

**WIRELESS USE AGREEMENT BETWEEN  
CITY OF NORTH LAS VEGAS AND EXTENET SYSTEMS, LLC.**

This Wireless Agreement Between City of North Las Vegas and ExteNet Systems, LLC. (“Agreement”) is executed to be effective \_\_\_\_\_ (“Effective Date”), and entered into by and between the City of North Las Vegas, a political subdivision of the State of Nevada (“City”), and ExteNet Systems, LLC., a Delaware limited liability company (“Company”).

**RECITALS**

A. WHEREAS, the City is the owner of ROW Poles (as defined in Subsection 1.18 below) located in the Rights-of-Way of the City;

B. WHEREAS, Company is a corporation organized, under and by virtue of the laws of the State of Delaware, duly qualified to transact business within the State of Nevada and is registered with the PUCN (as defined in Subsection 1.15 below) as a provider of telecommunication services (CPC 2873);

C. WHEREAS, Company will own, install, maintain and operate in the ROW (as defined in Subsection 1.17 below) the fiber optic and other cabling and related equipment that Company uses to connect Company’s Equipment (as defined in Subsection 1.9 below) to the Network (as defined in Subsection 1.14 below) in accordance with federal and state law and the certificate of authority for a statewide franchise for video services issued to Company by the Nevada Secretary of State under NRS Chapter 711;

D. WHEREAS, Company desires to use space on certain ROW Poles for construction, operation, management and maintenance of its Network serving Company’s wireless customers that are Qualified Service Providers (as defined in Subsection 1.16 below) and utilizing Equipment certified by the Federal Communications Commission (“FCC”) and in accordance with FCC rules and regulations; and

E. WHEREAS, for the purpose of operating the Network, Company wishes to locate, place, attach, install, operate, control, manage, and maintain Equipment on the ROW Poles, and on other facilities owned by third parties; and

F. WHEREAS, Company is willing to compensate the City in exchange for a grant and right to use and physically occupy portions of the ROW Poles.

**AGREEMENT**

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree to the following covenants, terms, and conditions:

**1. DEFINITIONS.** The following definitions shall apply generally to the provisions of this Agreement:

**1.1 *Affiliate.*** “Affiliate” means each person or entity which falls into one or more of the following categories: (a) each person or entity having, directly or indirectly, a controlling interest in Company; (b) each person or entity in which Company has, directly or indirectly, a controlling interest; or (c) each person or entity that, directly or indirectly, is controlled by a third party which also directly or indirectly controls Company. An “Affiliate” shall in no event mean any creditor of Company solely by virtue of its status as a creditor and which is not otherwise an Affiliate by reason of owning a controlling interest in, being owned by, or being under common ownership, common management, or common control with, Company.

**1.2 *Assignment or Transfer.*** “Assignment” or “Transfer” means any transaction in which: (a) any ownership or other right, title or interest of more than fifty percent (50%) in Company or its Network is transferred, sold, assigned, leased or sublet, directly or indirectly, in whole or in part; (b) there is any change or transfer of control of Company or its Network; (c) the rights and/or obligations held by Company under this Agreement are transferred, directly or indirectly to another party that is not an Affiliate; or (d) any change or substitution occurs in the managing members of Company, if applicable. An “Assignment” shall not include a mortgage, pledge or other encumbrance as security for money owed, or the transfer of any right, title, or interest in the Company or the Network to an Affiliate.

**1.3 *Cable Service.*** Cable Service has the meaning given it in the federal Cable Act, 47 United States Code § 521 et seq.

**1.4 *City.*** “City” means the City of North Las Vegas, a political subdivision of the State of Nevada.

**1.5 *Commence Installation.*** “Commence Installation” shall mean the date that Company commences to install its Network, or any expansion thereof, in the City ROW.

**1.6 *Commence Operation.*** “Commence Operation” shall mean the date that Equipment is installed and made on-air by Company pursuant to this Agreement.

**1.7 *Company.*** “Company” means ExteNet Systems, LLC, a limited liability company duly organized and existing under the laws of the State of Delaware, and its lawful successors, assigns, and transferees, registered with the PUCN as a telecommunications service provider (CPC 2873).

**1.8 *Decorative Streetlight Pole.*** “Decorative Streetlight Pole” shall mean any streetlight pole that: (a) is made from a material other than metal; or (b) incorporates artistic design elements not typically found in standard metal streetlight poles. Decorative Streetlight Poles may not be used for the Network without prior written approval by City. The term “Decorative Streetlight Pole” includes any historically or architecturally significant or designated streetlight poles owned by the City located in the ROW.

**1.9 Equipment.** “Equipment” means the optical repeaters, wave division multiplexers, antennas, fiber optic cables, wires, conduits, pull boxes, and related equipment, whether referred to singly or collectively, to be installed, managed and operated by Company hereunder that may be used for transmitting, processing, and receiving voice and data wireless telecommunications services by means of an antenna array through which a Qualified Service Provider, provides “**Commercial Mobile Service**” (as defined in 47 U.S.C. § 332(d)). All Equipment and installation configurations that have been pre-approved by the City are shown in the drawings and photographs attached hereto as Exhibit A and incorporated herein by reference. Any Equipment and installation configuration not contained within Exhibit A must receive additional written approval by the City Manager, authorized representative or designee, before it may be used on any City Municipal Facility or placed on or in the ROW.

**1.10 Gross Revenue.** “Gross Revenue” means any and all income and other consideration of whatever nature (including the full fair market value of any commercially traded or bartered goods and services that are provided in lieu of cash compensation to be paid to Company) gained or derived by Company or its Affiliates in any manner from Qualified Service Providers from or in connection with all services that Company provides to the Qualified Service Providers from or in connection with use of the Equipment by Qualified Service Providers to provide Commercial Mobile Service using the Equipment. Gross Revenue shall not include: (a) sales, *ad valorem*, or other types of “add-on” taxes, levies, or fees calculated by gross receipts or gross revenues which might have to be paid to or collected for federal, state, or local government; (b) non-collectable amounts due Company or its Affiliates; (c) refunds or rebates; (d) non-operating revenues such as interest income or gain from the sale of an asset; (e) revenues of Company for the provision of Telecommunications Services, Information Services, or Cable Service; and (f) revenues received by Qualified Service Providers from their customers for the provision of Commercial Mobile Service.

**1.11 Information Service.** “Information Service” has the same meaning as that term is defined in the United States Code, 47 U.S.C. § 153(24).

**1.12 Laws.** “Laws” means any and all statutes, constitutions, ordinances, resolutions, regulations, judicial decisions, rules, tariffs, administrative orders, certificates, orders, or other requirements of the City or other governmental agency having joint or several jurisdiction over the parties to this Agreement, as such laws may be amended from time to time, including, but not limited to, *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Inv.*, 33 FCC Rcd. 9088 (2018) (hereinafter “FCC Small Cell Order”), and *City of Portland v. United States*, 969 F.3d 1020 (9th Cir. 2020) (“9th Circuit Small Cell Opinion”).

**1.13 Municipal Facilities.** “Municipal Facilities” means ROW Poles, Decorative Streetlight Poles, and other lighting fixtures or electroliers located within the ROW, and may refer to such facilities in the singular or plural, as appropriate to the context in which used.

**1.14 Network.** “Network” or collectively “Networks” means one or more of the neutral-host, protocol-agnostic, fiber-based optical repeater networks that Company uses to serve its customers that are Qualified Service Providers in the City.

**1.15 PUCN.** “PUCN” means the Public Utilities Commission of Nevada.

**1.16 Qualified Service Provider.** “Qualified Service Provider” means a person, other than the Company, that has all applicable federal and state authorizations required to provide Commercial Mobile Service using the Equipment.

**1.17 Rights-of-Way.** “Rights-of-Way” or “ROW” means public property (including air space associated with a ROW Pole) dedicated, granted, held, prescriptively used, or authorized by patent of the United States of America, for City public street purposes, except as limited by any underlying grant, including rights-of-way granted by the United States Bureau of Land Management, United States Bureau of Reclamation or the Nevada Department of Transportation and except public streets predominantly used for public freeway or expressway purposes. For purposes of this agreement, ROW includes easements held by the City except whereby the property is owned by a third party.

