOMINAL THICKNESS	P
8'-0"	2'-0"	3-1/2"	31'-0"	TYPE 150
8'-0"	2'-0"	3-1/2"	31'-0"	
10'-0"	2'-0"	3-1/2"	31'-0"	
12'-0"	2'-0"	3-1/2"	31'-0"	

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

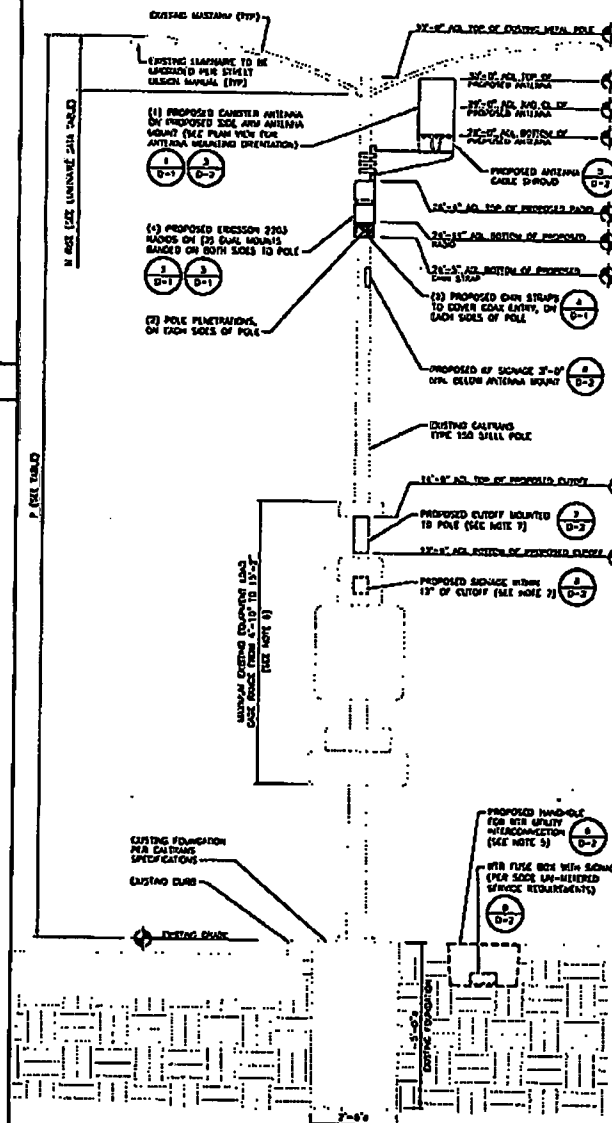
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) SIDE ARM ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) RADIO UNITS & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (lbs) PER UNIT	TOTAL WEIGHT (lbs)
1	REC. MOUNT-2Y150-12P ON SIDE ARM ANTENNA	33.3	33.3
1	UNIBLOCK RITE-2303 RADIO	10.4	10.4
1	SIDE ARM ANTENNA MOUNT BRACKET	25	25
1	ANTENNA BASE MOUNT	7	7
1	CABLE STRAP	6	6
1	CHOK STRAP	5	5
1	PACKEDCOP. PPS10123 CUTOFF	19	19
	TOTAL	106	106

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

- A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSIGNED TO BE DIRT AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET POLE QUALITY ASSUMPTION IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET POLE WILL FULLY COMPLY WITH THE ALBINO 2013. THEREFORE, THE EXISTING STREET POLE IS DEEMED SUFFICIENT FOR THE PROPOSED LOAD CASES.
- THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
- A 34 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL STATION NUMBER SHALL BE PLACED IN THE CUT-OFF LOAD CENTER, RADIOS ON ANTENNA.
- ELECTRICAL CONDUIT SHALL BE GROUNDED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CAL-OSHA.

ASSUMPTION NOTES

- ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
- SEE REQUIREMENTS - PROJECT TO COMPLY WITH ALL REQUIREMENTS. TOP OF THE ANTENNA MUST BE LOCATED 30' A.O.D. ON THE POLES THAT ARE LOCATED TO THE WEST OF I-5 PER PLANNING REQUIREMENTS. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE OVERALL HEIGHT OF LESS THAN 30' WILL BE APPLIED.
- EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
- NO CHIPPING OF COAGULATION.
- HAND HOLE AND WIRE CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SLOTTED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
- ACTUAL EXISTING SPACING AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
- POLE MOUNTED CUTOFF AND ASSOCIATED SPACING ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.



3730 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



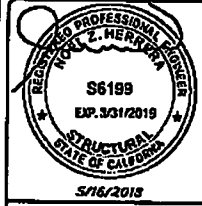
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10050 BELLEVUE BLVD
SAN DIEGO, CA 92131

PDS NUMBER

593784

REV	DATE	DESCRIPTION
1	04/15/14	REVISED PER COMMENTS
2	04/15/14	REVISED PER COMMENTS
3	04/15/14	REVISED PER COMMENTS
4	04/15/14	REVISED PER COMMENTS
5	04/15/14	REVISED PER COMMENTS
6	04/15/14	REVISED PER COMMENTS
7	04/15/14	REVISED PER COMMENTS
8	04/15/14	REVISED PER COMMENTS
9	04/15/14	REVISED PER COMMENTS
10	04/15/14	REVISED PER COMMENTS



AT&T SMALL CELL (CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 150 STREET LIGHT POLE WITH SIDE ARM ANTENNA MOUNT AND PICO RADIO EQUIPMENT SCHEMATIC

SHEET NUMBER

MS15D-7

Site Information: Address: San Diego, CA
Description: 30' Generic Existing Steel Light Pole
Type 15D
Loading Scenario: Pico-3

Applicable Codes: AASHTO 2015

Analysis Results

Existing Steel Light Pole Stress Ratio with Proposed Equipment: 73.1% Pass
Existing Steel Light Pole Service Deflection Ratio with Proposed Equipment: 77.0% Pass
Existing Concrete Pier Foundation: 61.7% Pass

ASSUMPTIONS, DISCLAIMERS, AND NOTES

1. This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This includes site data, existing/proposed equipment loading, and pole data. If this information is not current and correct, this report should be considered obsolete and further analysis will be required.
2. Black & Veatch assumes no responsibility for failure caused by factors beyond our control. These include but are not limited to existing, existing, existing, and/or deteriorating components, improper manufacturing and/or construction, and improper pole maintenance.
3. Black & Veatch assumes no responsibility for modifications completed prior to or thereafter in which Black & Veatch was not directly involved. These modifications include but are not limited to replacing or strengthening pole components, installing or removing existing components, installing or removing existing components, and changing loading configurations.
4. This analysis assumes that the pole structural components and materials, including all steel sections and attachment hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above specifications.
5. This analysis assumes that all existing and/or proposed equipment mounted on the tower will have adequate capacity to support the existing and proposed equipment loading.
6. This analysis does not govern the design of existing light poles per AASHTO Sec. C11.4.
7. At the time of this structural analysis, exact details were not available for the following items:
- Summary: (Type B model, weight & dimensions)
- Foundation pier size and capacity, and parameters.
- Signages on poles were assumed.

POLE DATA
Type of Material: Steel - 50 ksi
Bottom Pole Diameter: 6 in
Top Pole Diameter: 16.116 in
Pole Thickness: 0.1715 in
Weight of Pole: 32 lb
Type of Material: Steel - 50 ksi
Pole Diameter: 6 in
Pole Thickness: 0.1715 in
Weight of Pole: 32 lb
Type of Material: Steel - 50 ksi
Pole Diameter: 6 in
Pole Thickness: 0.1715 in
Weight of Pole: 32 lb

LOADING DATA
Type of Material: Steel - 50 ksi
Pole Diameter: 6 in
Pole Thickness: 0.1715 in
Weight of Pole: 32 lb
Type of Material: Steel - 50 ksi
Pole Diameter: 6 in
Pole Thickness: 0.1715 in
Weight of Pole: 32 lb
Type of Material: Steel - 50 ksi
Pole Diameter: 6 in
Pole Thickness: 0.1715 in
Weight of Pole: 32 lb

Reference is made to the existing load cases, as shown on the previous sheet of this analysis, for not significantly impact the structural results. These existing load cases include the weight of the pole, the weight of the equipment, and the weight of the signages. The analysis is complete and is submitted to the Engineer of Record for their consideration.

EQUIPMENT DATA

Equipment & Approximate Weight	Location at Proposed	Dimensions (in)	Weight	Height from Ground (ft)	Location
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00
AT&T Small Cell	Existing	15 x 15 x 15	45	1.50	5.00

Total Weight of Load: 180 lb
Total Moment Due to Wind Load: 180 lb-ft
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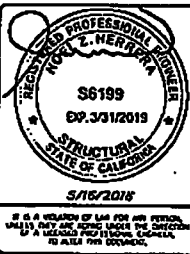
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3215 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121
BLACK & VEATCH
BLACK & VEATCH CORPORATION
10000 WILLOW CREEK RD
SAN DIEGO, CA 92121

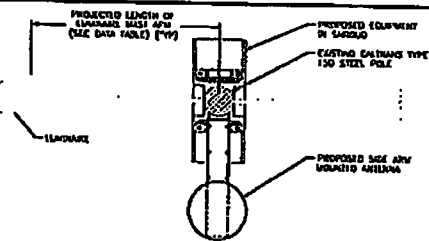
PTS NUMBER
593784

REV	DATE	DESCRIPTION
1	01/15/18	REVISED FOR COMMENTS
2	02/15/18	REVISED FOR COMMENTS
3	03/15/18	REVISED FOR COMMENTS
4	04/15/18	REVISED FOR COMMENTS
5	05/15/18	REVISED FOR COMMENTS
6	06/15/18	REVISED FOR COMMENTS
7	07/15/18	REVISED FOR COMMENTS
8	08/15/18	REVISED FOR COMMENTS
9	09/15/18	REVISED FOR COMMENTS
10	10/15/18	REVISED FOR COMMENTS
11	11/15/18	REVISED FOR COMMENTS
12	12/15/18	REVISED FOR COMMENTS



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 15D STREET
LIGHT POLE WITH SIDE
ARM ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER
MS15D-8



PROJECTED LENGTH	H ROSE	MIN O.D. AT POLE	MINIMUM THICKNESS	P
0'-0"	0'-0"	3'-1/4"	31'-0"	TYPE 150
0'-0"	0'-0"	3'-1/2"	31'-0"	TYPE 150
0'-0"	0'-0"	3'-1/2"	31'-0"	TYPE 150
0'-0"	0'-0"	3'-1/2"	31'-0"	TYPE 150
0'-0"	0'-0"	3'-1/2"	31'-0"	TYPE 150

STEEL POLE PLAN VIEW

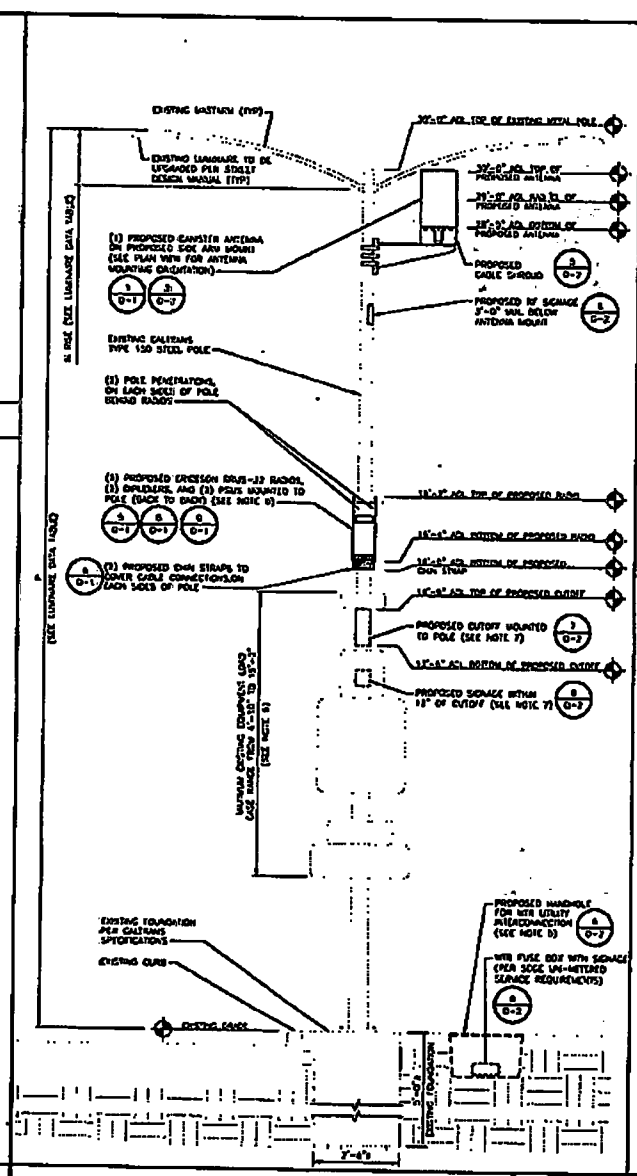
PROJECT DESCRIPTION

AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- DETAIL (1) CANTENNA ANTENNA & ASSOCIATED MOUNT/HARDWARE
- DETAIL (2) RADIO UNIT & ASSOCIATED MOUNT/HARDWARE
- DETAIL (3) CUTOFF TO POLE

AMOUNT	EQUIPMENT	WEIGHT (lbs) PER UNIT	TOTAL WEIGHT (lbs)
1	ACE MOON-20150-12" OR EQUIV. ANTENNA	35.3	35.3
2	ERIKSSON RUA-33 RADIO & PM AC DS UNIT	43.21	86.42
2	RFE FORWARDING-AC CABLE	3.1	6.2
1	ACE AND ANTENNA MOUNT BRACKET	25	25
1	ANTENNA SLEEVE BOLT	2	2
1	CABLE SAGRO	0	0
2	DOWN STRAP	0	0
1	RADIO CONNECTION SYSTEM	5	5
1	PLATEFORMA P100127 CUTOFF	1.2	1.2
	TOTAL		276.62

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

1. A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE DETAIL AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS. AND IN GOOD CONDITION. EXISTING STREET LIGHT POLE DEFECTS ASSESSMENT IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET LIGHT POLE WILL FULLY COMPLY WITH THE AASHTO 2010. THEREFORE, THE EXISTING STREET LIGHT POLE IS DEEMED SATISFACTORY FOR THE PROPOSED LOAD CASES.
2. THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
3. A 24 HOUR CONTACT INFORMATION OF CELL CENTER OWNER AND CELL STATION MASTER SHALL BE PLACED IN THE CUTOFF OR LONG CUTTER, RANGES OR SIGNAGE.
4. ELECTRICAL CODES SHALL BE ENFORCED ACCORDING TO THE CURRENT EDITION OF THE CALIFORNIA PUE AND THE ELECTRICAL SAFETY CODE OF CALIFORNIA.

ASSUMPTION NOTES

1. ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
2. WOF REQUIREMENT - PROJECT TO COMPLY WITH WOF REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 33' AGL ON THE POLES THAT ARE LOCATED TO THE WEST OF I-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE ORIGINAL RECORD OF LESS THAN 30' WILL BE IMPLEMENTED.
3. EQUIPMENT SHALL BE INSTALLED FOR THE APPROVED CONFIGURATION ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
4. NO CHIPPING OF FOUNDATION.
5. HANG HOLE AND VIB CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH-SPECIFIC POLE LOCATION.
6. ACTUAL EXISTING SIGNAGE AND EQUIPMENT WILL VARY BASED ON-SITE LOCATION.
7. POLE MOUNTED CUTOFF AND ASSOCIATED SIGNAGE ORIENTATION ON POLE MAY VARY BASED ON-SITE LOCATION.

GENERAL NOTES



3335 PACIFIC CENTER BLVD
SAN DIEGO, CA 92131



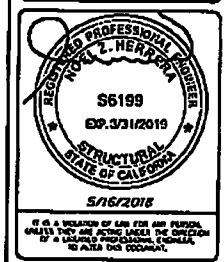
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10003 WILLOW GREEN RD
SUITE 2350
SAN DIEGO, CA 92131

PIS NUMBER

593784

REV	DATE	DESCRIPTION
1	07/11/15	REVISED PER COMMENTS
2	07/11/15	REVISED PER COMMENTS
3	07/11/15	REVISED PER COMMENTS
4	07/27/15	REVISED FOR APPROVAL
5	08/11/15	REVISED FOR APPROVAL



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 150 STREET
LIGHT POLE WITH SIDE
ARM ANTENNA MOUNT AND
MICRO RADIO EQUIPMENT
SCHEMATIC

SHEET NUMBER

MS15D-10

Site Information:

Address: San Diego, CA
 Description: 30' Generic Existing Steel Light Pole
 Type 15D
 Loading Scenario: Micro-4

Applicable Codes:

AASHTO 2015

Analysis Results

Existing Steel Light Pole Stress Ratio with Proposed Equipment: 73.5% Pass
 Existing Steel Light Pole Service Deflection Ratio with Proposed Equipment: 77.9% Pass
 Existing Concrete Pier Foundation: 64.7% Pass

ASSUMPTIONS, DISCLAIMERS, AND NOTES

1. This analysis was performed under the assumption that all information provided to Black & Veatch is correct and current. This is to include site data, existing/proposed equipment loading, and pole data. If the information is not current and correct, this report should be considered obsolete and further analysis will be required.
2. Black & Veatch assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to: incorrect, corroding, decaying and/or deteriorating components, improper manufacturing and/or construction, and improper pole maintenance.
3. Black & Veatch assumes no responsibility for modifications completed prior to or hereafter in which Black & Veatch was not directly involved. These modifications include but are not limited to replacing or strengthening pole components, attaching or removing equipment creating unbalanced loading, welding or removing safety components, and changing loading configurations.
4. This analysis assumes that the pole structural components and members, including all attachments and attachment hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above specifications.
5. This analysis assumes that all existing and/or proposed equipment mounted on the tower will have adequate capacity to support the existing and proposed equipment loading.
6. Fatigue does not govern the design of common light poles per AASHTO Sec. C11.4.
7. All the time of this structural analysis, exact details were not available for the following items:
 - Equipment (Type & model, weight & dimensions)
 - Foundation (Size and quantity, soil parameters)
 - Significant on-pole welds

POLE DATA

Type of Material	Steel - 55 ksi	(ksi)	WIND PRESSURE
Bottom Pole Diameter	0 in		Exposure Factor = 0.00564 (see AASHTO 2015)
Top Pole Diameter	0.647 in		C = 0.24
Pole Thickness	0.170 in		Basic Wind Speed = 120 mph
Height of Pole	30 ft		Service Wind Speed = 16 mph
			Exposure Category = C

WIND DATA

Type of Material	Steel A500 Gr. B	(ksi)
Arm Diameter	0.875 in	
Arm Thickness	0.125 in	
Weight of Arm	22.5 lbs	
Horizontal Length of Arm	12.00 ft	
Total Length of Arm	12.5 ft	

Assumptions made for the existing wind speed, as shown on the drawing sheet, were not verified. It is not recommended that the structural design of the existing pole be based on the design of (1) existing pole or (2) existing pole. The design of the existing pole should be checked by the Engineer of Record for these conditions.

EQUIPMENT DATA

Equipment & Attachments	Existing or Proposed	Dimensions (in)			Weight (lb)	Effective Projected Area (sq ft)	Location (ft)
		W	H	D			
Cell 1 (top)	Existing	15	15	15	15	1.50	15.00
Cell 2 (top)	Existing	15	15	15	15	1.50	15.00
Cell 3 (top)	Existing	15	15	15	15	1.50	15.00
Cell 4 (top)	Existing	15	15	15	15	1.50	15.00
Cell 5 (top)	Existing	15	15	15	15	1.50	15.00
Cell 6 (top)	Existing	15	15	15	15	1.50	15.00
Cell 7 (top)	Existing	15	15	15	15	1.50	15.00
Cell 8 (top)	Existing	15	15	15	15	1.50	15.00
Cell 9 (top)	Existing	15	15	15	15	1.50	15.00
Cell 10 (top)	Existing	15	15	15	15	1.50	15.00
Cell 11 (top)	Existing	15	15	15	15	1.50	15.00
Cell 12 (top)	Existing	15	15	15	15	1.50	15.00
Cell 13 (top)	Existing	15	15	15	15	1.50	15.00
Cell 14 (top)	Existing	15	15	15	15	1.50	15.00
Cell 15 (top)	Existing	15	15	15	15	1.50	15.00
Cell 16 (top)	Existing	15	15	15	15	1.50	15.00
Cell 17 (top)	Existing	15	15	15	15	1.50	15.00
Cell 18 (top)	Existing	15	15	15	15	1.50	15.00
Cell 19 (top)	Existing	15	15	15	15	1.50	15.00
Cell 20 (top)	Existing	15	15	15	15	1.50	15.00
Cell 21 (top)	Existing	15	15	15	15	1.50	15.00
Cell 22 (top)	Existing	15	15	15	15	1.50	15.00
Cell 23 (top)	Existing	15	15	15	15	1.50	15.00
Cell 24 (top)	Existing	15	15	15	15	1.50	15.00
Cell 25 (top)	Existing	15	15	15	15	1.50	15.00
Cell 26 (top)	Existing	15	15	15	15	1.50	15.00
Cell 27 (top)	Existing	15	15	15	15	1.50	15.00
Cell 28 (top)	Existing	15	15	15	15	1.50	15.00
Cell 29 (top)	Existing	15	15	15	15	1.50	15.00
Cell 30 (top)	Existing	15	15	15	15	1.50	15.00
Cell 31 (top)	Existing	15	15	15	15	1.50	15.00
Cell 32 (top)	Existing	15	15	15	15	1.50	15.00
Cell 33 (top)	Existing	15	15	15	15	1.50	15.00
Cell 34 (top)	Existing	15	15	15	15	1.50	15.00
Cell 35 (top)	Existing	15	15	15	15	1.50	15.00
Cell 36 (top)	Existing	15	15	15	15	1.50	15.00
Cell 37 (top)	Existing	15	15	15	15	1.50	15.00
Cell 38 (top)	Existing	15	15	15	15	1.50	15.00
Cell 39 (top)	Existing	15	15	15	15	1.50	15.00
Cell 40 (top)	Existing	15	15	15	15	1.50	15.00
Cell 41 (top)	Existing	15	15	15	15	1.50	15.00
Cell 42 (top)	Existing	15	15	15	15	1.50	15.00
Cell 43 (top)	Existing	15	15	15	15	1.50	15.00
Cell 44 (top)	Existing	15	15	15	15	1.50	15.00
Cell 45 (top)	Existing	15	15	15	15	1.50	15.00
Cell 46 (top)	Existing	15	15	15	15	1.50	15.00
Cell 47 (top)	Existing	15	15	15	15	1.50	15.00
Cell 48 (top)	Existing	15	15	15	15	1.50	15.00
Cell 49 (top)	Existing	15	15	15	15	1.50	15.00
Cell 50 (top)	Existing	15	15	15	15	1.50	15.00
Cell 51 (top)	Existing	15	15	15	15	1.50	15.00
Cell 52 (top)	Existing	15	15	15	15	1.50	15.00
Cell 53 (top)	Existing	15	15	15	15	1.50	15.00
Cell 54 (top)	Existing	15	15	15	15	1.50	15.00
Cell 55 (top)	Existing	15	15	15	15	1.50	15.00
Cell 56 (top)	Existing	15	15	15	15	1.50	15.00
Cell 57 (top)	Existing	15	15	15	15	1.50	15.00
Cell 58 (top)	Existing	15	15	15	15	1.50	15.00
Cell 59 (top)	Existing	15	15	15	15	1.50	15.00
Cell 60 (top)	Existing	15	15	15	15	1.50	15.00
Cell 61 (top)	Existing	15	15	15	15	1.50	15.00
Cell 62 (top)	Existing	15	15	15	15	1.50	15.00
Cell 63 (top)	Existing	15	15	15	15	1.50	15.00
Cell 64 (top)	Existing	15	15	15	15	1.50	15.00
Cell 65 (top)	Existing	15	15	15	15	1.50	15.00
Cell 66 (top)	Existing	15	15	15	15	1.50	15.00
Cell 67 (top)	Existing	15	15	15	15	1.50	15.00
Cell 68 (top)	Existing	15	15	15	15	1.50	15.00
Cell 69 (top)	Existing	15	15	15	15	1.50	15.00
Cell 70 (top)	Existing	15	15	15	15	1.50	15.00
Cell 71 (top)	Existing	15	15	15	15	1.50	15.00
Cell 72 (top)	Existing	15	15	15	15	1.50	15.00
Cell 73 (top)	Existing	15	15	15	15	1.50	15.00
Cell 74 (top)	Existing	15	15	15	15	1.50	15.00
Cell 75 (top)	Existing	15	15	15	15	1.50	15.00
Cell 76 (top)	Existing	15	15	15	15	1.50	15.00
Cell 77 (top)	Existing	15	15	15	15	1.50	15.00
Cell 78 (top)	Existing	15	15	15	15	1.50	15.00
Cell 79 (top)	Existing	15	15	15	15	1.50	15.00
Cell 80 (top)	Existing	15	15	15	15	1.50	15.00
Cell 81 (top)	Existing	15	15	15	15	1.50	15.00
Cell 82 (top)	Existing	15	15	15	15	1.50	15.00
Cell 83 (top)	Existing	15	15	15	15	1.50	15.00
Cell 84 (top)	Existing	15	15	15	15	1.50	15.00
Cell 85 (top)	Existing	15	15	15	15	1.50	15.00
Cell 86 (top)	Existing	15	15	15	15	1.50	15.00
Cell 87 (top)	Existing	15	15	15	15	1.50	15.00
Cell 88 (top)	Existing	15	15	15	15	1.50	15.00
Cell 89 (top)	Existing	15	15	15	15	1.50	15.00
Cell 90 (top)	Existing	15	15	15	15	1.50	15.00
Cell 91 (top)	Existing	15	15	15	15	1.50	15.00
Cell 92 (top)	Existing	15	15	15	15	1.50	15.00
Cell 93 (top)	Existing	15	15	15	15	1.50	15.00
Cell 94 (top)	Existing	15	15	15	15	1.50	15.00
Cell 95 (top)	Existing	15	15	15	15	1.50	15.00
Cell 96 (top)	Existing	15	15	15	15	1.50	15.00
Cell 97 (top)	Existing	15	15	15	15	1.50	15.00
Cell 98 (top)	Existing	15	15	15	15	1.50	15.00
Cell 99 (top)	Existing	15	15	15	15	1.50	15.00
Cell 100 (top)	Existing	15	15	15	15	1.50	15.00

Total Dead Load
 Total Moment Due to Dead Load Structures

0.00 kips
 0.00 kip-ft

Structural Analysis Results

Structural Analysis Results	Existing or Proposed	Dimensions (in)	Weight (lb)	Effective Projected Area (sq ft)	Location (ft)
Total Wind Force in 2 Direction	Existing	15	15	1.50	15.00
Total Moment Due to Wind in 2 Dir	Existing	15	15	1.50	15.00
Total Wind Force in 2 Direction	Existing	15	15	1.50	15.00
Total Moment Due to Wind in 2 Dir	Existing	15	15	1.50	15.00
Total Wind Force in 2 Direction	Existing	15	15	1.50	15.00
Total Moment Due to Wind in 2 Dir	Existing	15	15	1.50	15.00

6.2 Structural Components Capacity Checks

6.2.1 Member of Components of Pole
 Compression, Bending Check

Maximum Factored Axial Load
 Factored Compression Strength
 Service Load
 $P_u/P_n = 0.181$ (see Table 6.2)

6.2.2 Member of Components of Pole

Maximum Factored Bending Moment
 Factored Bending Strength
 Maximum Integrated Factor (see Table 6.2)
 Service Load
 $M_u/M_n = 0.181$

6.2.3 Member of Components of Pole

Maximum Factored Shear
 Factored Shear Strength
 Service Load
 $V_u/V_n = 0.181$

Maximum Factored Torsion
 Factored Torsion Strength
 Service Load
 $T_u/T_n = 0.181$

6.2.4 Member of Components of Pole

Maximum Factored Axial Load
 Factored Compression Strength
 Service Load
 $P_u/P_n = 0.181$ (see Table 6.2)

Therefore, existing light pole has adequate capacity to support existing and proposed loads.

6.2.5 Member of Components of Pole

Maximum Factored Bending Moment
 Factored Bending Strength
 Service Load
 $M_u/M_n = 0.181$

Therefore, existing light pole has adequate capacity to support existing and proposed loads.



5730 PACIFIC CENTER BLVD
 SAN DIEGO, CA 92121

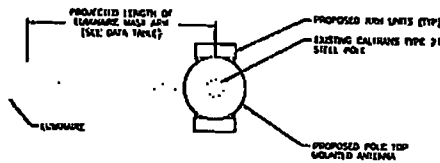


BLACK & VEATCH

BLACK & VEATCH CORPORATION
 10025 WILLOW CREEK RD
 SUITE 200
 SAN DIEGO, CA 92121

PROJECT NUMBER

593784



LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	N RISE	MIN. O.D. AT POLE	NOMINAL THICKNESS	P TYPE 21
6'-0"	3'-0"	3-1/2"	0.1196"	36'-0"
6'-0"	2'-0"	3-1/2"		37'-0"
12'-0"	3'-0"	3-1/2"		37'-0"
12'-0"	4'-0"	4-1/2"		37'-0"
12'-0"	6'-0"	4-1/2"		37'-0"

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

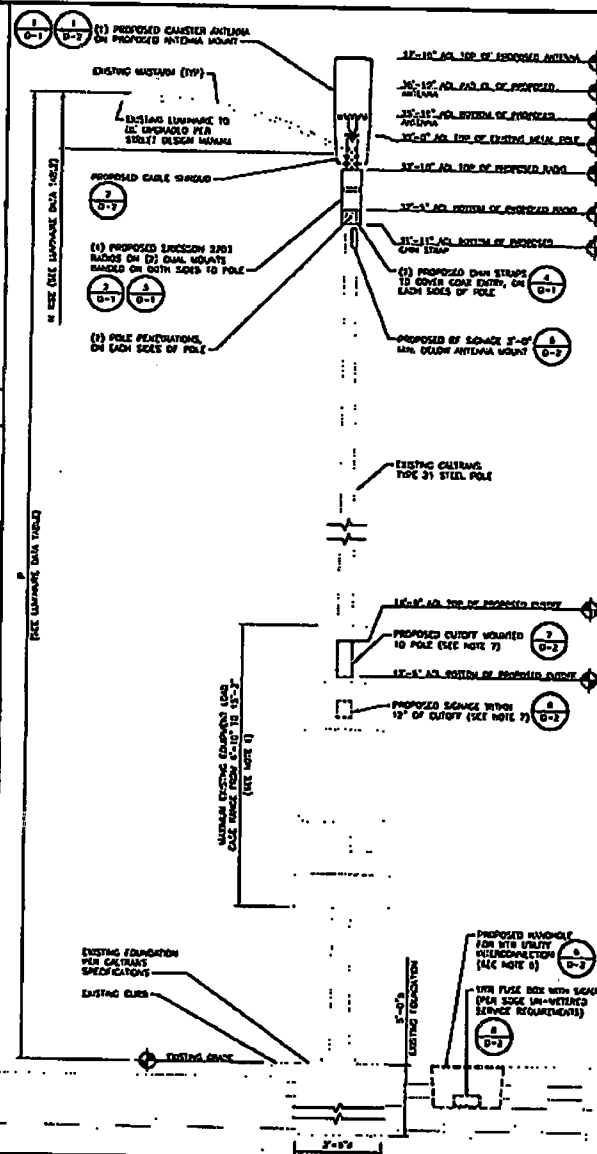
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CANTENNA ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) RADIO UNIT & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (lbs)	TOTAL WEIGHT (lbs)
1	ATE ACORN-2112B-12P OR EQUIV. ANTENNA	35.3	35.3
1	ERICKSON RAYS-2763 RADIO	16.6	51.9
1	ANTENNA TOP MOUNT BRACKET	22	73.9
1	ANTENNA SLAVE MOUNT	7	80.9
1	CABLE STRAP	5	85.9
1	FACTORYCAL PFD0102 CUTOFF	12	97.9
TOTAL			149.9

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

- A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSIGNED AS BEING MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET LIGHT STRUCTURE IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET LIGHT POLE WILL PLACED WITHIN THE ANALYSIS. THEREFORE, THE EXISTING STREET LIGHT POLE IS BEING MAINTAINED FOR THE PROPOSED LOAD CASES.
- THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD OBJECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
- A 24 HOUR CONTACT INFORMATION OF KEY TOWER OWNERS AND CELL TOWER MANAGER SHALL BE PLACED IN THE CUT-OFF (END CENTER, AROUND OR ANTENNA).
- ELECTRICAL CUTOFF SHALL BE CALCULATED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CAL-ESHA.

ASSUMPTION NOTES

- ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
- WET REQUIREMENT - PROJECT TO COMPLY WITH WET REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AGL ON THE POLES THAT ARE LOCATED TO THE WEST OF 1-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE OVERALL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
- EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
- NO CHIPPING OF FOUNDATION.
- HAVE POLE AND VIB CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
- ACTUAL EXISTING SCIENCE AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
- POLE MOUNTED CUTOFF AND ASSOCIATED SCIENCE ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



5730 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



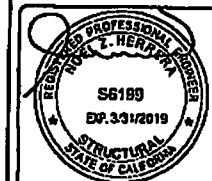
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10033 WILLOW CREEK RD
SUITE 8300
SAN DIEGO, CA 92131

PTS NUMBER

593784

REV	DATE	DESCRIPTION
1	01/14/18	REVISED PER COMMENTS
2	02/14/18	REVISED PER COMMENTS
3	04/14/18	REVISED PER COMMENTS
4	05/14/18	REVISED PER COMMENTS
5	06/14/18	REVISED PER COMMENTS



06/30/2019
S6189
06/30/2019
STRUCTURAL
STATE OF CALIFORNIA

AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 21 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
SCHEMATIC

SHEET NUMBER

MS21-1

**San Diego, CA
35' Generic Existing Steel Light Pole
Type 21
Pic-1**

ASISTO 2015

Existing Steel Light Pole Stress Ratio with Proposed Equipment:	56.2% Pass
Existing Steel Light Pole Service Deflection Ratio with Proposed Equipment:	81.7% Pass
Existing Concrete Pier Foundation:	64.0% Pass

1. This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, routing/proposed appearance loading, and pole data. If the information is not current and correct, this report should be considered obsolete and further analysis will be required.

2. BLACK & VEATCH assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to mining, corroding, decaying and/or deteriorating components, improper manufacturing and/or construction, and third party acts and omissions.

A Black & Veatch assumes no responsibility for modifications completed prior to or hereafter in which Black & Veatch was not directly involved. These modifications include but are not limited to replacing or strengthening pole components, installing or removing bracing mounting components, installing or removing utility components, and changing loading configurations.