**1.18 ROW Pole.** “ROW Pole” means any Streetlight Pole, Traffic Signal Pole or School Zone Flasher and does not include strand between ROW Poles.

**1.19 School Zone Flasher.** “School Zone Flasher” means any metal pole that is owned by the City, is located in the ROW, and is used for traffic signal or traffic control purposes for schools. School Zone Flasher does not include any pole that is made from any material other than metal.

**1.20 Streetlight Pole.** “Streetlight Pole” means any standard-design metal pole that has a mast arm for the support of a light fixture, is owned by the City, is located in the ROW, and is used for street lighting purposes. Streetlight Pole does not include any pole supporting a streetlight that is made from any material other than metal.

**1.21 Telecommunications Service.** “Telecommunications Service” has the same meaning as that term is defined in the United States Code, 47 U.S.C. § 153(53).

**1.22 Traffic Signal Pole.** “Traffic Signal Pole” means any standard-design metal pole that is owned by the City, is located in the ROW, and is used for traffic signal or traffic control purposes, including School Zone Flashers. Traffic Signal Pole does not include any pole that is made from any material other than metal.

**2. TERM.** This Agreement shall take effect as of the Effective Date and shall extend for a term of five (5) years, unless it is earlier terminated by either party in accordance with the provisions herein. The parties in their sole discretion may extend the term of this Agreement for an additional five (5)-year period on mutually agreeable terms and conditions, provided that Company is not in default of any of its obligations under this Agreement at the time of extension.



**3. REPRESENTATION CONCERNING SERVICES; TERMINATION WITHOUT CAUSE.** Company acknowledges that its rights to use the ROW arise under Title 47 of the United States Code as a provider of Telecommunications Services and under CPC 2873 issued by the PUCN, and the City's regulation of the Company's Equipment installed within the ROW is subject to the FCC Small Cell Order and the 9<sup>th</sup> Circuit Small Cell Opinion. At any time that Company ceases to operate as a provider of Telecommunications Services under Federal law, the City shall have the option, in its sole discretion and upon six (6) months' written notice to Company, to terminate this Agreement and to require the removal of Company's Equipment from the ROW and from Municipal Facilities, including the cost of any site remediation, at no cost or liability to the City. Company shall have the option, in its sole discretion and upon six (6) months written notice to City, to terminate this Agreement.

**4. SCOPE OF AGREEMENT.** Any and all rights expressly granted to Company under this Agreement, which shall be exercised at Company's sole cost and expense, shall be subject to the prior and continuing right of the City under applicable Laws to regulate and/or use any and all parts of the ROW exclusively or concurrently with any other person or entity, and shall be further subject to all deeds, easements, dedications, conditions, covenants, restrictions, encumbrances, and claims of title of record which may affect the ROW. Nothing in this Agreement shall be deemed to grant, convey, create, or vest in Company a real property interest in land, including any fee, leasehold interest, or easement.

**4.1 Attachment to Municipal Facilities.** Company will submit to the authorized representative of the City a proposed design for any proposed Network or Networks that will include the Equipment and Municipal Facilities the Company proposes to use ("Network Design"). The submission will identify each Qualified Service Provider that will use the Equipment to provide Commercial Mobile Service. Review and approval of the Company's submission by the authorized City representative may include a review for aesthetic requirements pursuant to the FCC Small Cell Order and the 9<sup>th</sup> Circuit Small Cell Opinion. Once the authorized City representative approves the design for the respective area and pole, the City will identify those Municipal Facilities to which Company can attach its Equipment.

**4.1.1** If adequate Municipal Facilities do not exist for the attachment of Equipment, Company may replace the Municipal Facilities with functionally suitable poles, install its Equipment on other poles in the ROW lawfully owned and operated by third parties, or install its own poles.

**4.1.2** Company shall not attach its Equipment to more than a total of twenty-five (25) poles in the ROW within one square mile (a square mile shall be defined as in the Public Lands Survey System as a Section of land within the Township, Section, and Range boundaries within the City of North Las Vegas), regardless of whether such poles are owned by the City, Company or third parties, unless approved by the authorized City representative or designee, who may approve up to ten (10) additional poles within the same square mile. Greater consideration shall be made for additional density if attachments are installed on City-owned poles. Furthermore, Company shall not attach its Equipment to more than one (1)

ROW pole every 300 feet, unless approved by the authorized City representative.

**4.1.3** Subject to the conditions herein, the City hereby authorizes and permits Company to enter upon the ROW and to locate, place, attach, install, operate, maintain, control, remove, reattach, reinstall, relocate, and replace Equipment in or on identified Municipal Facilities and third-party facilities for the purposes of operating the Network so that Qualified Service Providers may provide Commercial Mobile Service using the Equipment and the Network.

**4.1.4** To reduce the disruption to Municipal Facilities, Company may power its Equipment by using the power sources that service the existing ROW Pole structure and its components. The power used by Company's Equipment shall be determined by the usage identified on the specifications for the Equipment installed pursuant to this Agreement, *provided that* the City may verify the actual power consumed by Company's Equipment using measurements of the power consumed prior to the installation of the Equipment compared to the power consumed after the installation of the Equipment. All electrical work and installations related to the power-sharing authorized by this Subsection 4.1.4 shall be performed by a licensed contractor that is approved by the City and in a manner that is approved by the City. Company shall make all requests for power-sharing arrangements pursuant to this Subsection 4.1.4 in advance and in writing. Company shall reimburse the City, as provided in Subsection 5.7, for the increased power costs and other power related costs or liabilities the City incurs as a result of any power-sharing authorized by this Subsection 4.1.4.

**4.1.5** A denial of an application for the attachment of Equipment to Municipal Facilities shall not be based upon the size, quantity, shape, color, weight, configuration, or other physical properties of Company's Equipment if the Equipment proposed for such application conforms to one of the pre-approved configurations and the Equipment specifications set forth in Exhibit A, and that Equipment conforms as closely as practicable with the design and color of the Municipal Facilities, as determined by the authorized City representative in their sole discretion.

**4.1.6** If Company selects a Municipal Facility that either party determines is structurally or electrically inadequate to accommodate Equipment, Company may proceed at its sole cost and expense to replace the Municipal Facility. A replacement ROW Pole that Company includes in the Network Design shall be subject to the approval by the City. Company shall, upon installation, dedicate such replacement ROW Pole to the City as a Municipal Facility. A replacement ROW Pole shall accommodate all of Company's cabling to Equipment attached to the Pole inside the Pole from the ground up to the point that the cabling exits the Pole to connect to the Equipment. Any and all replacement ROW Poles shall remain Municipal Facilities upon the termination or expiration of this Agreement.

**4.1.7** Company may apply to the City to expand its initial Network installation through the same process as specified in this Subsection 4.1.

**4.1.8** In the event of an emergency or to protect the public health or safety, prior to the City accessing or performing any work on a Municipal Facility on which Company has installed Equipment, the City may require Company to deactivate such Equipment if any of City's employees or agents must move closer to the Equipment than the recommended one foot minimum distance. In such case, City will contact Company at the contact telephone number referenced in Subsection 14.3 hereinto request immediate deactivation. If Company fails to respond in a timely manner, depending on the nature of the emergency, City may deactivate said Equipment to perform necessary work with no liability to City.

**4.1.9** When applying for a permit to install Equipment pursuant to this Agreement, Company shall deliver a copy of the permit application to:

City of North Las Vegas  
Department of Public Works Development and Flood Control Division  
2250 Las Vegas Boulevard North, Suite 200  
North Las Vegas, Nevada 89030

**4.2 Attachment to Third-Party Property.** Subject to obtaining the written permission of the owner(s) of the affected property, the City hereby authorizes and permits Company to enter upon the ROW and to attach, install, operate, maintain, remove, reattach, reinstall, relocate, and replace such number of Equipment in or on poles or other structures lawfully owned and operated by public utility companies or other property owners located within or outside the ROW as may be permitted by the public utility company or property owner, as the case may be. Company shall furnish to the City documentation in a form acceptable to the City of such permission from the individual utility or property owner responsible. A denial of an application for the attachment of Equipment to third-party-owned poles or structures in the ROW shall not be based upon the size, quantity, shape, color, weight, configuration, or other physical properties of Company's Equipment if the Equipment proposed for such application conforms to one of the pre-approved configurations and the Equipment specifications set forth in Exhibit A, and that Equipment conforms as closely as practicable with the design and color of existing poles in the vicinity of Company's Equipment and/or pole location, as determined by the authorized City representative in their sole discretion.

**4.3 Preference for Municipal Facilities.** In any situation where Company has a choice of attaching its Equipment to either Municipal Facilities or third-party-owned property in the ROW, Company agrees to attach to the Municipal Facilities, provided that: (a) such Municipal Facilities are at least equally suitable functionally for the operation of the Network; and (b) the Attachment Fee (as defined in Subsection 5.3) and installation costs associated with such attachment over the length of the term are equal to or less than the fee or cost to Company of attaching to the alternative third-party-owned property. In the event that no Municipal Facilities or third-party-owned poles are functionally suitable, Company

may, at its sole cost and expense, install its own poles. Design, location and height of proposed Company poles shall be reviewed and subject to administrative approval by the City prior to installation. Company's Equipment and poles must conform as closely as practicable with the design and color of poles existing in the vicinity of Company's Equipment or pole location, as determined by the authorized City representative in their sole discretion. Company will be responsible for all maintenance, repair and liability for all poles installed by Company in the ROW. Upon the termination or expiration of this Agreement, any and all Company poles shall be dedicated as Municipal Facilities, and Company shall submit to the City an instrument satisfactory to the City transferring to the City the ownership of such poles, or the Company poles shall be removed, at the City's direction and at the sole cost and expense of Company. If Company shall fail to remove any Company poles as requested by the City within ninety (90) days after receipt of the City's notice, or an additional reasonable time under the circumstances, City shall be entitled to remove the Company pole(s) at Company's sole cost and expense, upon ten (10) days' written notice to Company. Company shall pay to the City actual costs and expenses incurred by the City in performing any removal work and any storage of Company's property after removal within thirty (30) days after the date of a written demand for this payment from the City. To the extent the City has actual knowledge thereof, the City will attempt promptly to inform Company of the displacement or removal of any Company pole. If the Company pole is damaged or downed for any reason, and as a result is not able to safely hold Company Equipment, the City will attempt promptly to inform Company but otherwise shall have no obligation to repair or replace such Company pole. Company shall bear all risk of loss as a result of damaged or downed Company poles pursuant to Subsection 6.12 below.

**4.4 No Interference.** Company, in the performance and exercise of its rights and obligations under this Agreement, shall not interfere in any manner with the existence and operation of any and all public and private rights-of-way, sanitary sewers, water mains, storm drains, gas mains, poles, aerial and underground electrical and telephone wires, traffic signals, traffic control devices, communication facilities, electroliers, cable television, location monitoring services, public safety and other telecommunications, utility, or municipal property, without the express written approval of the owner or owners of the affected property or properties, except as permitted by applicable Laws or this Agreement.

**4.5 Permits; Default.** Whenever Company is in default in any of its obligations under this Agreement, after written notice and first conferring with Company's Market Manager, City may deny further encroachment, excavation or similar permits until such time as Company cures all of its defaults. Such denial shall be a non-exclusive remedy and City reserves its right to pursue any and all additional remedies available under the applicable Laws.

**4.6 Compliance with Laws.** Company shall comply with all applicable Laws in the exercise and performance of its rights and obligations under this Agreement.

**4.7 No Authorization to Provide Other Services; Ownership; Access to Right-of-Way; Cost of Construction; Connection to Network.** Company represents, warrants, and

covenants that the Equipment installed pursuant to this Agreement will be utilized solely by Qualified Service Providers to provide Commercial Mobile Service using the Network and Company is not authorized to and shall not use the Equipment or Network to offer or provide any other services not specified herein. All Equipment shall be owned by Company, except that by agreement with Company, a Qualified Service Provider may own the radios, antenna arrays, and related cabling. This Agreement authorizes Company, and no other person, to mount, operate, manage and maintain Equipment in the ROW. This Agreement does not authorize, and Company shall neither permit nor obligate itself to permit, a Qualified Service Provider to enter or access the ROW or to mount, operate, manage or maintain Equipment (i) on Municipal Facilities or (ii) on poles owned by third parties. All construction, maintenance, and other activities relating in any way to the construction, installation, repair, maintenance, operation, service, replacement, removal or otherwise relating to the Equipment, including without limitation any restoration of, affected City or third-party improvements must be performed by Company (or its contractors or agents) entirely at Company's expense. Company shall own, install, maintain and operate in the ROW the fiber optic and other cabling and related equipment that Company uses to connect Company's Equipment, as defined in Subsection 1.9, to the Network. The Company shall do so in accordance with all applicable Laws and the certificate of authority for a statewide franchise for video services issued to Company by the Nevada Secretary of State under NRS Chapter 711 and any construction, encroachment, or occupancy permit that City requires consistent with NRS 711.640.

**4.8 Nonexclusive Use Rights.** Notwithstanding any other provision of this Agreement, any and all rights expressly or impliedly granted to Company under this Agreement shall be non-exclusive, and shall be subject and subordinate to: (a) the continuing right of the City to regulate, use, and allow any other person or persons to use, any and all parts of the ROW or Municipal Facilities exclusively or concurrently with any other person or persons; and (b) the public easement for streets and any and all other deeds, easements, dedications, conditions, covenants, restrictions, encumbrances and claims of title (collectively "Encumbrances") which may affect the ROW or Municipal Facilities now or at any time during the term of this Agreement, including, without limitation, any Encumbrances granted, created or allowed by the City at any time.

**5. COMPENSATION.** Company shall be solely responsible for the payment of all lawful fees in connection with Company's performance under this Agreement, including those set forth below.

**5.1 Business License and Business License Fee.** Company agrees to obtain such a business license and to pay (i) a quarterly license fee in accordance with the North Las Vegas Municipal Code and (ii) any requisite business license fees thereunder.

**5.2 Permit Fee.** Company agrees to obtain such permits and pay such permit fees in accordance with the North Las Vegas Municipal Code.

**5.3 Municipal Facilities Attachment Fee.** The annual Municipal Facilities Attachment



Fee of the Agreement shall be three hundred three dollars and 00/100 cents (\$303.00) for use of each Municipal Facility, if any, upon which Equipment has been installed pursuant to the Agreement, as adjusted in accordance with Section 5.4 thereof.

**5.4 Adjustment to Municipal Facilities Attachment Fee.** Commencing on January 1 after the first anniversary of the Effective Date and continuing annually thereafter during the term, the Municipal Facilities Attachment Fee shall be adjusted (rounded to the nearest whole dollar) by a percentage amount equal to the greater of (i) the percentage of change in the Annual Average Consumer Price Index, All Urban Consumers for All Items, U.S. City Average (1982-84=100) ("CPI-U"), for the most recently completed calendar year as compared to the previous calendar year, as published by the U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. or (ii) two and one-half percent (2.5%).

**5.5 Payment of Municipal Facilities Attachment Fee.** The Municipal Facilities Attachment Fee shall be paid by check mailed or delivered to City of North Las Vegas, Finance Department, 2250 Las Vegas Blvd, North, Suite 710, North Las Vegas, Nevada, 89030 with a transmittal referencing this Agreement. The place and time of payment may be changed at any time by City upon thirty (30) days' written notice to Company. Mailed payments shall be deemed paid upon the date such payment is postmarked by the postal authorities. If postmarks are illegible to read, the payment shall be deemed paid upon actual receipt by the City. Company assumes all risk of loss and responsibility for late payment charges if payments are made by mail.