4. This analysis assumes that the pole structure of components and assembly, including all steel systems and attachment hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and inspected over the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above considerations.

5. The analysis indicates that all existing and/or proposed equipment mounts on the tower will have adequate capacity to support the existing and proposed equipment loading.

6. *Figure does not govern the design of common line poles per AASHTO Sec. E11.4.*

8. At the time of the structural analysis, exact details were not available for the following items:

- **Assumptions:** fixed & model weights & dimensions
- **Foundation** rather than **data** and **parameters**
- **Agrees** on **poles** with **experiments**

COLE DATA		WYCKOFFS DATA	
Type of Material	Steel - 15 1/2	From Equation, $P = 0.00344 \sqrt{EACG \Delta V / C}$	
Section Size Diameter	0.675 in	Good Weld Factor	Gr 1 1/2
Yield Point Character	1 564 in	Steel Yield Point	Yn 120
Yield Point	0.973 in	Ultimate Yield Point	Ym 140
Length of Pipe	33 ft	Ultimate Elongation	C

COMPARISON DATA		WYCKOFFS DATA	
Type of Material	Steel A500 Gr B	From Equation, $P = 0.00344 \sqrt{EACG \Delta V / C}$	
Section Diameter	0.875 in	Good Weld Factor	Gr 1 1/2
Yield Point Character	0.770 in	Steel Yield Point	Yn 120
Yield Point	0.770 in	Ultimate Yield Point	Ym 140
Length of Pipe	72.5 ft	Ultimate Elongation	C
Yield Point Character	12.00 in		
Yield Point	12.00 in		
Length of Pipe	12.00 in		

Interactions were in the (2,4) and (2,5) cells, as shown in the graphs. These interactions do not significantly affect the significant results from the other cells. The addition of 10% water was found to be a significant factor in the 2,4 and 2,5 cells, and the addition of 10% water was found to be a significant factor in the 2,4 and 2,5 cells.

[illegible]

Total Drains	=	0.14	hrs
Total Amount Due to Drainage Identification	=	1.00	hrs

Turner & Green 1969:187b

Total Wind Force in 2 Direction
 Total Maximum due to Wind in 2 D
 Total Wind Force in 3 Direction
 Total Maximum due to Wind in 3 D
 Total Force

Total Wind Force on E Direction	a	6.54	kg
Total Moment due to Wind on E Dir	c	9.87	kgm
Total Wind Force on W Direction	b	0.33	kg
Total Moment due to Wind on W Dir	d	0.25	kgm
Total Moment	e	0.52	kgm

4.4.2.2.2. Component Capacity Data

Abstract

649:10
Vol. 2, 1

Minimum Interest Rate	9.0	8.5	8.0
Interest Computation for each	9.0	8.5	8.0
Month	9.0	8.5	8.0

General Issues

[illegible]

NEW! Local Store Only

Maximum 7 people 100 sq	$V_1 = 1.06$	sqm
7 people 100 sq	$V_2 = 0.67$	sqm
100 sq	$V_{100} = 0.018$	
Maximum 7 people 100 sq	$V_1 = 0.01$	sqm
7 people 100 sq	$V_2 = 0.006$	sqm
100 sq	$V_{100} = 0.00018$	

Downloaded from <http://jeb.sagepub.com> at 07:41 25 July 2015

SECRET

Kennedy J. Edgar	• 967	Pace
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Therefore, creating light and has adequate capacity to support existing and proposed loads.

DISCLAIMER:

Maximum # group of standing telephone	20	745 kg
Maximum # of standing telephone	10	675 kg
Maximum # of	10	675 kg

Therefore, a strong link is in fact observed between the regional culture and economic base.



3755 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



BLACK & VEATCH

BLACK & VEATCH CORPORATION
10049 WILLOW CREEK RD
SUITE 1350
SAN DIEGO, CA 92131

PIS NUMBER

593784

1	04/01/18	REVISED PER COMMENTS
2	05/14/18	REVISED PER COMMENTS
3	06/20/18	REVISED PER COMMENTS
4	07/16/18	NOISE VIB APPROVAL
REV	DATE	REVISION



5/16/2015

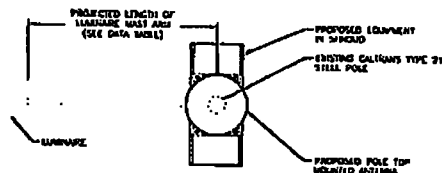
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USING THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER
TO DATE TWO COPIES.

AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

**EXISTING TYPE 21 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS**

SHEET NUMBER

MS21-2



LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H	MIN D.O.	MINIMUM THICKNESS	P
8'-0"	2'-0"	3-1/4"	0.1185"	TYPE 21
8'-0"	2'-0"	3-1/4"	0.1185"	30'-0"
10'-0"	2'-0"	3-1/4"	0.1185"	30'-0"
12'-0"	2'-0"	3-1/4"	0.1185"	30'-0"
15'-0"	2'-0"	3-1/4"	0.1185"	30'-0"

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

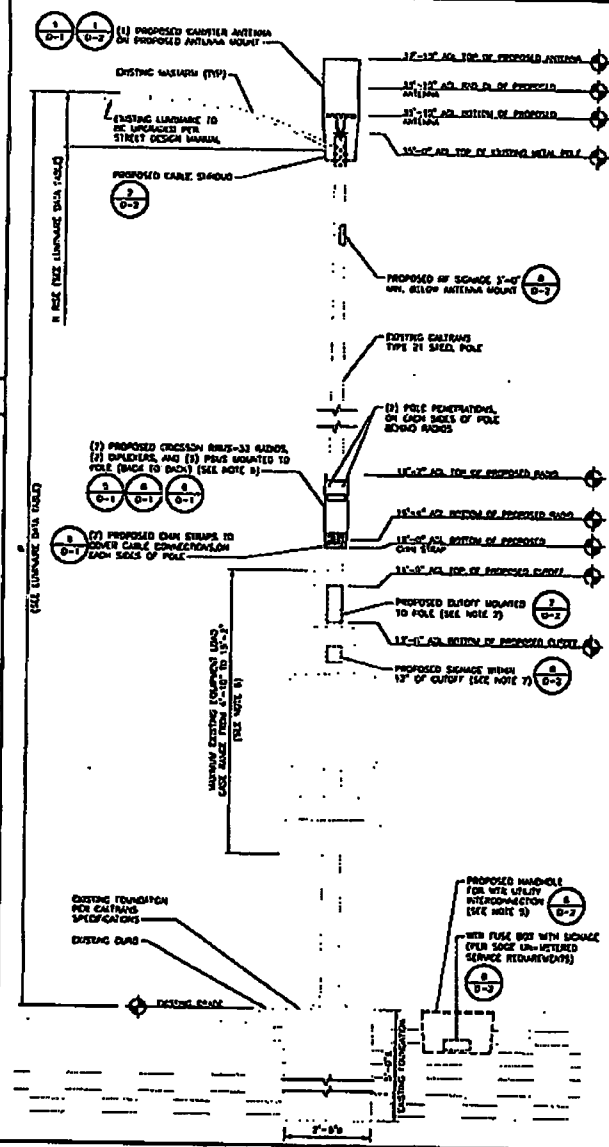
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A STREET LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CENTER ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (2) GROUND UNITS & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (LBS) PER UNIT	TOTAL WEIGHT (LBS)
1	ACE 4000-27150-12P OR EQUAL ANTENNA	33.4	33.4
2	LOCOSON RING-32 RING & PIV AC OR UNIT	62.21	124.42
2	RFS 20P402024-AC DUPLEXER	0.3	0.6
1	ANTENNA TOP MOUNT BRACKET	23	23
1	ANTENNA SLEEVE MOUNT	7	7
1	CABLE CHIMNEY	6	6
2	CABLE STRAP	5	10
1	RADIO CONCEALMENT SYSTEM	3	3
1	ANCHORBOLTS #1/2X12 CUTOFF	12	12
	TOTAL		278.92

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

1. A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE DUNT AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURERS SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET POLE BELIEFS ASSIGNMENT IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET POLE WILL FULLY COMPLY WITH THE ASSUMED JOBS. THEREFORE, THE EXISTING STREET LIGHT POLE IS DEEMED SUFFICIENT FOR THE PROPOSED LOAD CASE.
2. THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
3. A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL STATION NUMBER SHALL BE PLACED IN THE CUT-OFF LOAD CENTER, RADIOS OR ANTENNA.
4. ELECTRICAL CUTOFF SHALL BE COMPLETED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF C&A-0504.

ASSUMPTION NOTES

1. ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
2. NOT REQUIREMENT - PROJECT TO COMPLY WITH WET REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AGL ON THE POLES THAT ARE LOCATED TO THE WEST OF I-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE ORIGINAL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
3. EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
4. NO CHIPPING OF FOUNDATION.
5. HAND POLE AND WIR CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
6. ACTUAL EXISTING SIGNAGE AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
7. POLE MOUNTED CUTOFF AND ASSOCIATED SIGNAGE ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



5735 PHONE CENTER BLVD
SAN DIEGO, CA 92121



BLACK & VEATCH

BLACK & VEATCH CORPORATION
15001 WALTON CREEK RD
SUITE 2500
SAN DIEGO, CA 92131

PDS NUMBER

593784

NO.	DATE	DESCRIPTION
1	04/15/18	ISSUED PER COMMENTS
2	04/15/18	ISSUED PER COMMENTS
3	04/15/18	ISSUED PER COMMENTS
4	04/15/18	ISSUED PER COMMENTS
5	04/15/18	ISSUED PER COMMENTS
6	04/15/18	ISSUED PER COMMENTS
7	04/15/18	ISSUED PER COMMENTS
8	04/15/18	ISSUED PER COMMENTS
9	04/15/18	ISSUED PER COMMENTS
10	04/15/18	ISSUED PER COMMENTS
11	04/15/18	ISSUED PER COMMENTS
12	04/15/18	ISSUED PER COMMENTS
13	04/15/18	ISSUED PER COMMENTS
14	04/15/18	ISSUED PER COMMENTS
15	04/15/18	ISSUED PER COMMENTS
16	04/15/18	ISSUED PER COMMENTS
17	04/15/18	ISSUED PER COMMENTS
18	04/15/18	ISSUED PER COMMENTS
19	04/15/18	ISSUED PER COMMENTS
20	04/15/18	ISSUED PER COMMENTS



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AT&T SMALL CELL (CRAN) PROJECT MASTER STRUCTURAL PLAN

EXISTING TYPE 21 STREET LIGHT POLE WITH POLE TOP ANTENNA MOUNT AND MICRO RADIO EQUIPMENT SCHEMATIC

SHEET NUMBER

MS21-4

Site Information: Address: San Diego, CA
 Description: 35' Generic Existing Steel Light Pole
 Loading Scenario: Type 21
 Micro-2

Applicable Codes: AASHTO 2015

Analysis Results

Existing Steel Light Pole Stress Ratio with Proposed Equipment: 62.4% Pass
 Existing Steel Pole Service Deflection Ratio with Proposed Equipment: 78.4% Pass
 Existing Concrete Pier Foundation: 64.0% Pass

ASSUMPTIONS, DISCLAIMERS, AND NOTES

1. This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed equipment loading, and pole data. If this information is not current and correct, this report should be considered obsolete and further analysis will be required.
2. Black & Veatch assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to: existing, corroding, deteriorating and/or deteriorating components, improper manufacturing and/or construction, and improper pole maintenance.
3. Black & Veatch assumes no responsibility for modifications completed prior to its review on which Black & Veatch was not directly involved. These modifications include but are not limited to replacing or reinforcing pole components, including or removing antenna mounting components, including or removing utility components, and changing loading configurations.
4. This analysis assumes that the poles structural components and mounts, including all steel sections and attachment hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and maintained since the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above specifications.
5. This analysis assumes that all existing and/or proposed equipment mounts on the tower and have adequate capacity to support the existing and proposed equipment loading.
6. Fatigue does not govern the design of common light poles per AASHTO Sec. C13.4
7. As the basis of this structural analysis, exact details were not available for the following items:
 - Hardware (Type & model, weight & dimensions)
 - Foundation (soil data and quantity, soil parameters)
 - Hardware on poles were assumed.

POLE DATA
 Type of Material: Steel - S100
 Between Pole Diameter: 6615 in
 Top Pole Diameter: 33425 in
 Pole Thickness: 0.1791 in
 Weight of Pole: 11 lb

WIND DATA
 from location: 1000 ft above ground level
 Gust 1 Hour Factor: 1.0
 Basic Wind Speed: 100 mph
 Exposure Category: C

LAMP/ANTENNA DATA
 Type of Material: Steel A500 Gr B
 Ann Diameter: 1.875 in
 Ann Thickness: 0.170 in
 Height of Ann: 7.5 in
 Horizontal Length of Ann: 17.00 in
 Total Length of Ann: 22.5 in

*Reference: Refer to the following wind speed, as shown on the drawing sheet, which has been determined by the engineer. The wind speed is based on the 1000 ft above ground level. The wind speed is based on the 1000 ft above ground level. The wind speed is based on the 1000 ft above ground level.

EQUIPMENT DATA

Equipment & Mounting Details	Loading or Proposed	Dimensions (in)			Weight (lb)	Effective Projected Area (sq ft)		Elevation (ft)
		W	H	D		1 Dir	2 Dir	
Antenna Mount	Existing	1	1	1	43	1.33	1.33	11.00
Antenna Mount	Proposed	15	44	15	65.24	0.94	4.18	11.00
Antenna Mount	Proposed	12.00	27.17	9.75	174.43	2.27	1.62	12.17
Overhead	Proposed	12.00	0	0.75	10	0.50	0.36	15.00
Antenna Mount	Existing	60	0.5	0.5	5	0.33	0.00	21.00
Antenna Mount	Existing	58	0.5	0.5	5	0.33	0.00	21.00
Antenna Mount	Existing	27	1	1	10	0.25	0.25	15.00
Antenna Mount	Existing	19	1	1	2	1.25	0.25	12.00
Antenna Mount	Existing	35	10	0.5	0	7.50	0.00	10.00
Antenna Mount	Existing	28	0	0.5	7	1.17	0.00	17.00
Antenna Mount	Existing	45	16	0.5	2	7.50	0.00	0.00

Total Wind Load: 0.36 kips
 Total Moment Due to Dead Load: 0.99 kips-ft

Strength Factors Wind Load
 Total Wind Force on 1 Direction: 0.45 kips
 Total Moment Due to Wind on 1 Dir: 0.78 kips-ft
 Total Wind Force on 2 Direction: 0.78 kips
 Total Moment Due to Wind on 2 Dir: 0.78 kips-ft
 Total Force on 1 Direction: 0.45 kips
 Total Moment Due to Wind on 1 Dir: 0.78 kips-ft
 Total Force on 2 Direction: 0.78 kips
 Total Moment Due to Wind on 2 Dir: 0.78 kips-ft

6.2.1 Structural Components: Maximum

Maximum Factored Axial Load: 0.99 kips
 Factored Axial Load: 0.68 kips
 Stress Ratio: 0.283
 Yes, it is required to provide more

General Strength Check

Maximum Factored Bending Moment: 0.45 kips-ft
 Factored Bending Moment: 0.36 kips-ft
 Maximum Factored Axial Load: 0.99 kips
 Stress Ratio: 0.283

Wind and Tower Strength Check

Maximum Factored Wind: 0.36 kips
 Factored Wind Strength: 0.45 kips
 Stress Ratio: 0.810
 Maximum Factored Torque: 0.12 kips-ft
 Factored Torque Strength: 0.12 kips-ft
 Stress Ratio: 0.031
 Yes, it is required to provide more

Combined Stress Check

Combined Stress Ratio: 0.121

Therefore, existing pole has adequate capacity to support existing and proposed loads.

6.2.2 Structural Components: Lateral

Force at 10 ft from Base

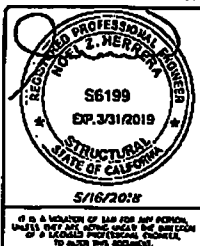
Maximum Factored Bending Moment: 0.45 kips-ft
 Factored Bending Moment: 0.36 kips-ft
 Stress Ratio: 0.283

Therefore, existing pole has adequate capacity to support existing and proposed loads.



PIS NUMBER
 593784

REV	DATE	DESCRIPTION
1	05/15/18	REVISED FOR COMMENTS
2	06/15/18	REVISED FOR COMMENTS
3	07/15/18	REVISED FOR COMMENTS
4	08/15/18	REVISED FOR COMMENTS



AT&T SMALL CELL
 (CRAN) PROJECT
 MASTER STRUCTURAL PLAN
 EXISTING TYPE 15 STREET
 LIGHT POLE WITH POLE
 TOP ANTENNA MOUNT AND
 MICRO RADIO EQUIPMENT
 STRUCTURAL CALCULATIONS

SHEET NUMBER
 MS21-5



5735 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



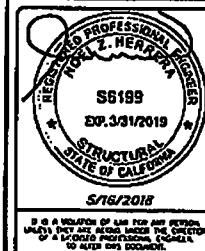
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10005 WILLOW CREEK RD
SUITE 6350
SAN DIEGO, CA 92131

PIS NUMBER

593784

REV	DATE	DESCRIPTION
1	04/14/10	REVISED PER COMMENTS
2	04/14/10	REVISED PER COMMENTS
3	04/14/10	REVISED PER COMMENTS
4	04/14/10	REVISED PER COMMENTS
5	04/14/10	REVISED PER COMMENTS



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 15 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
MICRO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS21-6

6.1 Base Plate & Anchorage

6.1.1 Base Plate

ASSUMPTIONS

Minimum Factored Bending Moment per anchor per anchor	$M_u = 21.57$	kip-in	(of Analysis & Design Section 6.2.1)
Minimum Factored Shear Load	$V_u = 0.70$	kip	(of Analysis & Design Section 6.2.1)
Concrete Compressive Strength	$f'_c = 3$	ksi	(assumed)
Yield Strength of Base Plate	$F_y = 36$	ksi	
Base Plate Width	$b = 12$	in	
Base Plate Thickness	$t = 12$	in	
Resistance Factor for Compression	$\phi_c = 0.65$		See 6.2.2
Base Plate Yielding	$\phi_t = 0.9$		
Anchor Rod Yield Strength	$F_y = 36$	ksi	
Anchor Rod Diameter	$d = 1.25$	in	

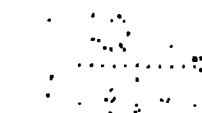


FIG. 6.1.1 Base Plate and Anchor Rod Assembly

Design Moment, M_u at Base of Column	$M_u = 21.57$	kip-in	See 6.1
Design Shear, V_u at Base of Column	$V_u = 0.70$	kip	See 6.1
Design Moment, M_u at Base of Column	$M_u = 21.57$	kip-in	See 6.1
Design Shear, V_u at Base of Column	$V_u = 0.70$	kip	See 6.1

Base Plate Design Method: $\phi_c M_n \leq \phi_c M_u$ and $\phi_t V_n \leq \phi_t V_u$

Base Plate Design Method: $\phi_c M_n \leq \phi_c M_u$ and $\phi_t V_n \leq \phi_t V_u$

Base Plate Design Method: $\phi_c M_n \leq \phi_c M_u$ and $\phi_t V_n \leq \phi_t V_u$

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Base Plate Design Method: $\phi_c M_n \leq \phi_c M_u$ and $\phi_t V_n \leq \phi_t V_u$

Base Plate Design Method: $\phi_c M_n \leq \phi_c M_u$ and $\phi_t V_n \leq \phi_t V_u$

6.2 Anchor Rod Design

ASSUMPTIONS

Design Moment	$M_u = 21.57$	kip-in	(of Analysis & Design Section 6.2.1)
Design Shear	$V_u = 0.70$	kip	(of Analysis & Design Section 6.2.1)
Number of Rods in Stem Tension & Shear	$n = 4$		
Factored Tension per Anchor Rod	$T_u = 0.5$	kip	
Factored Shear per Anchor Rod	$V_u = 0.175$	kip	
Anchor Rod Diameter	$d = 1.25$	in	(assumed)
Yield Strength of Anchor Rod	$F_y = 36$	ksi	(AISC assumed)
Ultimate Tensile Strength of Anchor Rod	$F_u = 58$	ksi	(AISC assumed)

Combined Tension and Shear in Anchor Rods

Minimum Factored Tension of Anchor Rod	$T_u = 0.5$	kip	See 6.2.1.1
Minimum Factored Shear of Anchor Rod	$V_u = 0.175$	kip	Table 6.2.2
Minimum Shear Strength of Anchor Rod	$V_n = 0.175$	kip	Table 6.2.2
Minimum Tension Strength of Anchor Rod	$T_n = 0.5$	kip	See 6.2.1.1.2
Resistance Factor for Shear and Tension	$\phi = 0.75$		See 6.2.1.1.2
Minimum Tension Strength of Anchor Rod, $R_n = F_y A_s$	$R_n = 58.4$	kip	Eq. 6.2.2
Minimum Tension Strength of Anchor Rod, $R_n = F_y A_s$	$R_n = 58.4$	kip	Eq. 6.2.2
Design Ratio	$\phi R_n = 43.8$	kip	See 6.2.1.1.2

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Parameters

Lateral Force	$P = 1.25$	kip	
Vertical Force	$V = 0.75$	kip	
Height above grade of Lateral Force	$H = 11.40$	ft	
Diameter of Pier	$D = 2.50$	ft	
Lateral Soil Bearing Capacity	$q_s = 0.10$	ksf	Table 1805.2
Vertical Soil Bearing Capacity	$q_{av} = 1.70$	ksf	Table 1805.2
Transverse Load Factor	$F = 2.00$		Section 1805.3.4
Test Depth	$D_{test} = 5.12$	ft	

Aspirate Equation

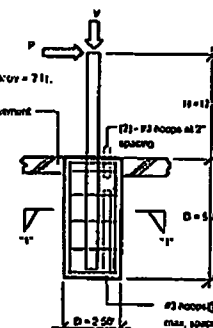
$$D_{req} = (4.21 P H / S_b B)^{1/3}$$

IBC 2012 Eq. 18-3

Lateral Soil Bearing Capacity	$F = 5$	0.20 ksf
Allowable lateral pressure at TD, $S_b = F \times 5 \times D$	$S_b = 1.00$	ksf
Required Calculated Depth	$D_{req} = 5.40$	ft

$$D_{req} = (0.78 \times 4.01 \times 5.40 \times 0.15)^{1/3} = 0.95 \text{ ksf}$$

SR = 64.0% OK



MS21-7

6.6 Base Plate & Anchorage

6.6.1 Base Plate

6.6.2 Anchor Rods

OVERVIEW

Minimum Factored Bending Moment per unit length, M_u = 26.07 k-ft/ft
Minimum Factored Axial Load, P_u = 9.81 kips

per Section 6.6.1 and Section 6.6.2

Concrete Compression Strength

f'_c = 3 ksi (assumed)

Yield Strength of Base Plate

F_y = 36 ksi

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

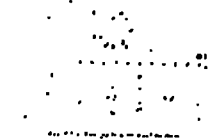


Diagram of Base Plate (per Section 6.6.1)

Concrete Compressive Strength

f'_c = 3 ksi

Yield Strength of Base Plate

F_y = 36 ksi

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2

Design Moment = Large Moment Base Plate

M_u = 26.07 k-ft/ft

Design Moment = Small Moment Base Plate

M_u = 9.81 kips

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

Design Moment = Large Moment Base Plate

M_u = 26.07 k-ft/ft

Design Moment = Small Moment Base Plate

M_u = 9.81 kips

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

Design Moment = Large Moment Base Plate

M_u = 26.07 k-ft/ft

Design Moment = Small Moment Base Plate

M_u = 9.81 kips

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

Design Moment = Large Moment Base Plate

M_u = 26.07 k-ft/ft

Design Moment = Small Moment Base Plate

M_u = 9.81 kips

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

Design Moment = Large Moment Base Plate

M_u = 26.07 k-ft/ft

Design Moment = Small Moment Base Plate

M_u = 9.81 kips

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

Design Moment = Large Moment Base Plate

M_u = 26.07 k-ft/ft

Design Moment = Small Moment Base Plate

M_u = 9.81 kips

Base Plate Length

L_p = 12 in

Base Plate Width

B_p = 12 in

Development Factor in Compression

λ_s = 0.5

Base Plate Thickness

t_p = 2 in

Anchor Rod Edge Distance

e = 1.71 in

See 5.2.2

6.6.2 Anchor Rods

OVERVIEW

OVERVIEW

Minimum Factored Tension, T_u = 2.0 kips

Maximum Factored Shear, V_u = 1.84 kips

Number of Bars in Both Tension & Shear, N = 4

Factored Tension per Anchor Rod, T_{ur} = 0.5 kips

Factored Shear per Anchor Rod, V_{ur} = 0.46 kips

per Section 6.6.1

per Section 6.6.1

Anchor Rod Diameter, D = 1.25 in

Yield Strength of Anchor Rod, F_y = 36 ksi

Ultimate Tensile Strength of Anchor Rod, F_u = 58 ksi

(assumed)

(assumed)

(assumed)

Concrete Compression Strength

f'_c = 3 ksi

Yield Strength of Base Plate, F_y = 36 ksi

Base Plate Length, L_p = 12 in

Base Plate Width, B_p = 12 in

Development Factor in Compression, λ_s = 0.5

Base Plate Thickness, t_p = 2 in

Anchor Rod Edge Distance, e = 1.71 in

See 5.2.2

See 5.2.2

See 5.2.2

See 5.2.2

See 5.2.2

See 5.2.2

See 5.2.2

See 5.2.2

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (retained condition)

OVERVIEW

Lateral Force, P = 1.00 k

Vertical Force, V = 0.76 k

Height above grade of Lateral Force, H = 17.40 ft

Diameter of Pier, D = 2.50 ft

Lateral Soil Bearing Capacity, Q_{ul} = 0.10 ksf

Vertical Soil Bearing Capacity, Q_{uv} = 1.50 ksf

Transfer Load Factor, F = 2.00

Total Depth, D_{tot} = 5.62 ft

P	1.00 k	
V	0.76 k	
H	17.40 ft	
D	2.50 ft	
Q_{ul}	0.10 ksf	Table 1806.2
Q_{uv}	1.50 ksf	Table 1806.3
F	2.00	Section 1806.3.4
D_{tot}	5.62 ft	

Anchor Rod Equation

$D_{req} = 1.425 P H / S_u, 0.5"$

IBC 2012 Eq. 18-7

Lateral Soil Bearing Capacity

$Q_{ul} = 0.10$ ksf

Allowable lateral pressure at "10", $S_u = F \times S_u = 0$

Required Calculated Depth, $D_{req} = 5.40$ ft

1.00 ksf
5.40 ft < 17.40 ft = 7 ft.

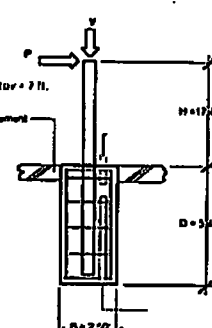
Vertical Soil Bearing Check

(Section 1807.3.2.3)

$Q_{uv} = (1.76 \times 4.91 \times 5.40 \times 0.15) / 4.91$

$Q_{uv} = 0.05$ ksf

1.50 ksf
5.40 ft < 17.40 ft = 7 ft.



5735 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



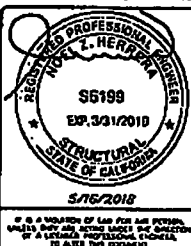
BLACK & VEATCH CORPORATION

10001 WILLOW GATE RD
SUITE 8300
SAN DIEGO, CA 92131

PTS NUMBER

593784

REV	DATE	DESCRIPTION
1	01/15/10	REVISED FOR COMMENTS
2	01/15/10	REVISED FOR COMMENTS
3	01/15/10	REVISED FOR COMMENTS
4	01/15/10	REVISED FOR COMMENTS
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7	01/15/10	REVISED FOR COMMENTS
8	01/15/10	REVISED FOR COMMENTS
9	01/15/10	REVISED FOR COMMENTS
10	01/15/10	REVISED FOR COMMENTS



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 21 STREET
LIGHT POLE WITH SIDE
ARM ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

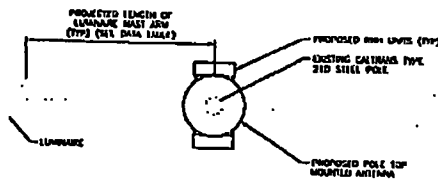
MS21-9

MS21-10

1. ALL PROPOSED EQUIPMENT TO BE RAN TO MATCH EXISTING POLE.
2. NO/ MISALIGNMENT - PROJECT TO COORDINATE WITH NEP REQUIREMENT, TOP OF THE ANTENNA NOT TO EXCEED 45' FROM THE POLE. THE POLE TO BE LOCATED TO THE WEST OF 1-3 PER PERMITS REQUIREMENT. IN SUCH SCENARIOS, THE NEW STRUCTURE, PLANE SCHEMATIC WITH THE OVERALL DIMENSION OF LESS THAN 50 YDS. OF IMPLEMENTED.
3. EQUIPMENT MAY BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE EXISTING STRUCTURE, PLANE ANY ORIENTATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
4. NO SHIPING OF FOUNDATION.
5. MAIN POLE AND WITH ORIENTED LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SHOWN ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
6. WIND LOADING SCENARIO AND EQUIPMENT WILL VARY BASED ON THE LOCATION.
7. POLE EXISTING HEIGHT AND ASSOCIATED BENDING MOMENT ON POLE MAY VARY BASED ON THE LOCATION.

[illegible]

MS21-11



LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	N	MIN. O.D. AT POLE	NOMINAL THICKNESS	P
6'-0"	2'-0"	3-1/2"	0.1195"	TYPE 210
8'-0"	2'-0"	3-1/2"	0.1195"	37'-0"
10'-0"	2'-0"	3-1/2"	0.1195"	37'-0"
12'-0"	2'-0"	3-1/2"	0.1195"	37'-0"

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

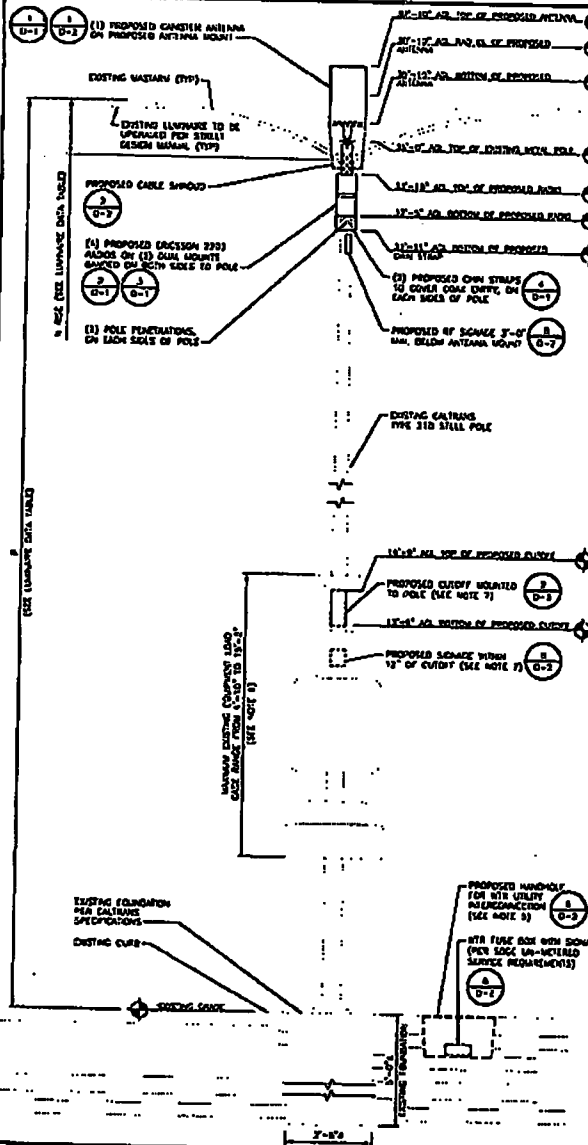
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) WIRELESS ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) RADIO UNIT & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CABLE TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (LBS) PER UNIT	TOTAL WEIGHT (LBS)
1	ACE ADDON-21120-TOP ON EXISTING ANTENNA	33.3	33.3
1	EROSION ROPS-3203 ROPS	14.4	14.4
1	ANTENNA TOP MOUNT BRACKET	22	22
1	ANTENNA SLIDE MOUNT	7	7
1	CABLE SHROUD	0	0
1	OWN STRAP	2	2
1	PATCH-CORD STRAND1122 CORDS	12	12
TOTAL			149.9

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

- A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE MAINTAINED AND MODIFIED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET POLE DEFLECTS ASSESSMENT IS NOT WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET POLE IS DEEMED SUFFICIENT FOR THE PROPOSED LOAD CASES.
- THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
- A 24 HOUR DEFLECT INFORMATION OF CELL TOWER ORDER AND CELL STATION NUMBER SHALL BE PLACED IN THE CUB-OFF LOAD ORDER, REPORT OR ANTENNA.
- ELECTRICAL CONDUIT SHALL BE COORDINATED ACCORDING TO THE GENERAL ORDER OF THE CALTRANS P&C AND THE ELECTRICAL SAFETY ORDER OF CAL-SDMS.

ENGINEER ON RECORD

ASSUMPTION NOTES

- ALL PROPOSED EQUIPMENT TO BE PAINTED TO MATCH EXISTING POLE.
- DEF REQUIREMENT - PROJECT TO COMPLY WITH DEF REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AGL ON THE POLES THAT ARE LOCATED TO THE WEST OF 1-5 PER PLANNING REQUIREMENT. IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE ORIGINAL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
- EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
- NO CHIPPING OF FOUNDATION.
- WIND HOLE AND VIB CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
- ACTUAL EXISTING SOURCE AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
- POLE LOCATED CUTOFF AND ASSOCIATED SOURCE ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



3730 PAVING CENTER BLVD
SAN DIEGO, CA 92131



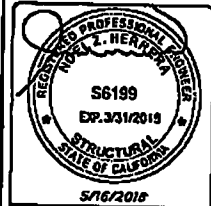
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10001 WILLOW CREEK RD
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SAN DIEGO, CA 92131

OPS NUMBER

593784

REV	DATE	DESCRIPTION
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3	01/15/18	REVISED PER COMMENTS
4	01/15/18	REVISED FOR APPROVAL
5	01/15/18	REVISED FOR APPROVAL



IT IS A VIOLATION OF LAW FOR ANY PERSON, OTHER THAN THE ENGINEER, TO SIGN THE QUESTION OF A LICENSE WITHOUT BEING A LICENSED PROFESSIONAL ENGINEER, OR AFTER HIS DEATH.

AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

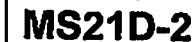
EXISTING TYPE 210 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
SCHEMATIC

SHEET NUMBER

MS21D-1

[illegible]

Therefore, a strong case can be made adequate capacity in support science and research had



6.6 Base Plate & Anchorage

6.6.1 Base Plate

ASCE Section 6.6.1

Design Data

Maximum Factored Bending Moment per inch of width, M_u	10	kip-in	ref. Analysis & Design Section 6.2.1
Maximum Factored Shear Force, V_u	0.02	kip-in	ref. Analysis & Design Section 6.2.1
Concrete Compressive Strength, f'_c	3	ksi	(assumed)
Yield Strength of Base Plate, F_y	36	ksi	
Base Plate Length, L	12	in	
Base Plate Width, B	12	in	
Resistance Factor for Compression, ϕ_c	0.85		Sec. 6.6.2
Base Plate Thickness, t	1	in	
Anchor Rod Edge Distance, e	1.25	in	



Fig. 6.6.1 Base Plate Dimensions

Design Parameters, Strength of Base Plate

Factored Capacity, $\phi_c P_n$	10	kip	Eq. 6.6.1
Maximum Shear Stress, V_u / A_g	1.00	ksi	Sec. 6.6.1
Maximum Shear Force, V_u	0.02	kip	Eq. 6.6.1
Gross Capacity, $\phi_c P_n$	10	kip	Eq. 6.6.1

Base Plate Design Details

Small Moment = 0, $P_u = 10$ kip
Large Moment = 0, $P_u = 10$ kip

Base Plate Design

Base Plate Thickness, t

Base Plate Thickness, t

Base Plate Thickness, t

Base Plate Thickness, t

Base Plate Thickness, t

Base Plate Thickness, t

Base Plate Thickness, t

Base Plate Thickness, t

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Base Plate Thickness, t

6.6.2 Anchor Rods

ASCE Section 6.6.2

Design Data

Maximum Factored Tension, T_u	1.0	kip	ref. Section 6.2.1
Maximum Factored Shear, V_u	1.00	kip	ref. Section 6.2.1
Number of Bolts in Both Tension & Shear, N	4		
Factored Tension per Anchor Rod, T_{ur}	0.25	kip	
Factored Shear per Anchor Rod, V_{ur}	0.25	kip	
Anchor Rod Diameter, d	0.75	in	(assumed)
Yield Strength of Anchor Rod, F_y	36	ksi	(A36 assumed)
Ultimate Tensile Strength of Anchor Rod, F_u	58	ksi	(A36 assumed)

Combined Tension and Shear in Bolted Type Connections

Minimum Unstressed Area of Anchor Rod, A_n	0.43	in ²	Sec. 6.6.2.1
Minimum Tensile Stress of Anchor Rod, F_t	43.50	ksi	Table 6.6.2
Minimum Shear Strength of Anchor Rod, F_v	20.00	ksi	Table 6.6.2
Required Shear Stress of Anchor Rod, F_v	0.50	ksi	Sec. 6.6.2.1
Resistance Factor for Tension, ϕ_t	0.75		Sec. 6.6.2.1
Minimum Tensile Strength of Anchor Rod, F_t	43.50	ksi	Sec. 6.6.2.1
Minimum Tensile Strength of Anchor Rod, F_t	43.50	ksi	Sec. 6.6.2.1
Factored Tensile Strength of Anchor Rod, T_{ur}	0.25	kip	Eq. 6.6.2
Anchor Rods	0.012	kip	Eq. 6.6.2

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Parameters

Lateral Force, P	1.00	kip	
Height above grade of Lateral Force, H	0.75	ft	
Diameter of Pier, D	17.00	in	
Lateral Soil Bearing Capacity, S_1	2.50	kip/ft ²	Table 1806.2
Vertical Soil bearing Capacity, S_2	0.10	kip/ft ²	Table 1806.2
Temporary Load factor, F	2.00		Section 1806.2.6
Final Depth, D_{eff}	5.43	ft	

Required Equations

$$D_{eff} = 4.25 P H / S_1 S_2 \quad (IBC 2012 Eq. 18-2)$$

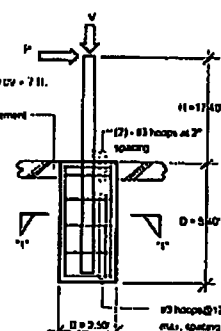
Lateral Soil Bearing Capacity, S_1	2.50	kip/ft ²
Allowable lateral pressure at "D", $S_1 = F \times S_2 \times D$	1.00	kip/ft ²
Required Calculated Depth, D_{eff}	5.43	ft

Vertical Soil bearing Check

$$Q_{all} = (0.75 \times 4.01 \times 5.40 \times 0.15) / 4.01$$

$$= 0.90 \text{ kip}$$

$$3/4 \times 1.50 \text{ kip} = 1.125 \text{ kip} > 0.90 \text{ kip}$$



5738 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



BLACK & VEATCH

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AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 210 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER
MS21D-3

MS21D-4

Site Information: Address: San Diego, CA
Description: 30' Generic Raising Steel Light Pole
Type 1SD
Loading Scenario: Micro-2

Applicable Codes: AASHTO 2015

Analysis Results

Existing Steel Light Pole Stress Ratio with Proposed Equipment: 71.4% Pass
Existing Steel Pole Service Deflection Ratio with Proposed Equipment: 99.6% Pass
Existing Concrete Pier Foundation: 64.7% Pass

ASSUMPTIONS, DISCUSSION, AND NOTES

1. The analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed equipment loading, and pole data. If this information is not current and correct, the report should be considered obsolete and further analysis will be required.

2. Black & Veatch assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to: welding, corroding, decaying and/or deteriorating components, improper manufacturing and/or construction, and improper pole maintenance.

3. Black & Veatch assumes no responsibility for modifications completed prior to or hereafter in which Black & Veatch is not directly involved. These modifications include but are not limited to replacing or strengthening pole components, and/or changing loading configurations.

4. The analysis assumes that the pole is situated at components and mounts, including all steel sections and all equipment hardware, are in good working order and in their original state, free of any other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above specifications.

5. The analysis assumes that all existing and/or proposed equipment mounts on the tower will have adequate capacity to support the existing and proposed equipment loading.

6. Fatigue does not govern the design of common light poles per AASHTO Sec. C11.4

7. At the time of this structural analysis, exact details were not available for the following items:

- Equipment (Type B model, weight & dimensions)
- Foundation (Pier dia and quantity, and parameters)
- Spacing of poles were assumed.

POLE DATA

Item	Value	Unit	Notes
Typical Material	Steel - 55 ksi	(ksi)	
Bottom Pole Diameter	8	in	
Top Pole Diameter	14.75	in	
Pole Thickness	0.1719	in	
Height of Pole	30	ft	

SAMPLE DATA

Item	Value	Unit
Type of Mount	Steel 1500 Gr 5	(ksi)
Arm Diameter	3.75	in
Arm Thickness	0.132	in
Weight of Arm	33.5	lb
Horizontal Length of Arm	33.00	ft
Total Length of Arm	33.75	ft

Notes: This report was prepared by the Engineering Department of Black & Veatch, Inc. under the supervision of the Professional Engineer, David L. Smith, P.E. The design of the pole and its components was based on the information provided by the client and the design of the pole and its components was based on the information provided by the client. The design of the pole and its components was based on the information provided by the client.

EQUIPMENT DATA

Equipment & Approximate Wt	Loading or Positioning	Dimensions (in)	Weight (lbs)	Effective Projected Area (sq ft)	Location
Equipment 1	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 2	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 3	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 4	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 5	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 6	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 7	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 8	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 9	Existing	15 x 15 x 15	15	15 x 15	Top of Pole
Equipment 10	Existing	15 x 15 x 15	15	15 x 15	Top of Pole

Total Dead Load

Total Moment Due to Dead Load (ft-kips)

0.01 kips

0.01 kips

Structural Wind Loads

Total Wind Force in Z Direction

1.54 kips

Total Wind Force in Y Direction

27.35 kips

Total Wind Force in X Direction

0.13 kips

Total Moment Due to Wind in Z Direction

22.29 kips

Total Moment Due to Wind in Y Direction

0.01 kips

Total Moment Due to Wind in X Direction

0.01 kips

Total Moment Due to Wind in Z Direction

0.01 kips

Total Moment Due to Wind in Y Direction

0.01 kips

Total Moment Due to Wind in X Direction

0.01 kips

Total Moment Due to Wind in Z Direction

0.01 kips

Total Moment Due to Wind in Y Direction

0.01 kips

Total Moment Due to Wind in X Direction

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Total Moment Due to Wind in Z Direction

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Total Moment Due to Wind in Y Direction

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Total Moment Due to Wind in X Direction

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Total Moment Due to Wind in Z Direction

0.01 kips

Total Moment Due to Wind in Y Direction

0.01 kips

Total Moment Due to Wind in X Direction

0.01 kips

Total Moment Due to Wind in Z Direction

0.01 kips



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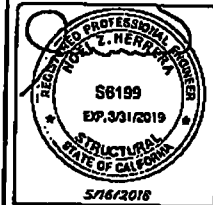
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AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 21D STREET
LIGHT POLE WITH POLE
TOP RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS21D-5



3735 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121

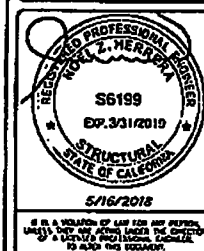


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7	06/21/18	REVISED PER COMMENTS
8	06/21/18	REVISED PER COMMENTS
9	06/21/18	REVISED PER COMMENTS
10	06/21/18	REVISED PER COMMENTS



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 21D STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
MICRO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS21D-6

5.6 Base Plate & Anchorage

5.6.1 Anchor Rods

5.6.2 Base Plate

Design Data			
Maximum Factored Bending Moment per member magnitude	$M_u = 24.21$	kips-ft	(see Analysis & Design Section 5.2.1)
Maximum Factored Shear	$V_u = 1.21$	kips	(see Analysis & Design Section 5.2.1)
Concrete Compressive Strength	$f'_c = 3$	ksi	(assumed)
Yield Strength of Steel Plate	$F_y = 36$	ksi	
Base Plate Length	$L = 12$	in	
Base Plate Width	$B = 12$	in	
Resistance Factor in Compression	$\phi_c = 0.65$		(see 5.3.2)
Base Plate Thickness	$t_p = 1.5$	in	
Anchor Rod Edge Distance	$e = 1.75$	in	

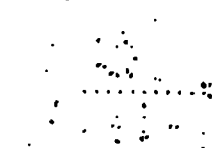


Fig. 5.6.1 Base plate and anchor rods

Design Method: Steel Base Plate

Equation Reference			
Maximum Bending Stress	$f_u = 1.06$	ksi	(see 5.6.2)
Maximum Bending Moment	$M_u = 24.21$	kips-ft	(see 5.2.1)
Concrete Strength	$\phi_c = 0.65$		(see 5.3.2)

Base Plate Check Method

Steel Strength	$\phi_t = 0.9$		(see 5.3.2)
Base Plate Thickness	$t_p = 1.5$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

Base Plate Check

Base Plate Thickness	$t_p = 1.5$	in	(see 5.6.2)
Base Plate Width	$B = 12$	in	
Base Plate Length	$L = 12$	in	

5.6.1 Anchor Rods

5.6.2 Base Plate

Design Data			
Maximum Factored Tension	$T_u = 2.1$	kips	(see Section 5.2.1)
Maximum Factored Shear	$V_u = 1.04$	kips	(see Section 5.2.1)
Number of Rods in Base Tension & Shear	$n = 4$		
Factored Tension per Anchor Rod	$T_{ur} = 0.525$	kips	
Factored Shear per Anchor Rod	$V_{ur} = 0.26$	kips	
Anchor Rod Diameter	$d = 1.75$	in	(assumed)
Yield Strength of Anchor Rod	$F_y = 36$	ksi	(A36 assumed)
Ultimate Tensile Strength of Anchor Rod	$F_u = 58$	ksi	(A36 assumed)

Concrete Strength and Steel Reinforcement Properties

Concrete Compressive Strength	$f'_c = 3$	ksi	(see 5.3.2)
Yield Strength of Steel Reinforcement	$F_y = 36$	ksi	(see 5.3.2)
Ultimate Tensile Strength of Steel Reinforcement	$F_u = 58$	ksi	(see 5.3.2)
Resistance Factor for Tension	$\phi_t = 0.9$		(see 5.3.2)
Resistance Factor for Shear	$\phi_v = 0.85$		(see 5.3.2)

Minimum Tensile Strength of Anchor Rod	$T_{ur} = 0.525$	kips	(see 5.2.1)
Factored Tensile Strength of Anchor Rod	$T_{ur} = 0.525$	kips	(see 5.2.1)
Base Plate	$B = 12$	in	

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Parameters

Lateral Force	$P = 1.15$	kips	
Vertical Force	$V = 0.21$	kips	
Height Above grade of Lateral Force	$H = 15.71$	ft	
Diameter of Pier	$D = 2.5$	ft	
Lateral Soil Bearing Capacity	$S = 0.15$	ksf	(see Table 1805.2)
Vertical Soil bearing Capacity	$Q_{ult} = 1.5$	ksf	(see Table 1805.2)
Transient Load factor	$F = 2.0$		(see Section 1805.3.4)
Test Depth	$D_{test} = 5.35$	ft	

Design Equations

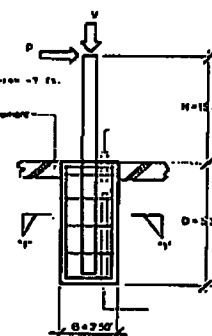
Design Equation	$D_{test} = (4.25 \cdot P \cdot H / S)^{1/3}$	(see 1805.2.2)
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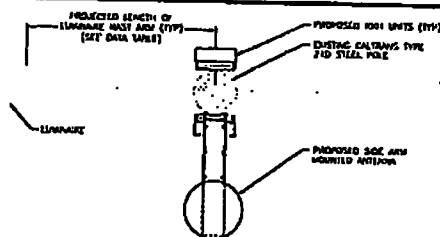
Lateral Soil Bearing Capacity

Lateral Soil Bearing Capacity	$F \cdot S = 0.20$	ksf	
Allowable lateral pressure at "D"	$S_a = F \cdot S \cdot D = 0.5$	ksf	
Required Calculated Depth	$D_{req} = 5.35$	ft	

Vertical Soil bearing Check

Vertical Soil bearing Check	$Q_{ult} = 1.5$	ksf	(see Section 1805.2.2)
Required Calculated Depth	$D_{req} = 5.35$	ft	





LUMINAIRE MAST ARM DATA PER CALTRANS				
PROJECTED LENGTH	H RISE	MIN. O.D. AT POLE	NOMINAL THICKNESS	P
6'-0"	2'-0"	3-1/2"		TYPE 210
8'-0"	3'-0"	3-1/2"		30'-0"
10'-0"	3'-3"	3-1/2"		37'-0"
12'-0"	4'-0"	3-1/2"		37'-0"
14'-0"	4'-6"	3-1/2"		37'-0"

STEEL POLE PLAN VIEW

NO SCALE

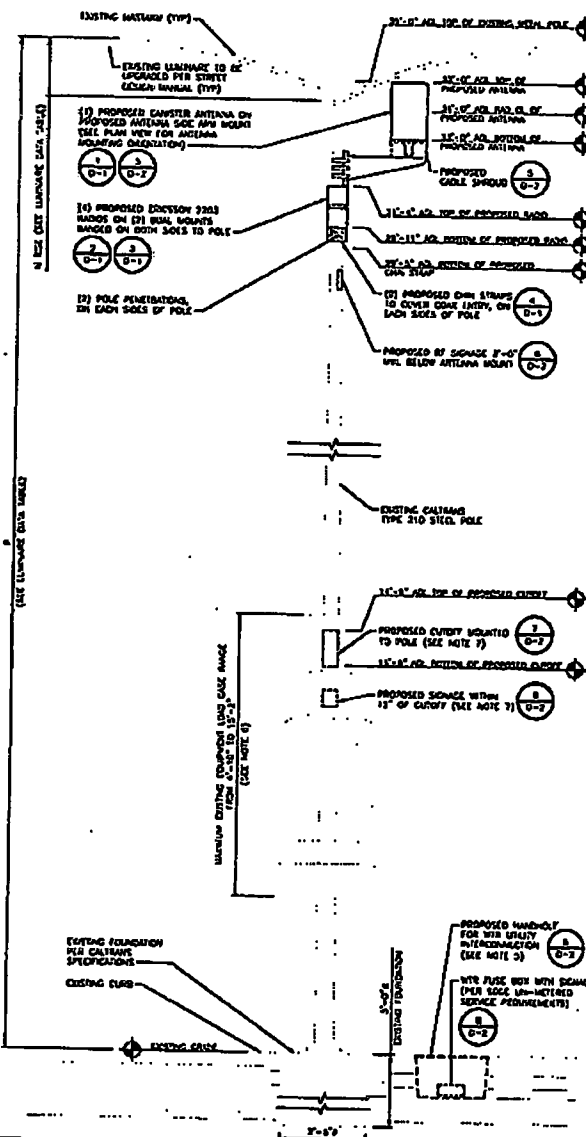
PROJECT DESCRIPTION

- AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:
- INSTALL (1) CANTENNA ANTENNA & ASSOCIATED MOUNT/HARDWARE
 - INSTALL (1) RADIO MOUNT & ASSOCIATED MOUNT/HARDWARE
 - INSTALL (1) CUTOFF TO POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (LBS) PER UNIT	TOTAL WEIGHT (LBS)
1	ACE AGON-2110-10 OR EQUAL ANTENNA	33.3	33.3
4	ORION-2110-10 OR EQUAL RADIO	18.4	73.6
1	SIDE ARM ANTENNA MOUNT BRACKET	25	25
1	ANTENNA SLEEVE MOUNT	8	8
1	CABLE SHROUD	5	5
2	OMNI STRAP	5	10
1	PARTICULAR, PYSOIDS CUTOFF	12	12
	TOTAL		192.9

PROJECT NOTES



STEEL POLE ELEVATION VIEW

NO SCALE

- A STRUCTURAL ANALYSIS WAS PERFORMED. THE EXISTING STREET LIGHT IS ASSUMED TO BE BUILT AND MAINTAINED IN ACCORDANCE WITH THE POLE MANUFACTURER'S SPECIFICATIONS AND IN GOOD CONDITION. EXISTING STREET POLE CLEARS ASSESSMENT IS 30' WITHIN THE SCOPE OF THE ANALYSIS. BASED ON THE ANALYSIS, THE EXISTING STREET POLE WILL FULLY COMPLY WITH THE AASHTO 2010 THROSTON. THE EXISTING STREET LIGHT POLE IS DEEMED SATISFACTORY FOR THE PROPOSED LOAD CASES.
- THE GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IF THERE ARE ANY FIELD DEFECTS THAT COMPROMISE STRUCTURAL INTEGRITY.
- A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL STATION NUMBER SHALL BE PLACED IN THE CUT-OFF LOAD CENTER, RADIOS OR ANTENNA.
- ELECTRICAL CONDUIT SHALL BE CALCULATED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CAL-OSHA.