**5.6 Reimbursement of City's Costs.** Within sixty (60) days following the Effective Date, Company shall pay a one-time fee in the amount of \$4,500 for the City's administrative costs associated with preparing and processing this Agreement.

**5.7 Delinquent Payment.**

**5.7.1** If Company fails to pay any amounts due for Municipal Facilities Attachment Fees, within forty-five (45) days after the due date, Company will pay, in addition to the unpaid fees, a sum of money equal to two percent (2%) of the amount due, including penalties and accrued interest, for each month and/or fraction thereof during which the payment is due and unpaid.

**5.7.2** If Company fails to timely pay any amounts due for permit fees and/or business license fees, Company will pay, in addition to the unpaid fees, interest and penalties on such delinquent fees as specified by the applicable provisions of the North Las Vegas Municipal Code.

**5.7.3** City reserves its right to pursue any and all additional remedies for the Company's delinquent payments as applicable.

**5.8 Reimbursement of City's Increased Power Costs and Other Power Related Costs.** The City may, in its discretion and on a calendar quarterly basis: (a) calculate and bill Company, as provided herein, for the City's increased power costs resulting from power-



sharing at any Municipal Facility by using the power consumption estimates noted on the specifications for the Equipment, multiplied by the applicable energy charges for such consumption based on twenty-four hours per day, seven (7) days per week usage; or (b) measure the actual increase in power consumption at any Municipal Facility resulting from power-sharing, and bill Company, as provided herein, for the City's increased power costs based on such measurements. If the City's increased power costs for any ROW pole are Thirty Dollars (\$30.00) or less for a quarter, the increased power costs shall be deemed to be included as part of the Municipal Facilities Attachment Fee required by Subsection 5.2 above, and Company shall not be required to pay any separate power costs for that ROW Pole for that quarter. If the City's increased power costs for any ROW pole are more than Thirty Dollars (\$30.00) for a quarter, the City shall bill Company only for the incremental power costs that are above the first Thirty Dollars (\$30.00) in increased power costs. Company shall reimburse the City for any fees incurred for the temporary disconnection and reconnection of power service. The City shall bill Company for the reimbursements due under this Subsection at the end of each calendar quarter, and Company's reimbursements for the City's increased power costs and other power related costs shall be due and payable not later than forty-five (45) days after each calendar quarter. The City may change its methodology for determining reimbursement costs on an annual basis, and any change in methodology shall take effect on July 1 of each year. The City shall permit and manage reasonable access to the ROW by competing wireless providers in a nondiscriminatory manner as required under the applicable Laws.

**6. CONSTRUCTION.** Company shall comply with all applicable federal, State, and City technical specifications and requirements and all applicable State and local codes related to the construction, installation, operation, maintenance, and control of Company's Equipment installed in the ROW and on Municipal Facilities in the City. Company shall not attach, install, maintain, or operate any Equipment in or on the ROW and/or on Municipal Facilities without the prior written approval of an authorized representative of the City for each location.

**6.1 Commencement of Installation and Operation.** Company shall Commence Installation of its initial Network approved by the City no later than six (6) months after the date of issuance of the City permit to install Company's initial Equipment Network and shall Commence Operation no later than one (1) year after said permit date. Failure to Commence Operation of the initial Network within one (1) year after said permit date shall be considered a default of a material covenant or term of this Agreement. In any case, Company shall Commence Installation of its initial Network no later than two (2) years after the Effective Date. Upon approval of any expansion of Company's Network pursuant to Section 4 above, Company shall Commence Installation of the approved expansion of its Network no later than six (6) months after the approval date of such expansion by City and shall Commence Operation of the expansion no later than one (1) year after the approval date by the City.

**6.2 Obtaining Required Permits.** The attachment, installation, location, removal, or relocation of the Equipment in the ROW shall require permits from the City. Company shall apply for the appropriate permits and pay any standard and customary permit fees. City shall respond to Company's requests for permits and shall otherwise cooperate with

Company in facilitating the deployment of the Network in the ROW in a reasonable and timely manner and in accordance with all applicable Laws. Permit conditions may include, without limitation: (a) approval by the City of traffic control plans prepared by Company for Company's work in the City ROW; (b) approval, by the Nevada Department of Transportation ("NDOT") of traffic control plans prepared by Company for Company's work within the ROW controlled by NDOT; and (c) adherence to time restrictions for work in streets as specified by the City and/or NDOT.

**6.3 Location of Equipment.** The proposed locations of Company's planned initial installation of Equipment shall be provided to the City in the form of a map or on an annotated aerial photograph, either of which must be in a format acceptable to the City, promptly after Company's field review of available ROW Poles and prior to deployment of the Equipment. Prior to Commencement of Installation of the Equipment in the ROW or upon any Municipal Facility, Company shall obtain written approval from an authorized representative of the City for such installation in the ROW or upon such Municipal Facility from the City pursuant to Subsection 6.2 above. The City may approve or disapprove a location and installation, based upon reasonable regulatory factors, including but not limited to, the ability of the Municipal Facility to structurally support the Equipment, the location of other present or future communication facilities, efficient use of scarce physical space to avoid premature exhaustion, potential interference with other communication facilities and services, the public safety and other critical services, and aesthetic requirements. Within fifteen (15) days after inspection of each installation, Company shall furnish to the City an as-built map or annotated aerial photograph (which must be in a format acceptable to the City) and a current ROW Pole list showing the exact location of the Equipment in the ROW and on Municipal Facilities or third-party facilities. Company shall deliver this to City of North Las Vegas, Department of Public Works Development and Flood Control Division, 2250 Las Vegas Boulevard North, Suite 200, North Las Vegas, Nevada 89030 or electronically if requested by the City.

**6.4 Zoning Height Restrictions.** Notwithstanding anything to the contrary in this Agreement (including the specifications attached hereto at Exhibit A), and subject to all applicable Laws, no portion of Company's Equipment shall extend higher than twenty-four (24) inches above the height of any existing structure. Except for cabling, Company shall attach nothing less than fifteen (15) feet above grade. In the case of a new installation by Company, the overall height of Company's pole and equipment shall not exceed thirty-five (35) feet above grade unless otherwise approved by the City.

**6.5 Street Furniture Cabinets.** Company understands that above-ground street furniture and equipment cabinets located in the ROW are discouraged and generally prohibited as a matter of City policy and that any such installation of above-ground street furniture or equipment cabinets will be required to be placed in an easement on private property adjacent the ROW, and will require additional approvals and/or permitting under applicable ordinances. Notwithstanding anything in the foregoing, the installation of below-ground vaults shall be allowed within the ROW pursuant to applicable City Code zoning and undergrounding provisions and provided that

Company will be responsible for all costs associated with such below-ground vaults, including without limitation relocation costs of any public improvements or public utilities facilities. Company agrees to comply with the City's current ordinances regarding such installations as well as any future regulations that may be adopted by the City respecting such installations. In no instance shall the installation of any of Company's Equipment or any appurtenant structures block pedestrian walkways in the ROW or result in violation of the Americans with Disabilities Act, or obstruct sight visibility, as defined by City ordinance or Regional Transportation Commission of Southern Nevada standard drawings.

**6.6 Visual Impact of Cross-Arm Installations.** Company agrees that, in order to minimize the visual impact of its attachments on utility poles, in any instance where a cross-arm is set on a utility pole as the locus for attachment of Equipment, Company shall use its best efforts to work with the applicable third parties to ensure that such Equipment shall be attached at the point on the cross-arm that is acceptable to the City. If, however, the third party does not accommodate the City's request, Company shall be allowed to attach in whatever fashion is required by the third party.