ASSUMPTION NOTES

- ALL PROPOSED EQUIPMENT TO BE PARTED TO MATCH EXISTING POLE.
- NOT REQUIREMENT - PROJECT TO COMPLY WITH ALL REQUIREMENTS TOP OF THE ANTENNA NOT TO EXCEED 30' AD. ON THE POLES THAT ARE LOCATED TO THE WEST OF 8-3 PUL PLANNING REQUIREMENTS. IN EACH SCENARIO, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE OVERALL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
- EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFESSIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
- NO CHIPPING OF FOUNDATION.
- HAND POLE AND WEL. CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
- ACTUAL EXISTING SCHEME AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
- POLE MOUNTED CUTOFF AND ASSOCIATED SCHEME ORIENTATION OF POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



5735 PACIFIC CENTER BLVD
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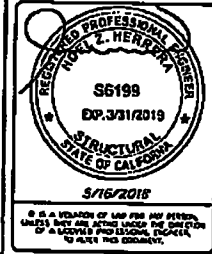
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10000 WILLOW CREEK RD
SUITE 2300
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2	04/14/18	REVISED PER COMMENTS
3	04/14/18	REVISED PER COMMENTS
4	04/14/18	REVISED PER COMMENTS
5	04/14/18	REVISED PER COMMENTS
6	04/14/18	REVISED PER COMMENTS
7	04/14/18	REVISED PER COMMENTS
8	04/14/18	REVISED PER COMMENTS
9	04/14/18	REVISED PER COMMENTS
10	04/14/18	REVISED PER COMMENTS



AT&T SMALL CELL (CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 210 STREET LIGHT POLE WITH SIDE ARM ANTENNA MOUNT AND PICO RADIO EQUIPMENT SCHEMATIC

SHEET NUMBER

MS21D-7

On 12/12/68, the FBI received a letter from the American Friends Service Committee (AFSC) regarding the activities of the AFSC in the United States. The letter stated that the AFSC was a non-profit organization that was dedicated to the promotion of peace and social justice. The AFSC was also involved in the activities of the AFSC in the United States. The letter stated that the AFSC was a non-profit organization that was dedicated to the promotion of peace and social justice. The AFSC was also involved in the activities of the AFSC in the United States.

MS21D-8

6.6 Steel Plate B Anchorage

6.6.1 Design Data

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

6.6.2 Design Data



6.6.3 Design Data

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
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Yield Strength of Steel Plate	F_y	36	ksi
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Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
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Steel Plate Length	L	12	in
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Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
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Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
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Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
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Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
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Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
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Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

Design Type			
Maximum Factored Bending Moment per unit length	M_u	11.62	kip-ft/ft
Maximum Factored Axial Load	P_u	1.01	kip
Concrete Characteristic Strength	f'_c	4	ksi
Yield Strength of Steel Plate	F_y	36	ksi
Steel Plate Length	L	12	in
Steel Plate Width	B	12	in
Minimum Factor of Safety	ϕ	0.9	
Steel Plate Thickness	t	0.75	in
Anchor Rod Edge Distance	e	4.75	in

6.6.2 Design Data

Design Type			
Maximum Factored Tension	T_u	2.3	kip
Maximum Factored Shear	V_u	1.79	kip
Number of Bars in Tension & Shear	N	4	
Factored Tension per Anchor Rod	T_{ur}	0.58	kip
Factored Shear per Anchor Rod	V_{ur}	0.45	kip
Anchor Rod Diameter	d	1.25	in
Yield Strength of Anchor Rod	F_y	36	ksi
Ultimate Tensile Strength of Anchor Rod	F_u	58	ksi

6.6.3 Design Data

Design Type			
Maximum Factored Tension	T_u	2.3	kip
Maximum Factored Shear	V_u	1.79	kip
Number of Bars in Tension & Shear	N	4	
Factored Tension per Anchor Rod	T_{ur}	0.58	kip
Factored Shear per Anchor Rod	V_{ur}	0.45	kip
Anchor Rod Diameter	d	1.25	in
Yield Strength of Anchor Rod	F_y	36	ksi
Ultimate Tensile Strength of Anchor Rod	F_u	58	ksi

6.7 Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

6.7.1 Design Data

Design Type			
Lateral Force	P	1.13	kip
Vertical Force	V	0.55	kip
Height above grade of Lateral Force	H	17.01	ft
Diameter of Pier	D	2.50	ft
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Vertical Soil bearing Capacity	S_2	1.50	ksf
Transient Load factor	F	2.00	
Frict Depth	C_{dr}	5.25	ft

6.7.2 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.3 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.4 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.5 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.6 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.7 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.8 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.9 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft

6.7.10 Design Data

Design Type			
Lateral Soil Bearing Capacity	S_1	0.15	ksf
Available lateral pressure at "D"	B_2	1.05	ksf
Required Calculated Depth	C_{dr}	5.67	ft



3736 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



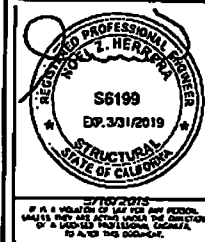
BLACK & VEATCH

10005 WILLOW CREEK RD
SUITE 3350
SAN DIEGO, CA 92131

PIS NUMBER

593784

REV	DATE	DESCRIPTION
1	04/15/19	ISSUED FOR CONSTRUCTION
2	04/15/19	ISSUED FOR CONSTRUCTION
3	04/15/19	ISSUED FOR CONSTRUCTION
4	04/15/19	ISSUED FOR CONSTRUCTION



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING TYPE 210 STREET
LIGHT POLE WITH SIDE
ARM ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS21D-9

Site Information: Address: San Diego, CA
 Description: 25' Generic Existing Steel Light Pole
 Type 21D
 Loading Scenario: Micro-4

Applicable Codes: AASHTO 2015

Analysis Results

Existing Steel Light Pole Stress Ratio with Proposed Equipment: 75.0% Pass
 Existing Steel Light Pole Service Deflection Ratio with Proposed Equipment: 102.4% Pass
 Existing Concrete Pier Foundation: 64.7% Pass

ASSUMPTIONS, OBSERVATIONS, AND NOTES

- This analysis was performed under the assumption that all information provided in Black & Veatch is current and correct. This is to include site data, existing/proposed equipment loading, and pole data. If this information is not current and correct, this report should be considered obsolete and further analysis will be required.
- Black & Veatch assumes no responsibility for failure caused by factors beyond our control. These include but are not limited to moving, corroding, delaying and/or deteriorating components, improper manufacturing and/or construction, and improper pole maintenance.
- Black & Veatch assumes no responsibility for modifications completed prior to its hire after which Black & Veatch was not directly involved. These modifications include but are not limited to replacing or strengthening pole components, installing or removing antenna mounting components, installing or removing utility components, and changing loading configurations.
- The analysis assumes that the pole's structural components and moorings, including all steel sections and attached hardware, are in good working order and in their original state, free of rust or other forms of corrosion. Furthermore, it is assumed that the pole has been properly maintained and monitored since the time of construction. This report should be considered obsolete and further analysis will be required if the pole does not meet all of the above specifications.
- The analysis assumes that all existing and/or proposed equipment mounted on the tower will have adequate capacity to support the existing and proposed equipment loading.
- Farigue does not govern the design of common light poles per AASHTO Sec. E11.4
- At the time of this structural analysis, exact details were not available for the following items:
 - Hardware: Type, model, weight & dimensions
 - Foundation details and quantity, soil parameters
 - Signages on poles were assumed.

POLE DATA
 Type of Material: Steel - 50 ksi (A36)
 Bottom Pole Diameter: 6.625 in.
 Top Pole Diameter: 11.625 in.
 Pole Thickness: 0.375 in.
 Height of Pole: 25 ft

UNWEATHERED DATA
 Type of Material: Steel A500 Gr. B (A500)
 Arm Diameter: 3.875 in.
 Arm Thickness: 0.125 in.
 Weight of Arm: 7.25 lbs/ft
 Horizontal Length of Arm: 17.00 ft
 Total Length of Arm: 17.15 ft

WIND PROFILES
 Design Equation: $P_e = 0.00125 V^2 C_d C_e C_t C_s$
 Gust Effect Factor: $G = 1.0$
 Basic Wind Speed: $V = 120$ mph
 Exposure Category: C

Observations made in the foregoing load cases, as shown on the previous sheet, were not submitted, do not necessarily represent the structural results. These observations include, the design of (1) supports and (2) the vehicle signal arm or component should be designed to the Engineer's Office for these calculations.

COMPUTATIONS

Equipment & Approximate Weight	Existing or Proposed	Dimensions (in)			Weight (lbs)	Projected Area (sq ft)	Distance (ft)
		W	H	D			
Radio Mast	Existing	-	-	-	45	1.20 x 1.20	10.0
12' Aerial Mast and 12W units (see notes)	Proposed	35	44	35	64.94	4.43 x 4.43	11.15
Top Arm Mount	Proposed	34.5	11.5	8	25	1.15 x 0.50	10.15
12' Extension Mast, 20 x 40 (see notes)	Proposed	17.00	22.11	4.31	114.43	2.27 x 3.54	16.97
Wind Vane	Proposed	12.00	6	2.75	12	0.20 x 0.20	10.00
Antenna Mast 1	Existing	60	0.5	0.5	5	0.21 x 0.20	11.00
Antenna Mast 2	Existing	60	0.5	0.5	5	0.21 x 0.20	11.00
Wind Vane	Existing	22	6	2	9	0.20 x 0.21	10.00
Antenna Mast 3	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 4	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 5	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 6	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 7	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 8	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 9	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 10	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 11	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 12	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 13	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 14	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 15	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 16	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 17	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 18	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 19	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 20	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 21	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 22	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 23	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 24	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 25	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 26	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 27	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 28	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 29	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 30	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 31	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 32	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 33	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 34	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 35	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 36	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 37	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 38	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 39	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 40	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 41	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 42	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 43	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 44	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 45	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 46	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 47	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 48	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 49	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 50	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 51	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 52	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 53	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 54	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 55	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 56	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 57	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 58	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 59	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 60	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 61	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 62	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 63	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 64	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 65	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 66	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 67	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 68	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 69	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 70	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 71	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 72	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 73	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 74	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 75	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 76	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 77	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 78	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 79	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 80	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 81	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 82	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 83	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 84	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 85	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 86	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 87	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 88	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 89	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 90	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 91	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 92	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 93	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 94	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 95	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 96	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 97	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 98	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 99	Existing	24	0.4	2	9	0.20 x 0.21	10.00
Antenna Mast 100	Existing	24	0.4	2	9	0.20 x 0.21	10.00

Total Drift Load
 Total Moment Due to Drift Load Exceeds Capacity
 = 0.79 kip-ft
 = 1.16 kip-ft

WIND LOADS

Total Wind Force on Z Direction
 Total Moment Due to Wind on Z Direction
 Total Wind Force on X Direction
 Total Moment Due to Wind on X Direction
 Total Wind Force on Y Direction
 Total Moment Due to Wind on Y Direction

0.000 kip
 11.11 kip-ft
 0.11 kip
 0.10 kip-ft
 0.01 kip
 0.01 kip-ft

6.2 Structural Component Capacity Check

Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

AASHTO
 Sec. E.11

6.3 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

6.4 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

6.5 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

6.6 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

6.7 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

6.8 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force

6.9 Wind Load Check

Maximum Factored Bending Moment
 Maximum Factored Axial Load
 Maximum Factored Torsion
 Maximum Factored Shear Force
 Maximum Factored Axial Load
 Maximum Factored Bending Moment
 Maximum Factored Torsion
 Maximum Factored Shear Force



5750 PACIFIC CENTER BLVD
 SAN DIEGO, CA 92121



BLACK & VEATCH

BLACK & VEATCH CORPORATION
 10000 WILLOW CREEK RD
 SAN DIEGO, CA 92131

PIS NUMBER

593784

2	05/14/19	REVISED PER COMMENTS
2	05/14/19	REVISED PER COMMENTS
1	05/14/19	REVISED PER COMMENTS
6	05/14/19	REVISED PER COMMENTS
NOV	DATE	DESCRIPTION

6.6 Base Plate & Anchorage

6.6.1 Design Data

(Ref. Section 6.2.1)

Design Data

Maximum Factored Bending Moment (at support)	$M_u = 25.02$	kip-ft	(Ref. Section 6.2.1)
Maximum Factored Axial Load	$P_u = 9.38$	kips	(Ref. Section 6.2.1)
Concrete Compressive Strength	$f'_c = 3$	ksi	(assumed)
Yield Strength of Base Plate	$F_y = 36$	ksi	
Base Plate Length	$L = 12$	in	
Base Plate Width	$B = 12$	in	
Minimum Factored Axial Compression	$P_u = 0.75$	kips	See 5.3.2.2
Base Plate Thickness	$t_p = 3$	in	
Anchor Rod Edge Distance	$L_{ar} = 1.75$	in	

Fig. 6.6.1 Base plate & anchor rod details

Design Assumptions, Loads & Material Properties

Concrete Compressive Strength	$f'_c = 3$	ksi	See 5.3.2
Yield Strength of Steel	$F_y = 36$	ksi	See 5.3.2
Maximum Factored Bending Moment	$M_u = 25.02$	kip-ft	See 5.3.2
Design Load Factor	$\phi = 0.9$		See 5.3.2

Base Plate Design Method

Design Method = Large Moment Base Plate (See 5.3.2.2)

Base Plate Thickness $t_p = 3$ in

Anchor Rod Edge Distance $L_{ar} = 1.75$ in

Anchor Rod Diameter $d_{ar} = 0.5$ in

Anchor Rod Yield Strength $F_y = 36$ ksi

Anchor Rod Tensile Strength $F_u = 58$ ksi

Anchor Rod Elongation $\epsilon = 0.005$

Anchor Rod Spacing $s = 12$ in

Anchor Rod End Distance $L_e = 12$ in

Anchor Rod Lap Length $L_{lap} = 12$ in

Anchor Rod Weld Length $L_w = 12$ in

Anchor Rod Weld Diameter $d_w = 0.5$ in

Anchor Rod Weld Strength $F_w = 36$ ksi

Anchor Rod Weld Elongation $\epsilon_w = 0.005$

Anchor Rod Weld Spacing $s_w = 12$ in

Anchor Rod Weld End Distance $L_{ew} = 12$ in

Anchor Rod Weld Lap Length $L_{ewlap} = 12$ in

Anchor Rod Weld Diameter $d_{ew} = 0.5$ in

Anchor Rod Weld Strength $F_{ew} = 36$ ksi

Anchor Rod Weld Elongation $\epsilon_{ew} = 0.005$

Anchor Rod Weld Spacing $s_{ew} = 12$ in

Anchor Rod Weld End Distance $L_{ewend} = 12$ in

Anchor Rod Weld Lap Length $L_{ewlapend} = 12$ in

Anchor Rod Weld Diameter $d_{ewend} = 0.5$ in

Anchor Rod Weld Strength $F_{ewend} = 36$ ksi

Anchor Rod Weld Elongation $\epsilon_{ewend} = 0.005$

Anchor Rod Weld Spacing $s_{ewend} = 12$ in

Anchor Rod Weld End Distance $L_{ewendend} = 12$ in

Anchor Rod Weld Lap Length $L_{ewlapendend} = 12$ in

Anchor Rod Weld Diameter $d_{ewendend} = 0.5$ in

Anchor Rod Weld Strength $F_{ewendend} = 36$ ksi

Anchor Rod Weld Elongation $\epsilon_{ewendend} = 0.005$

Anchor Rod Weld Spacing $s_{ewendend} = 12$ in

6.6.2 Anchor Rod Design

(Ref. Section 6.2.1)

Design Data

Maximum Factored Tension	$T_u = 2.5$	kips	(Ref. Section 6.2.1)
Minimum Factored Tension	$T_u = 1.5$	kips	(Ref. Section 6.2.1)
Number of Bars at Each Tension & Shear	$N = 6$		
Factored Tension per Anchor Rod	$T_{ur} = 0.42$	kips	
Factored Shear per Anchor Rod	$V_{ur} = 0.12$	kips	
Anchor Rod Diameter	$d_{ar} = 1.25$	in	(assumed)
Yield Strength of Anchor Rod	$F_y = 36$	ksi	(A36 assumed)
Ultimate Tensile Strength of Anchor Rod	$F_u = 58$	ksi	(A36 assumed)

Combined Tension and Shear in Reinforced Concrete

Normal Unstressed Area of Anchor Rod	$A_n = 1.23$	in ²	See 5.3.2.2
Normal Tensile Stress of Anchor Rod	$f_t = 43.50$	ksi	Table 5.3.2
Normal Shear Stress of Anchor Rod	$f_v = 26.10$	ksi	Table 5.3.2
Reinforced Shear Stress of Anchor Rod	$f_{tv} = 0.55$	ksi	See 5.3.2.2
Reinforced Tensile Stress of Anchor Rod	$f_{tv} = 0.75$	ksi	See 5.3.2.2
Normal Tensile Stress Modified to Include Shear Stress	$f_{tv} = 43.50$	ksi	See 5.3.2.2
Normal Tensile Strength of Anchor Rod	$R_n = 52.4$	kips	Eq. 5.3.2
Factored Tensile Strength of Anchor Rod	$\phi R_n = 47.2$	kips	Eq. 5.3.2
Shear Ratio	$\phi R_n = 0.91$	Ratio	See 5.3.2

Pier with Lateral Load, based on Chapter 18 of IBC 2012 (restrained condition)

Design Parameters

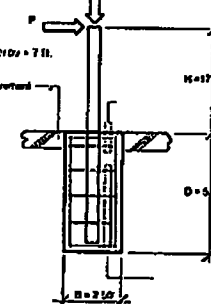
Lateral Force	$P = 1.02$	kips	
Vertical Force	$V = 0.75$	kips	
Height above grade of Lateral Force	$H = 17.46$	ft	
Diameter of Pier	$D = 2.50$	ft	
Lateral Soil Bearing Capacity	$S = 0.13$	ksi/ft	Table 1805.2
Vertical Soil Bearing Capacity	$S_v = 1.50$	ksi/ft	Table 1805.2
Frictional Load Factor	$f = 2.00$		Section 1805.3
Final Depth	$D_{final} = 2.40$	ft	

Assume Section

$D_{min} = 1.25 \times H \times S_v \times f$ (IBC 2012 Eq. 18.7)

Lateral Soil Bearing Capacity $F = S = 0.20$ ksi/ft
 Allowable lateral pressure at "D"
 Required Calculated Depth $D_{min} = 5.40$ ft < $D_{final} = 7.11$

Vertical Soil Bearing Check (Section 1805.3.2.3)
 $Q_{ult} = (7.75 + 4.01 \times 5.40 \times 0.13) / 4.01$
 $Q_{ult} = 0.90$ ksi/ft
 $S.R. = 64.0\%$ OK



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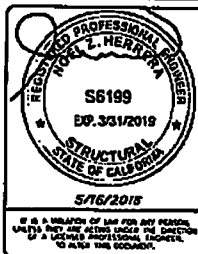
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10001 WILLOW CREEK RD
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SAN DIEGO, CA 92131

PIS NUMBER

593784

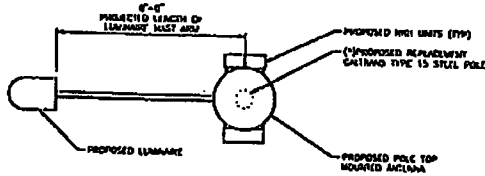
REV	DATE	DESCRIPTION
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2	06/11/15	REVISED FOR CHANGES
3	06/11/15	REVISED FOR CHANGES
4	06/11/15	REVISED FOR CHANGES



AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN
EXISTING TYPE 15 STREET
LIGHT POLE WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
STRUCTURAL CALCULATIONS

SHEET NUMBER

MS21D-12



SEE POLE MANUFACTURER SPECIFICATIONS AND DETAILS

STEEL POLE PLAN VIEW

NO SCALE

PROJECT DESCRIPTION

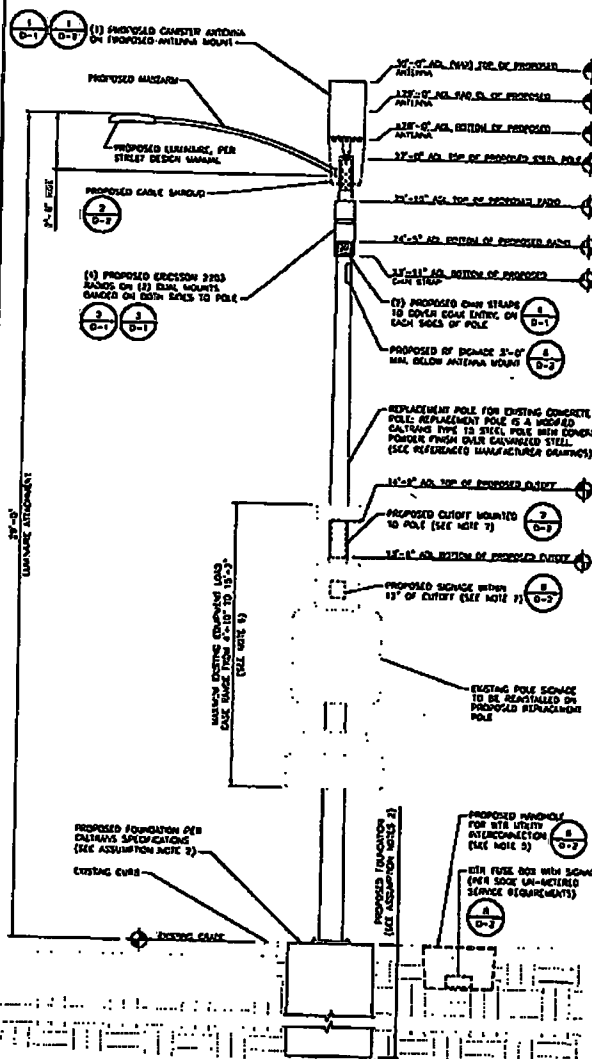
AT&T WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CANTENNA ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (4) RADIO UNITS & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) CUTOFF TO POLE
- REMOVE AND REPLACE CONCRETE POLE WITH STEEL POLE

PROPOSED EQUIPMENT

AMOUNT	EQUIPMENT	WEIGHT (lbs)	TOTAL WEIGHT (lbs)
1	ACE ADD-2715D-11P OR EQUAL ANTENNA	25.3	25.3
4	TRULSON ERU-2203 RADIO	18.6	74.4
1	ANTENNA TOP MOUNT BRACKET	22	22
1	ANTENNA SLEEVE MOUNT	7	7
1	CABLE SHROUD	0	0
2	OWN STRAP	5	10
1	QUICK-ON/OFF CUTOFF	12	12
TOTAL			149.0

PROJECT NOTES



REPLACEMENT POLE ELEVATION VIEW

NO SCALE

1. PROPOSED POLE DESIGN IS TYPE 15 GALVANNE SHIMMED, MODIFIED TO 24'-0" HEIGHT TO STAY WITHIN 30'-0" OVERALL HEIGHT LIMIT.
2. NEW POLE DESIGN DETAIL AND FOUNDATION DRAWINGS TO BE PROVIDED FOR LOCATION SPECIFIC CONDITIONS ON THE RIGHT OF WAY CONSTRUCTION PLANS. DRAWINGS ARE CHIEF ENGINEER FOR MASTER STRUCTURAL PLAN REVIEW.
3. A 24 HOUR COUNTER INFORMATION OF CELL TOWER CENTER AND CELL STATION NUMBER SHALL BE PLACED IN THE CUTOFF LOAD ENTRY, ABOVE OR ANTENNA.
4. ELECTRICAL CODES SHALL BE COMPLIED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUC AND THE ELECTRICAL SAFETY ORDER OF CAL-OSHA.

ENGINEER ON RECORD

ASSUMPTION NOTES

1. ALL PROPOSED EQUIPMENT TO BE PAINTED GREY TO MATCH CONCRETE POLE FINISH.
2. WIND REQUIREMENT - PROJECT TO COMPLY WITH WIND REQUIREMENT. TOP OF THE ANTENNA NOT TO EXCEED 30' AD. ON THE POLES THAT ARE LOCATED TO THE WEST OF 1-5 FOR PLANNING REQUIREMENT. IF SUCH OCCURS, THE MASTER STRUCTURAL PLAN SCHEMATIC WITH THE OVERALL HEIGHT OF LESS THAN 30' WILL BE IMPLEMENTED.
3. EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS ON THE MASTER STRUCTURAL PLAN. ANY DEVIATION WILL REQUIRE A NEW STRUCTURAL ANALYSIS.
4. NO DROPPING OF FOUNDATION.
5. HAND HOLE AND WIRE CUTOFF LOCATION IS A SCHEMATIC REPRESENTATION ONLY. ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
6. ACTUAL EXISTING SHROUD AND EQUIPMENT WILL VARY BASED ON SITE LOCATION.
7. POLE MOUNTED CUTOFF AND ASSOCIATED SHROUD ORIENTATION ON POLE MAY VARY BASED ON SITE LOCATION.

GENERAL NOTES



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SAN DIEGO, CA 92121



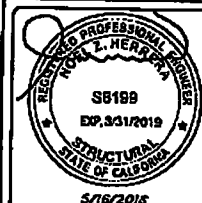
BLACK & VEATCH

BLACK & VEATCH CORPORATION
10000 WILLOW CREEK RD
SUITE 6300
SAN DIEGO, CA 92121

PIS NUMBER

593784

REV	DATE	REVISION
1		REVISED FOR COMMENTS
2		REVISED FOR COMMENTS
3		REVISED FOR COMMENTS
4		REVISED FOR COMMENTS
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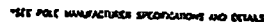
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AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

EXISTING CONCRETE POLE
REPLACEMENT WITH POLE
TOP ANTENNA MOUNT AND
PICO RADIO EQUIPMENT
SCHEMATIC

SHEET NUMBER

MSPR-1



STEEL FOLF PLAN VIEW

NO. 5447

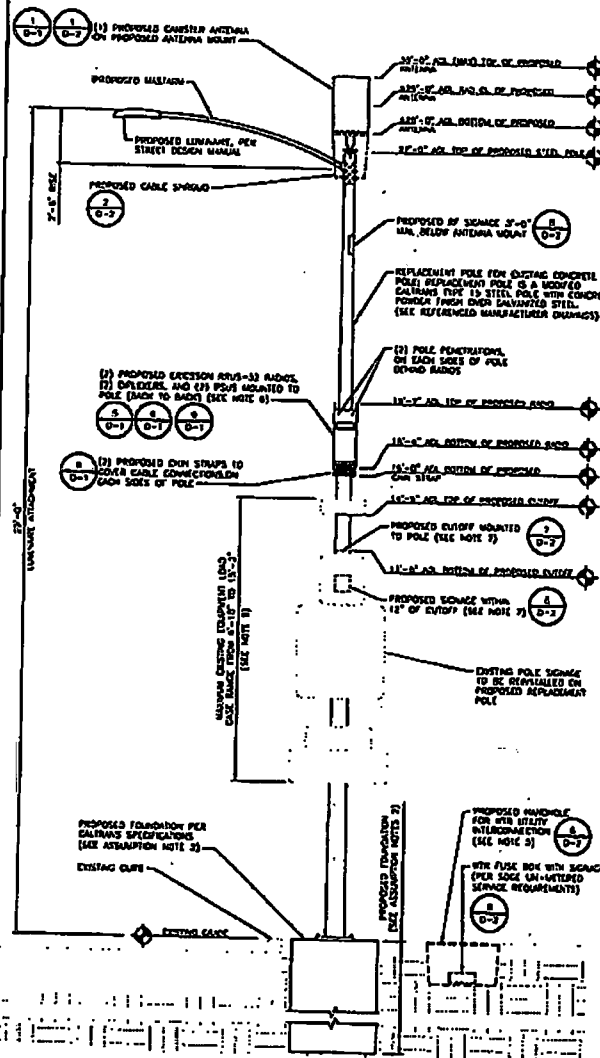
PROJECT DESCRIPTION

AFAT WIRELESS PROPOSES A NEW WIRELESS INSTALLATION ON A METAL LIGHT POLE. THE SCOPE WILL CONSIST OF THE FOLLOWING:

- INSTALL (1) CASSEIN ANTENNA & ASSOCIATED MOUNT/HARDWARE
- INSTALL (2) RADIO UNITS & ASSOCIATED MOUNT/HARDWARE
- INSTALL (1) SWITCH TO POLE
- REMOVE AND REPLACE CONCRETE POLE WITH STEEL POLE

PROPOSED EQUIPMENT			
AMOUNT	EQUIPMENT	WEIGHT (lbs) PER UNIT	TOTAL WEIGHT (lbs)
1	ACE ACORN-27150-12P OR EQUAL ANTENNA	35.5	35.5
2	(RECESSION PROS-33 RADIO & 55W AC OR LANT	87.91	175.82
3	RPS PUP/P02034A-WE DUPLEXER	3.1	9.3
1	ANTENNA 15P W/400P BRACKET	23	23
1	ANTENNA 3500E MOUNT	2	2
1	CABLE 500000	2	2
2	COAX BIRAP	5	10
1	RADIO CONNECTION SYSTEM	3	3
1	RADIOTECHNOL PHS90112 EXTIOFF	92	92
	TOTAL		335.87

PROJECT NOTES



REPLACEMENT POLE ELEVATION VIEW

NO SCALE

1. PROPOSED POLE DESIGN IS TYPE 15 CALIFORNIA STANDARD, CODED TO 27'-0" HEIGHT TO SLAY WITHIN 50'-0" EXTERNAL HEIGHT LIMIT
2. NEW POLE DESIGN DETAIL AND FOUNDATION DRAWINGS TO BE PROVIDED FOR LOCATION SPECIFIC CONDITIONS ON THE RIGHT OF WAY CONSIDERATION PLANS, DRAWINGS AND OTHER DESIGN FOR MASTER STRUCTURAL PLAN REVIEW.
3. A 24 HOUR CONTACT INFORMATION OF CELL TOWER OWNER AND CELL STATION MANAGER SHALL BE PLACED IN THE CUT-OUT LOAD CENTER, RADIO OR ANTENNA.
4. ELECTRICAL CONDUIT SHALL BE GROUNDED ACCORDING TO THE GENERAL ORDER OF THE CALIFORNIA PUBLIC AND THE ELECTRICAL SAFETY CODES OF 2014-2015.

INQUIRY ON RECORD

ASSUMPTION NOTES

1. ALL PROPOSED EQUIPMENT TO BE PAINTED GREY TO MATCH CONCRETE POLE FINISH.
2. NEW REQUIREMENT - PROJECT TO COMPLY WITH NEW REQUIREMENT, TOP OF THE ANTIWIND FLANGE NOT TO EXCEED 30" AGL OF GROUND AND LOCATED TO THE WEST SIDE OF 1-5 PM PLANNING REQUIREMENT, IN SUCH SCENARIOS, THE MASTER STRUCTURAL PLAN SHOWING WITH THE ORANGE PATTERN OF LESS THAN 30" WILL BE MAINTAINED.
3. EQUIPMENT MUST BE INSTALLED PER THE APPROVED CONFIGURATIONS OF THE MASTER STRUCTURAL PLAN. EQUIPMENT MUST INCLUDE A NEW STRUCTURAL ANALYSIS.
4. NO CHANGES TO FOUNDATION.
5. WIND HOLE AND WIND EXPOSE LOCATION AT A SCHEMATIC REPRESENTATION ONLY; ACTUAL LOCATION TO BE SPECIFIED ON CONSTRUCTION PLANS FOR EACH SPECIFIC POLE LOCATION.
6. ACTUAL HEIGHTS AND EQUIPMENT WILL BE BASED ON SITE LOCATION.
7. POLE MOUNTED OUTGO AND ASSOCIATED SCENE ORIENTATION OF POLE MAY VARY BASED ON SITE LOCATION.