**6.7 Relocation and Displacement of Equipment.** Company understands and acknowledges that upon ninety (90) days' written notice (or with less notice that is reasonable in an event of an emergency) City may require Company to relocate one or more Equipment installations. Company shall at City's direction relocate such Equipment at Company's sole cost and expense whenever City reasonably determines that the relocation is needed for any of the following purposes: (a) if required for the construction, modification, completion, repair, relocation, or maintenance of a City or other public agency project; (b) because the Equipment is, at the sole discretion of the City, interfering with or adversely affecting proper operation of ROW Poles, traffic signals, communications, or other Municipal Facilities; or (c) to protect or preserve the public health or safety. In any such case, City shall use reasonable efforts to afford Company a reasonably equivalent alternate location within such ninety (90)-day period. If Company shall fail to relocate any Equipment as requested by the City within ninety (90) days after receipt of the City's notice in accordance with the foregoing provision, or an additional reasonable time under the circumstances, City shall be entitled to remove or relocate the Equipment at Company's sole cost and expense, upon ten (10) days' written notice to Company. Company shall pay to the City actual costs and expenses incurred by the City in performing any removal work and any storage of Company's property after removal within thirty (30) days after the date of a written demand for this payment from the City. To the extent the City has actual knowledge thereof, the City will attempt promptly to inform Company of the displacement or removal of any ROW Pole on which any Equipment is located. If the Municipal Facility is damaged or downed for any reason, and as a result is not able to safely hold the Equipment, the City will attempt promptly to inform the Company but otherwise shall have no obligation to repair or replace such Municipal Facility for the use of Company's Equipment. Company shall bear all risk of loss as a result of damaged or downed Municipal Facilities pursuant to Subsection 6.12 below, and may choose to replace such Municipal Facilities pursuant to the provisions of Subsection 4.1.6 above.

**6.8 Relocations at Company's Request.** In the event Company desires to relocate any Equipment from one Municipal Facility to another, Company shall so advise City. City will use reasonable efforts to accommodate Company by making another reasonably equivalent Municipal Facility available for use in accordance with and subject to the terms and conditions of this Agreement.

**6.9 Damages Caused by Company.** Company shall, at its sole cost and expense and to the satisfaction of the City: (a) remove, repair or replace any of its Equipment that is damaged, becomes detached or has not been used for a period of more than ninety (90) days; and/or (b) repair any damage to ROW, Municipal Facilities or property, whether public or private, caused by Company, its agents, employees or contractors (or a Qualified Service Provider) in their actions relating to attachment, operation, repair or maintenance of Equipment. If Company does not remove, repair or replace such damage to its Equipment or to the ROW, Municipal Facilities or other property within thirty (30) days after receipt of the City's notice to do so, the City shall have the option, upon fifteen (15) days' prior written notice to Company, to perform or cause to be performed such removal, repair or replacement on behalf of Company and shall charge Company for the actual costs incurred by the City. If such damage causes a public health or safety emergency, as determined by the City, the City may immediately perform reasonable and necessary repair or removal work (but not any technical work on Company's Equipment) on behalf of Company and will notify Company as soon as practicable. Upon the receipt of a demand for payment by the City, Company shall within thirty (30) days after such receipt reimburse the City for such costs. The terms of this provision shall survive the expiration, completion or earlier termination of this Agreement.

**6.10 Change in Equipment.** If Company proposes to install Equipment that is different in any material way from the pre-approved configurations and Equipment specifications attached hereto as Exhibit A, then Company shall first obtain the written approval for the use and installation of the unauthorized Equipment from an authorized representative of the City. In addition to any other submission requirements, Company shall provide "load" (structural) calculations for all ROW Poles it intends to install in the ROW, notwithstanding original installation or by way of Equipment type changes. The City may approve or disapprove of the use of the different Equipment from the specifications set forth in Exhibit A, pursuant to the factors enumerated in Subsection 6.3 above, and such approval shall not be unreasonably withheld.

**6.11 Removal of Equipment.** Upon sixty (60) days' written notice by the City pursuant to the expiration or earlier termination of this Agreement, Company shall promptly, safely and carefully remove the Equipment from all Municipal Facilities and ROW. Such obligation of Company shall survive the expiration or earlier termination of this Agreement. If Company fails to complete this removal work on or before the sixty (60) days subsequent to the issuance of notice pursuant to this Section, then the City, upon written notice to Company, shall have the right at the City's sole election, but not the obligation, to perform this removal work and charge Company for the actual costs and expenses, including, without limitation, reasonable administrative costs. Company shall pay to the City actual costs and expenses incurred by the City in performing any removal work and any storage of



Company's property after removal within thirty (30) days after the date of a written demand for this payment from the City. After the City receives the reimbursement payment from Company for the removal work performed by the City, the City shall promptly make available to Company the property belonging to Company and removed by the City pursuant to this Section at no liability to the City. If the City does not receive reimbursement payment from Company within such thirty (30) days, or if City does not elect to remove such items at the City's cost after Company's failure to so remove prior to sixty (60) days subsequent to the issuance of notice pursuant to this Section, or if Company does not remove the Equipment within thirty (30) days after such property having been made available by the City after Company's payment of removal reimbursement as described above, any items of Company's property remaining on or about the ROW, Municipal Facilities, or stored by the City after the City's removal thereof may, at the City's option, be deemed abandoned and the City may dispose of such property in any manner by Law. Alternatively, the City may elect to take title to abandoned property, and Company shall submit to the City an instrument satisfactory to the City transferring to the City the ownership of such property. The provisions of this Section shall survive the expiration or earlier termination of this Agreement.

**6.12 Risk of Loss.** Company acknowledges and agrees that Company bears all risks of loss or damage or relocation or replacement of its Equipment and materials installed in the ROW or on Municipal Facilities pursuant to this Agreement from any cause, and the City shall not be liable for any cost of replacement or of repair to damaged Equipment, including, without limitation, damage caused by the City's removal of the Equipment, except to the extent that such loss or damage was caused by the willful misconduct of the City, including, without limitation, each of its elected officials, department directors, managers, officers, agents, designees, employees, and contractors, subject to the limitation of liability provided in Subsection 7.2 below.

**7. INDEMNIFICATION AND WAIVER.** Company agrees to indemnify, defend, protect, and hold harmless the City, its Council members, officers, employees, agents, and contractors from and against any and all claims, demands, losses, damages, liabilities, fines, charges, penalties, administrative and judicial proceedings and orders, judgments, and all costs and expenses incurred in connection therewith, including reasonable attorney's fees and costs of defense (collectively, the "Losses") for personal injury (including death) or damages to tangible property directly or proximately resulting from the negligence or willful misconduct of Company (or its agents, contractors, or Qualified Service Providers), except to the extent arising from or caused by the negligence or willful misconduct of the City, its City Council members, officers, employees, agents, or contractors.

**7.1 Waiver of Claims.** Company waives any and all claims, demands, causes of action, and rights it may assert against the City on account of any loss, damage, or injury to any Equipment or any loss or degradation of operation of the Network as a result of any event or occurrence which is beyond the reasonable control of the City.

## **7.2 Limitation of City's Liability.**

**7.2.1** The City shall be liable for the cost of repair (or, if repair is not feasible, replacement) to damaged Equipment only to the extent arising from the willful misconduct of City, its employees, agents, or contractors and shall in no event be liable for indirect or consequential damages.

**7.2.2** The City shall be liable for the cost of repair (or, if repair is not feasible, replacement) to damaged Equipment arising from the negligence of City, its employees, agents, or contractors and shall in no event be liable for indirect or consequential damages. City's total liability for negligence shall be limited to the Municipal Facilities Attachment Fee paid by Company to the City in the year under which such liability arises.

## **8. SECURITY FOR PERFORMANCE.**

**8.1 General Requirements.** As security for compliance with the terms of this Agreement and applicable City Code provisions, Company shall, no later than ten (10) days after the issuance of the first permit by the City to install Equipment and prior to any use of the ROW, provide security to the City in the form of either cash deposited with the City, or an irrevocable pledge of certificate of deposit, an irrevocable letter of credit, or a performance bond, payable in each instance to the City, in an amount of one hundred thousand dollars and 00/100 (\$100,000.00) to remain in full force and effect for the term of this Agreement, any or all of which may be claimed by the City as payment for liquidated damages assessed in accordance with Section 11 below, and to recover losses resulting to the City from Company's failure to perform.