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PTS NUMBER

593784

B	8/17/79	REVISED PER COMMENTS
B	8/21/79	REVISED PER COMMENTS
I	8/23/79	REVISED PER COMMENTS
D	8/27/79	ISSUED FOR APPROVAL
REV	GAT	DESCRIPTION



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AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

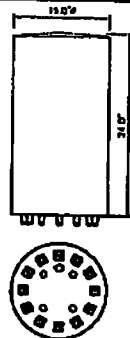
**EXISTING CONCRETE POLE
REPLACEMENT WITH POLE
TOP ANTENNA MOUNT AND
MICRO RADIO EQUIPMENT
SCHEMATIC**

POST NAME

MSPR-2

ACE AQCM-2715D-12P

DIAMETER: 13.0" (330mm)
 HEIGHT: 21.6" (549mm)
 TOTAL WEIGHT (WITHOUT CLAMP): 35.3 lbs (16 kg)
 CONNECTION INTERFACE: 4.3-10 DIN FEMALE
 AT CONNECTION LOCATION: BOTTOM
 AT CONNECTION QUANTITY: 12



ANTENNA SPECIFICATIONS

NO SCALE

1

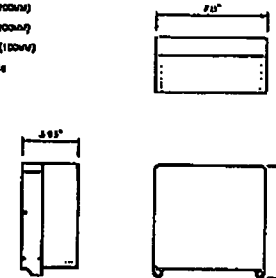
ERICSSON SUP 6503 DUAL RADIO MOUNT DETAIL

NO SCALE

2

ERICSSON RRUS-2203 RADIO

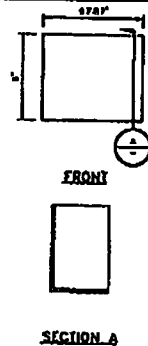
LENGTH: 7.8" (199mm)
 WIDTH: 7.8" (199mm)
 DEPTH: 3.93" (100mm)
 TOTAL WEIGHT (WITHOUT BRACKETS): 44.5 kg



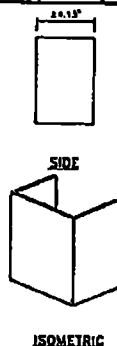
RADIO SPECIFICATIONS

NO SCALE

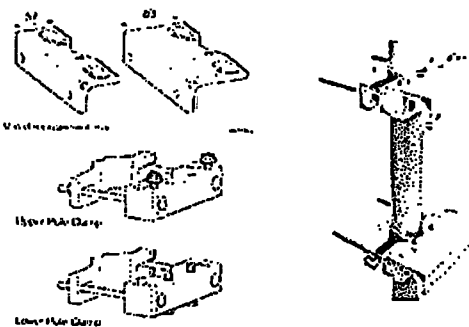
3



SECTION A



ISOMETRIC



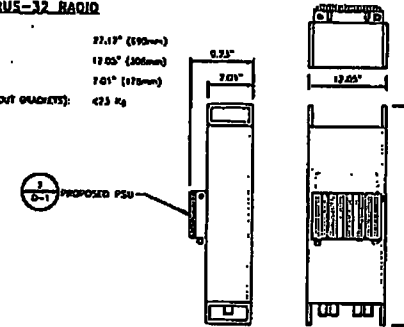
RADIO POLE MOUNT DETAIL

NO SCALE

5

ERICSSON RRUS-32 RADIO

LENGTH: 27.12" (692mm)
 WIDTH: 12.05" (306mm)
 DEPTH: 7.01" (178mm)
 TOTAL WEIGHT (WITHOUT BRACKETS): 47.3 kg



RADIO SPECIFICATIONS

NO SCALE

5

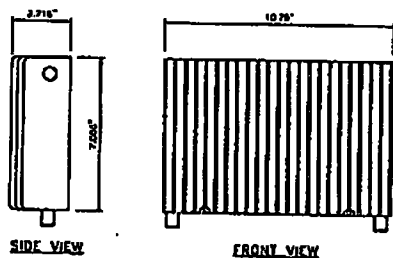
COAX CHIN STRAP DETAIL

NO SCALE

4

ERICSSON PSU AC OR

DIMENSIONS (mm): 7.000" x 10.750" x 2.711"
 WEIGHT: 11.5 lbs



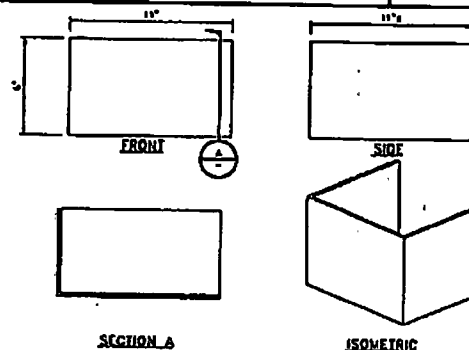
SIDE VIEW

FRONT VIEW

PSU POWER CONVERTER DETAIL

NO SCALE

7



SECTION A

ISOMETRIC

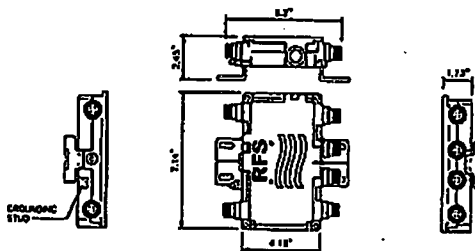
COAX CHIN STRAP DETAIL

NO SCALE

8

RES COP4020AD4-HC

DIMENSIONS (mm): 7.14" x 4.18" x 1.73" (181 x 106 x 44mm)
 CONNECTIONS:
 (A) 4.3-10 DIN FEMALE (M)
 (B) 4.3-10 DIN FEMALE (OUT)
 WEIGHT: 2.1 lbs (9.4 kg)



DUPLEXER DETAIL

NO SCALE

9



3738 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



BLACK & VEATCH

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10000 WILLOW CREEK RD
SUITE 2200
SAN DIEGO, CA 92131

PTS NUMBER

593784

REV	DATE	DESCRIPTION
1	05/14/18	ISSUED FOR CONSTRUCTION
2	05/14/18	REVISED FOR CONSTRUCTION
3	04/20/18	REVISED FOR CONSTRUCTION
4	04/20/18	REVISED FOR CONSTRUCTION
5	04/20/18	REVISED FOR CONSTRUCTION
6	04/20/18	REVISED FOR CONSTRUCTION
7	04/20/18	REVISED FOR CONSTRUCTION
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10	04/20/18	REVISED FOR CONSTRUCTION
11	04/20/18	REVISED FOR CONSTRUCTION
12	04/20/18	REVISED FOR CONSTRUCTION
13	04/20/18	REVISED FOR CONSTRUCTION
14	04/20/18	REVISED FOR CONSTRUCTION
15	04/20/18	REVISED FOR CONSTRUCTION
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AT&T SMALL CELL (CRAN) PROJECT
MASTER STRUCTURAL PLAN

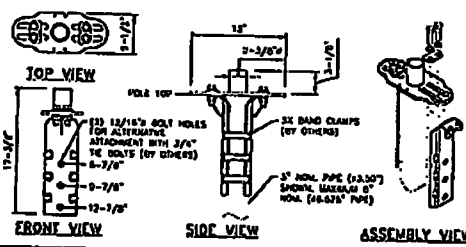
GENERAL DETAILS

SHEET NUMBER

D-1

CONCEALAB 000010

DIMENSIONS (INCH): 17.375" x 5.125" (442.177 x 130.16 mm)
 WEIGHT: 2.2 lbs (1.0 kg)
 * DETAIL IS FOR GRAPHIC REPRESENTATION. CONTRACTOR MUST
 REFERENCE MANUFACTURER'S DRAWINGS PRIOR TO CONSTRUCTION.

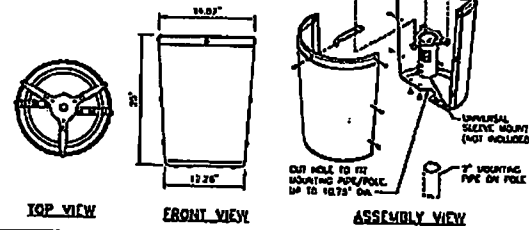


SMALL DIAMETER POLE TOP MOUNT

NO SCALE 1

CONCEALAB 000249MR

DIMENSIONS (INCH): 20" (508 mm)
 WEIGHT: 14.65" (243 mm)
 HEIGHT: 6 lbs (2.7 kg)
 * DETAIL IS FOR GRAPHIC REPRESENTATION. CONTRACTOR MUST
 REFERENCE MANUFACTURER'S DRAWINGS PRIOR TO CONSTRUCTION.

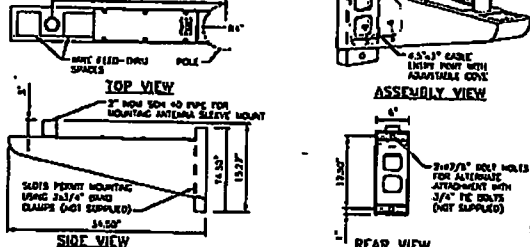


STANDARD POLE TOP MOUNT CABLE SHROUD

NO SCALE 2

CONCEALAB 000255MR

DIMENSIONS (INCH): 11.375" x 6.375" (289.166 x 162.73 mm)
 WEIGHT: 7.5 lbs (3.4 kg)
 * DETAIL IS FOR GRAPHIC REPRESENTATION. CONTRACTOR MUST
 REFERENCE MANUFACTURER'S DRAWINGS PRIOR TO CONSTRUCTION.

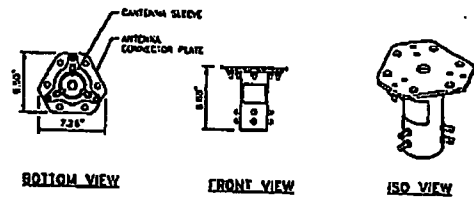


SIDE ARM MOUNT

NO SCALE 3

CONCEALAB 000688MO

DIMENSIONS (INCH): 8.86" x 6.38" x 3.18" (225.143 x 162.73 mm)
 WEIGHT (NO ANTENNA): 8.04 lbs (3.6 kg)
 * DETAIL IS FOR GRAPHIC REPRESENTATION. CONTRACTOR MUST
 REFERENCE MANUFACTURER'S DRAWINGS PRIOR TO CONSTRUCTION.

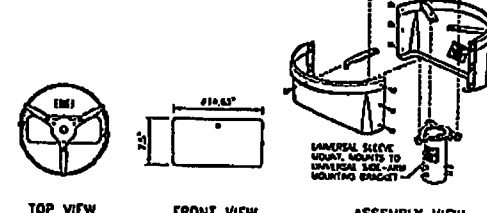


KMW ANTENNA SLEEVE MOUNT

NO SCALE 4

CONCEALAB 0007857MO

DIMENSIONS (INCH): 7.5" (190 mm)
 WEIGHT: 2.5 lbs (1.1 kg)
 * DETAIL IS FOR GRAPHIC REPRESENTATION. CONTRACTOR MUST
 REFERENCE MANUFACTURER'S DRAWINGS PRIOR TO CONSTRUCTION.

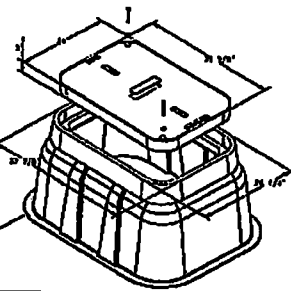


SIDE ARM MOUNT CABLE SHROUD

NO SCALE 5

ICA243524T-00006 FIBERGLASS/PCX POLYMER CONCRETE ASSEMBLY

DIMENSIONS (INCH): 14" x 24" x 34"
 INTERIOR DIMENSIONS (INCH): 13.75" x 23.5"
 * USDA/AFS APPROVED
 * DROP-IN INSTALLATION
 * SHIPPED ASSEMBLED
 * SAE RESISTANT COVER
 * STAINLESS STEEL BOLTS
 * 6031-100 FLOORING NOT SUP
 * INTERNAL DRAIN HOLES
 * MODERATE TRAFFIC - PARKING LOT, SIDEWALK
 * CONFORMS TO:
 * VLS 3.4
 * ASTM C 897
 * AWS/SCS 77

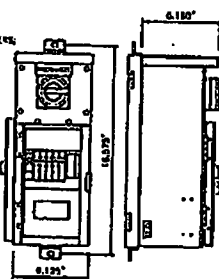


HAND HOLE SPECIFICATIONS

NO SCALE 6

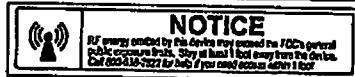
PACTECHSOL P1520122-3-AA777-PH-B

DIMENSIONS (INCH): 8.15" x 8.00" x 15.11"
 OPERATING VOLTAGE: 120 VAC
 MAIN BREAKER: 20-40 amperes
 NUMBER OF BREAKERS: MAX OF (3) BREAKERS
 POWER INPUT WIRE SIZE: #14-#16 AWG
 POWER OUTPUT WIRE SIZE: #10-#12 AWG
 TOTAL WEIGHT: 12 lbs



CUTOFF DETAIL

NO SCALE 7



RF NOTICE DECAL

AT&T operates antennas at this structure. Above this point you are entering an area where radio frequency (RF) fields may exceed the FCC General Population Exposure limits. Follow safety guidelines for working in an RF environment. Keep ☐ away from the fronts of antennas. Contact AT&T at 800-435-2827, ext. 8, 3 and follow their instructions prior to performing any maintenance or repairs above this point. This is AT&T Site USA.

CAUTION
 AT&T operates antennas at this structure. Above this point you are entering an area where radio frequency (RF) fields may exceed the FCC General Population Exposure limits. Follow safety guidelines for working in an RF environment. Keep ☐ away from the fronts of antennas. Contact AT&T at 800-435-2827, ext. 8, 3 and follow their instructions prior to performing any maintenance or repairs above this point. Call Site USA.

RF SIGNAGE DETAIL

NO SCALE 8



3735 PACIFIC CENTER BLVD
 SAN DIEGO, CA 92121

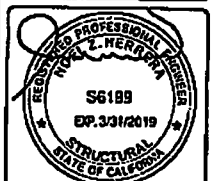


BLACK & VEATCH CORPORATION
 10000 WILLOW CREEK RD
 SUITE 4200
 SAN DIEGO, CA 92131

PIS NUMBER

593784

REV	DATE	DESCRIPTION
1	04/17/16	REVISED PER COMMENTS
2	04/17/16	REVISED PER COMMENTS
3	04/17/16	REVISED PER COMMENTS
4	03/17/16	REVISED FOR APPROVAL
REV	DATE	DESCRIPTION



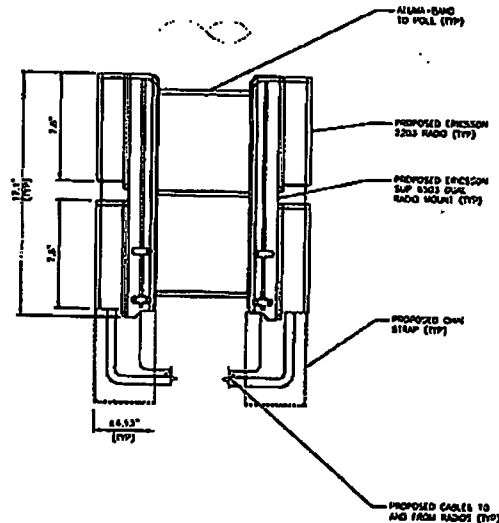
AT&T SMALL CELL
 (CRAN) PROJECT
 MASTER STRUCTURAL PLAN

GENERAL DETAILS

SHEET NUMBER

D-2

- OWN STRAP NOT ENTIRELY SHOWN FOR CLARITY.
- ALL COAX JUNCTIONS FROM RADIOS TO ANTENNA SHOULD BE OF SAME LENGTH, CONTRASTING TO COIL AND STURE ADDITIONAL COAX FOR THE RADIO ON THE TOP, BEHIND THE RADIO ITSELF.



**RICO - EQUIPMENT
PLACEMENT DETAIL**

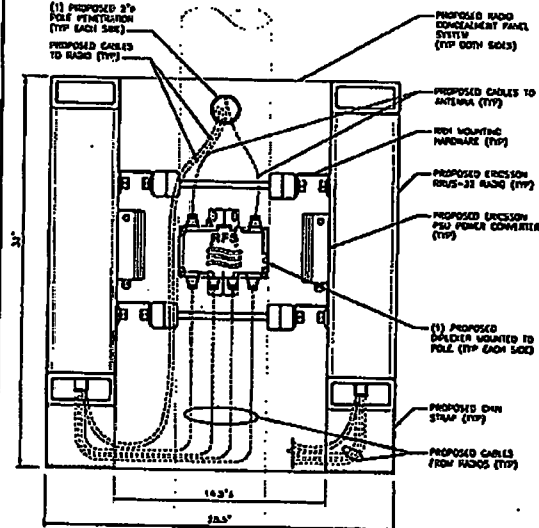
NO SCALE

1

- OWN STRAP NOT ENTIRELY SHOWN FOR CLARITY.

- ALL COAX JUNCTIONS FROM RADIOS TO ANTENNA SHOULD BE OF SAME LENGTH, CONTRASTING TO COIL AND STURE ADDITIONAL COAX FOR THE RADIO ON THE TOP, BEHIND THE RADIO ITSELF.

- RADIO CONCEALMENT SYSTEM NOT ENTIRELY SHOWN FOR CLARITY.



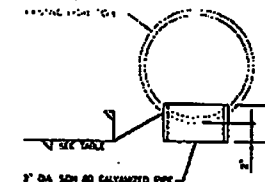
**MICRO - EQUIPMENT
PLACEMENT DETAIL**

NO SCALE

2

MINIMUM SIZE OF FILLET WELDS	
NOMINAL THICKNESS OF THICKER PART JOINED (IN)	MINIMUM SIZE OF FILLET WELD (IN)
TO 1/4 INCLUSIVE	3/16
OVER 1/4 TO 1/2	1/4
OVER 1/2 TO 1	5/16
OVER 1	3/4

ALL DIMENSIONS OF FILLET WELDS, SINGLE-PASS WELDS MUST BE USED.



VERTICAL ACCESS PORT DETAIL

NO SCALE

3

NOT USED

NO SCALE

4

NOT USED

NO SCALE

5

NOT USED

NO SCALE

6



5730 PACIFIC CENTER BLVD
SAN DIEGO, CA 92121



BLACK & VEATCH

BLACK & VEATCH CORPORATION
10000 WILLOW CREEK RD
SUITE 800
SAN DIEGO, CA 92131

PIS NUMBER

593784

REV	DATE	DESCRIPTION
1	01/15/14	REVISED PER COMMENTS
2	01/15/14	REVISED PER COMMENTS
3	04/20/15	REVISED PER COMMENTS
4	04/20/15	REVISED PER APPROVAL



5/16/2015

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL, TO ALTER THIS DOCUMENT.

AT&T SMALL CELL
(CRAN) PROJECT
MASTER STRUCTURAL PLAN

GENERAL DETAILS

SHEET NUMBER

D-3