**8.2 Bond Requirements.** If bonds are used to satisfy these security requirements, they shall be in accordance with the following:

**8.2.1** All bonds shall, in addition to all other costs, provide for payment of reasonable attorneys' fees.

**8.2.2** All bonds shall be issued by a surety company authorized to do business in the State of Nevada, and which is listed in the U.S. Department of the Treasury Fiscal Service (Department Circular 570, Current Revision): companies holding certificates of authority as acceptable sureties on federal bonds and as acceptable reinsuring companies.

**8.2.3** Company shall require the attorney-in-fact who executes the bonds on behalf of the surety to affix thereto a certified and current copy of his or her power of attorney.

**8.2.4** All bonds prepared by a licensed nonresident agent must be countersigned by a resident agent per NRS 680A.300.



**8.2.5** All bonds shall guarantee the performance of all of Company's obligations under this Agreement and all applicable laws.

**8.2.6** All bonds shall be substantially in the same form as that contained in Exhibit B attached hereto or as otherwise approved by the City.

**8.3 Replenishment of Security.** If at any time the City draws upon such performance security, Company shall within thirty (30) days after written notice from the City replenish such performance security to the original minimum amount required by this Section 8.

**8.4 Security Adjustments.** If this Agreement is renewed or otherwise extended beyond its original term, the security amount required by this Section 8 shall be adjusted based upon the percentage of change in the CPI-U. Security amount changes shall be effective as of July 1 following the fifth anniversary date of this Agreement, and shall be based upon the percentage change in the CPI-U for the preceding five (5) calendar years.

**9. INSURANCE.** Company shall obtain and maintain at all times during the term of this Agreement Commercial General Liability insurance and Commercial Automobile Liability insurance covering Company's operations in an amount not less than One Million Dollars (\$1,000,000.00) per occurrence (combined single limit), including bodily injury and property damage, and in an amount not less than Two Million Dollars (\$2,000,000.00) annual aggregate for each personal injury liability and products-completed operations. The Commercial General Liability insurance policy shall name the City, its Council members, officers and employees as additional insureds with respect to any covered liability arising out of Company's performance of work under this Agreement. Coverage shall be in an occurrence form and in accordance with the limits and provisions specified herein. Claims-made policies are not acceptable. Such insurance shall not be canceled, nor shall the occurrence or aggregate limits set forth above be reduced, until the City has received at least thirty (30) days' advance written notice of such cancellation or change. Company shall be responsible for notifying the City of such change or cancellation.

**9.1 Filing of Certificates and Endorsements.** Prior to the commencement of any work pursuant to this Agreement, Company shall file with the City original certificate(s) of insurance evidencing the coverages and limits required by this Section 9, which shall state the following:

**9.1.1** the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts;

**9.1.2** that the City shall receive thirty (30) days' prior notice of cancellation;

**9.1.3** that Company's Commercial General Liability insurance policy is primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and

shall not be required to contribute with this insurance; and

**9.1.4** that Company's Commercial General Liability insurance policy waives any right of recovery the insurance company may have against the City.

The certificate(s) of insurance shall be mailed to the City at the address specified in Section 10 below.

**9.2 Workers' Compensation Insurance.** Company shall comply with the provisions of NRS Chapters 616A through 616D regarding industrial insurance and, if required to maintain coverage for employees, Company shall obtain and maintain at all times during the term of this Agreement statutory workers' compensation and employer's liability insurance in an amount not less than the greater of (a) any amounts required by Nevada state law or (b) One Million Dollars (\$1,000,000.00) and shall furnish the City with a certificate showing proof of such coverage.

**9.3 Insurer Criteria.** Any insurance provider of Company shall be admitted and authorized to do business in the State of Nevada and shall carry a minimum rating assigned by *A.M Best & Company's Key Rating Guide* of "A" Overall and a Financial Size Category of "X" (*i.e.*, a size of \$500,000,000 to \$750,000,000 based on capital, surplus, and conditional reserves). Insurance policies and certificates issued by non-admitted insurance companies are not acceptable.

**9.4 Severability of Interest.** Any deductibles or self-insured retentions must be stated on the certificate(s) of insurance, which shall be sent to and approved by the City. "Severability of interest" or "separation of insureds" clauses shall be made a part of the Commercial General Liability and Commercial Automobile Liability policies.

## **10. NOTICES.**

**10.1 Method and Delivery of Notices.** All notices which shall or may be given pursuant to this Agreement shall reference this Agreement and shall be in writing and delivered personally or transmitted (a) through the United States mail, by registered or certified mail, postage prepaid; or (b) by means of prepaid overnight delivery service  
*If to the City.*

CITY OF NORTH LAS VEGAS  
Attn: Director of Finance  
2250 Las Vegas Boulevard North, Suite 710  
North Las Vegas, Nevada 89030

*With a copy to:*

CITY OF NORTH LAS VEGAS  
Director of Public Works 2250 Las Vegas Boulevard North, Suite 200  
North Las Vegas, Nevada 89030

*If to Company:*

ExteNet Systems, LLC  
Attn: General Counsel  
5844 John Hickman Parkway Suite 600  
Frisco, TX 75034  
e-mail: [notice@extenetsystems.com](mailto:notice@extenetsystems.com)

*With a copy to:*  
COO at same address

**10.2 Date of Notices; Changing Notice Address.** Notices shall be deemed given upon receipt in the case of personal delivery, three (3) days after deposit in the United States mail, or the next business day in the case of overnight delivery. Either party may, from time to time, designate any other address for this purpose by written notice to the other party delivered in the manner set forth above.

## **11. DEFAULT; CURE; REMEDIES; LIQUIDATED DAMAGES.**

**11.1 Default and Notification.** This Agreement is granted upon each and every condition herein and each of the conditions is a material and essential condition to the granting of this Agreement. Except for causes beyond the reasonable control of Company and subject to Section 11.2 below, if Company fails to comply with any of the conditions and obligations imposed hereunder, and if such failure continues for more than thirty (30) days after written demand from the City to commence the correction of such noncompliance on the part of Company, the City shall have the right to revoke and terminate this Agreement in addition to any other rights or remedies set forth in this Agreement or provided by law.

**11.2 Cure Period.** If the nature of the violation is such that it cannot be fully cured within thirty (30) days due to circumstances not under Company's control, the period of time in which Company must cure the violation may be extended by the City Manager in writing for such additional time reasonably necessary to complete the cure, provided that: (a) Company has promptly begun to cure; and (b) Company is diligently pursuing its efforts to cure in the City Manager's reasonable judgment.

**11.3 Liquidated Damages.** If Company fails to cure any noncompliance with the terms and conditions of this Agreement within the time allowed under Subsections 11.1 and 11.2 above, after the City gives Company reasonable written notice of such noncompliance, and an opportunity to be heard by the City Manager, the City may assess the following liquidated damages for such noncompliance:

**11.3.1** Failure to comply with the City's requirements concerning actual usage of the ROW or Municipal Facilities, including but not limited to any defaults resulting in construction-delay claims against the City: \$500.00 per day, for each day such failure continues.

**11.3.2** Failure to comply with any other provisions of this Agreement, including but not limited to failure to promptly provide data, documents, reports, or information to the City, or to provide insurance or security for the performance of Company's obligations hereunder: \$100.00 per day, for each day such failure continues.

**11.4 Payment of Damages.** Any liquidated damages assessed pursuant to this Section 11 shall be due and payable by check mailed or delivered to the Director of Finance, at the address provided for in Section 10 above, not later than thirty (30) days after the City provides Company with written notification of the assessment.

**11.5 Remedy not Penalty.** Company agrees that any failures in Subsection 11.3 above shall result in injuries to the City and its citizens and institutions, the compensation for which would be difficult to ascertain and prove, and that the amounts specified in Subsection 11.3 are liquidated damages, not a penalty or forfeiture.

**12. ASSIGNMENT.** This Agreement shall not be assigned by Company without the express written consent of the City. Notwithstanding the foregoing, the transfer of the rights and obligations of Company (i) to an Affiliate or (ii) to any successor in interest or entity acquiring fifty percent (50%) or more of Company's stock or assets (collectively "Exempted Transfers") shall not require the consent of the City, provided that with regard to a successor in interest or entity acquiring fifty percent (50%) or more of Company's stock or assets, Company reasonably demonstrates to the City's lawfully empowered designee the following criteria ("Exempted Transfer Criteria"): (a) such transferee will have a financial strength after the proposed transfer sufficient to fully perform Company's obligations hereunder; (b) any such transferee assumes all of Company's obligations hereunder, including all obligations and/or defaults under this Agreement occurring prior to the transfer (whether known or unknown), signed by Company's and its transferee's respective officers duly authorized to do so, on a notarized form approved by the City; (c) the experience and technical qualifications of the proposed transferee, either alone or together with Company's management team, in the provision of Telecommunications Service, evidences an ability to operate the Company Facilities; (d) the transferee provides the City with a copy of an appropriate certificate of public convenience and necessity from the PUC authorizing it to operate the Company Facilities; and (e) the transferee has a valid City business license. Company shall give at least thirty (30) days' prior written notice ("Exempted Transfer Notice") to the City of any such proposed Exempted Transfer and shall set forth with specificity in such Exempted Transfer Notice the reasons why Company believes the Exempted Transfer Criteria have been satisfied. The City shall have a period of thirty (30) days ("Exempted Transfer Evaluation Period") from the date that Company gives the City its Exempted Transfer Notice to object in writing to the adequacy of the evidence contained therein. Notwithstanding the foregoing, the Exempted Transfer Evaluation Period shall not be deemed to have commenced until the City has received from Company and the proposed transferee any and all additional information as the City may reasonably require in connection with its evaluation of the Exempted Transfer Criteria as set forth in the Exempted Transfer Notice, so long as the City gives Company notice in writing of the additional information the City requires within fifteen (15) days after the City's receipt of the original Exempted Transfer Notice. If the City fails to act upon Company's Exempted Transfer Notice within the Exempted Transfer Evaluation Period (as the same may be extended in accordance with the foregoing provisions),

such failure shall be deemed an affirmation by the City that Company has in fact established compliance with the Exempted Transfer Criteria to the City's satisfaction.

### **13. RECORDS; AUDITS.**

**13.1 Records Required by Code.** Company will maintain complete records pursuant to the applicable provisions of City of North Las Vegas Municipal Code.

**13.2 Additional Records.** The City may require such additional information, records, and documents from Company from time to time as are appropriate to reasonably monitor compliance with the terms of this Agreement. Additionally, the City may require Company to collect supplementary information as needed.

**13.3 Production of Records.** Company shall provide records within twenty (20) business days after a request by the City for production of the same unless the City agrees to additional time. Company shall not unreasonably deny the City (or its designated representative) access to records covered by this Agreement, including confidential and proprietary information. Such records shall be made available in the City. Failure to provide records in a timely manner shall subject Company to liquidated damages under Section 11. If any person other than Company maintains records on Company's behalf, Company shall be responsible for making such records available to the City (or its designated representative) for auditing purposes pursuant to this Section.

**13.4 Confidential and Proprietary Information.** Company acknowledges that information submitted to the City is open to public inspection and copying under Nevada Public Records Law, Chapter 239 of the NRS. Company is responsible for becoming familiar with and understanding the provisions of the Nevada Public Records Law. While Nevada law does not recognize Company-provided information as "confidential," Company may identify information, such as trade secrets, proprietary financial records, customer information or technical information, submitted to the City as confidential. Company shall prominently mark any information for which it claims confidentiality with the word "Confidential" on each page of such information prior to submitting such information to the City. The City shall treat any information so marked as confidential until the City receives any request for disclosure of such information. Within five (5) working days after receiving any such request, the City shall provide Company with written notice of the request, including a copy of the request. Company shall have five (5) working days within which to provide a written response to the City, before the City will disclose any of the requested information. The City retains the final discretion to determine whether to release the requested information designated as confidential by Company in accordance with applicable law.

In the event that City is requested in any proceeding or otherwise requested to disclose any Confidential Information, City will give Company prompt notice of such request so that Company may seek an appropriate protective order or other appropriate remedy. If, in the absence of a protective order, City is nonetheless legally compelled to disclose such information, then City will furnish only that portion of the Confidential Information



which is legally required, in which case City will not be subject to liability hereunder; provided, however, that City give Company written notice of the Confidential Information to be disclosed as far in advance of its disclosure as is practicable.

**14. MISCELLANEOUS PROVISIONS.** The provisions that follow shall apply generally to the obligations of the parties under this Agreement.

**14.1 Waiver of Breach.** The waiver by either party of any breach or violation of any provision of this Agreement shall not be deemed to be a waiver or a continuing waiver of any subsequent breach or violation of the same or any other provision of this Agreement.

**14.2 Severability of Provisions.** If any one or more of the provisions of this Agreement shall be held by a court of competent jurisdiction in a final judicial action to be void, voidable, or unenforceable, such provision(s) shall be deemed severable from the remaining provisions of this Agreement and shall not affect the legality, validity, or constitutionality of the remaining portions of this Agreement. Each party hereby declares that it would have entered into this Agreement and each provision hereof regardless of whether any one or more provisions may be declared illegal, invalid, or unconstitutional.

**14.3 Contacting Company.** Company shall be available to the staff employees of any City department having jurisdiction over Company's activities twenty-four (24) hours a day, seven (7) days a week, regarding problems or complaints resulting from the attachment, installation, operation, maintenance, or removal of the Equipment or Company poles. The City may contact by telephone the network control center operator at telephone number 866-892-5327 regarding such problems or complaints.

**14.4 Governing Law; Jurisdiction.** This Agreement shall be governed and construed by and in accordance with the laws of the State of Nevada, without reference to its conflicts of law principles. If suit is brought by a party to this Agreement, the parties agree that trial of such action shall be vested exclusively in federal or state courts located in Nevada.

**14.5 Attorneys' Fees.** Should any dispute arising out of this Agreement lead to litigation, the prevailing party shall be entitled to recover its costs of suit, including (without limitation) reasonable attorneys' fees.

**14.6 Consent Criteria.** In any case where the approval or consent of one party hereto is required, requested or otherwise to be given under this Agreement, such party shall not unreasonably delay, condition, or withhold its approval or consent.

**14.7 Representations and Warranties.** Each of the parties to this Agreement represents and warrants that it has the full right, power, legal capacity, and authority to enter into and perform the party's respective obligations hereunder and that such obligations shall be binding upon such party without the requirement of the approval or consent of any other person or entity in connection herewith, except as provided in Subsection 4.2 above.



**14.8 Amendment of Agreement.** This Agreement may not be amended except pursuant to a written instrument signed by both parties.

**14.9 Entire Agreement.** This Agreement contains the entire understanding between the parties with respect to the subject matter herein. There are no representations, agreements, or understandings (whether oral or written) between or among the parties relating to the subject matter of this Agreement which are not fully expressed herein.

**14.10 Intentionally Left Blank.**

**14.11 Non-Exclusive Remedies.** No provision in this Agreement made for the purpose of securing enforcement of the terms and conditions of this Agreement shall be deemed an exclusive remedy or to afford the exclusive procedure for the enforcement of said terms and conditions, but the remedies herein provided are deemed to be cumulative.

**14.12 No Third-Party Beneficiaries.** Except as otherwise provided in Section 7 above, it is not intended by any of the provisions of this Agreement to create for the public, or any member thereof, a third-party beneficiary right or remedy, or to authorize anyone to maintain a suit for personal injuries or property damage pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the City with respect to third parties shall remain as imposed by Nevada law.

**14.13 Construction of Agreement.** The terms and provisions of this Agreement shall not be construed strictly in favor of or against either party, regardless of which party drafted any of its provisions. This Agreement shall be construed in accordance with the fair meaning of its terms.

**14.14 Effect of Acceptance.** Company: (a) accepts and agrees to comply with this Agreement and all applicable federal, state, and local laws and regulations; (b) agrees that this Agreement was granted pursuant to processes and procedures consistent with applicable Laws; and (c) agrees that it will not raise any claim to the contrary or allege in any claim or proceeding against the City that at the time of acceptance of this Agreement any provision, condition or term of this Agreement was unreasonable or arbitrary, or that at the time of the acceptance of this Agreement any such provision, condition or term was void or unlawful or that the City had no power or authority to make or enforce any such provision, condition or term.

**14.15 Time is of Essence.** Time is of the essence with regard to the performance of all of Company's obligations under this Agreement.

**[Signatures on following page(s)]**

**IN WITNESS WHEREOF**, the parties hereto have caused this Agreement to be legally executed to be effective on the Effective Date specified herein.

**CITY OF NORTH LAS VEGAS**

By: \_\_\_\_\_  
PAMELA GOYNES-BROWN, MAYOR

ATTEST

By: \_\_\_\_\_  
JACKIE RODGERS, CITY CLERK

APPROVED AS TO FORM

By: \_\_\_\_\_  
MICAELA MOORE, CITY ATTORNEY

**EXTENET SYSTEMS, LLC**  
**A Delaware Corporation**

By:  \_\_\_\_\_  
Michael Watson, VP, Deputy General Counsel

Date: October 14, 2023

## Exhibit A

## Pole Structural Analysis

### • Replacement Light Pole and New Foundation •

**Site Information:** Various Locations  
**Extenet Node IDs:** NV-S000000xxx  
**Project:** Extenet Small Cell

**Prepared For:** Extenet Systems

**Structure:** New 30' Tall Light Pole – Type 316  
7 Gauge Steel Monopole  
Standard Luminaire Arm

**Pole Locations:** Las Vegas, Nevada  
Clark County

**Design Codes:** IBC 2018 with State Amendments  
Southern NV Building Code Amendment  
ANSI/TIA-222-H  
AASHTO LTS

**Analysis Load Case:** Extenet Final Configuration  
**Analysis Results:** Replacement Light Pole  
& New Foundation Adequate  
*Refer to Conclusion & Recommendations  
for Pole Replacement Requirements*

*Date Signed:*  
September 22, 2022



Don George,  
PE

Digitally signed by: Don George, PE  
DN: CN = Don George, PE email = don.  
george@geostructural.com C = US O =  
GeoStructural LLC OU = GeoStructural LLC  
Date: 2022.09.22 16:37:34 -0700

**Revision 2**  
**September 22, 2022**

Extenet\_Replacement 30 Foot Light Pole\_Structural Analysis\_City of Las Vegas\_R2 220922

## **1.0 Introduction**

GeoStructural LLC has completed a structural analysis for Extenet's proposed replacement light pole structures to be installed throughout Clark County, Nevada considering the final loading listed in Section 3.0.

## **2.0 Analysis Criteria**

An elastic three-dimensional model of the structure has been analyzed pursuant to the following criteria:

- IBC 2018 – International Building Code.
- SNBCA – Southern Nevada Building Code Amendment.
- ANSI/TIA-222-H – Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures.
- AASHTO LTS – Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.
- Signals.
- ASCE 7-16 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- AISC – Steel Construction Manual.
- ANSI/AWS D1.1 – Structural Welding Code.
- ACI 318 – Building Code Requirements for Structural Concrete.

Wind = 98 mph (3-sec gust Ultimate Wind Speed per IBC 2018)

Wind = 115 mph (3-sec gust Ultimate Wind Speed per AASHTO)

Wind = 75 mph (Service Wind Speed per AASHTO)

Wind w/ ice = 30 mph (3-sec gust Basic) with 0" Design Ice (Escalated with Height)

AASHTO Risk Category = Typical with 700MRI ( $1,000 < ADT \leq 10,000$ )

Topographic Category 1

Average Ground Elevation: 2,000 ft

Wind Exposure Category C

Structure Class II

Seismic Design Parameters:

Site Class D "Stiff Soil";  $S_{DS} = 0.50$ ; Design Category D (Conservative for Las Vegas Area)

The results of the analysis are illustrated in Section 4.0. If any of the existing or proposed conditions reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

### 3.0 Appurtenance Information

**Table 3.1 – Proposed Extenet Final Appurtenance Configuration<sup>1,2</sup>**

COR (U.N.O.)	Appurtenance (Quantity) Make/Model	Equipment Weight
29.5'± (Attachment)	Light Arm (Assume Two 18' Arms for Conservatism) Luminaire	100 lbs 60 lbs
27.0'± (Centerline)	(3) Ericsson 6701 5G Integrated Antennas with Shrouds	138 lbs (46 lbs/each)
13.0'± (Top)	(1) Raycap Distribution Sub-Panel (10.4" T x 9.4" W x 6.3" D)	8 lbs

1. Refer to antenna installation A&E Construction Drawings for additional information regarding final loading configuration, mount and equipment orientations.
2. All coax to be installed inside the pole shaft (and/or shielded from wind loading effects) unless specifically noted otherwise. If this assumption is incorrect, the results of this analysis will be affected and require revisions.



## 4.0 Analysis Results

**Table 4.1 – Replacement Pole Component Capacities – Ameron GeoTowers**

Load Case	Pole Component <sup>1</sup>	% Capacity <sup>2</sup>	Result <sup>3</sup>
Final Extenet Loading Configuration	Tapered Pole Base Plate Anchor Bolts	77% 95% 82%	Adequate <sup>4</sup>

1. Refer to the Software Output portion of this report for tower sections and structural information.
2. Listed results are expressed as a percentage of available member capacity ( $\Sigma \alpha_i Q_i / \Phi R_n$ ) based upon the material strengths listed in Table 4.2. 105% is an acceptable engineering allowable stress percentage for tower components.
3. Refer to the Software Output portion of this report for main structural member factored load effects ( $\Sigma \alpha_i Q_i$ ) and design strengths ( $\Phi R_n$ ).
4. Refer to Conclusion & Recommendations section of this report for light pole replacement requirements.

► **Tower Capacity Notes:**

- Ultimate design wind speed of 115 mph was utilized for the purpose of this analysis in accordance with AASHTO and TIA-222. This will have a conservative result when compared to the ultimate design wind speed of 98 mph for Clark County per the IBC 2018.
- Extenet Systems' proposed appurtenances will be mounted to the main light pole structure. No additional loading shall be added to the luminaire mount arm.

**Table 4.2 – Structural Component Material Strengths**

Structural Component	Nominal Strength/Material <sup>1</sup>
Tapered Pole Shaft - 7 Gauge	$F_y = 55$ ksi (A595 Gr. A)
Luminaire Arm (2-3/8" $\phi$ O.D. Sch. 40 Minimum)	$F_y = 55$ ksi (A595 Gr. A)
Base Plate	$F_y = 36$ ksi (A36)
Anchor Bolts	$F_y = 55$ ksi (F1554 Gr. 55)
Welds	E70XX Electrodes
Foundation Concrete / Reinforcing	$f'_c = 4,500$ psi / $F_y = 60$ ksi
Soil Parameters	<p>Minimum Presumptive Values per IBC §1806.2 &amp; TIA-222-H Annex F:</p> <p>Non-Cohesive Soil  <math>\phi = 30^\circ</math>, <math>N = 10</math>, <math>\gamma = 105</math> pcf  Allowable Bearing Pressure = 1,500 psf</p> <p>Cohesive Soil  Cohesion = 600 psf, <math>N = 8</math>, <math>\gamma = 105</math> pcf  Allowable Bearing Pressure = 1,500 psf</p>

1. Strengths listed were assumed for this analysis and are based upon ASTM, AISC, RCSC, AWS and ACI preferred specification values. Values and materials are consistent with industry standards. Material strengths were taken from original design documents when available.

**4.3 – Soil Parameter Assumptions (Minimum Assumed Presumptive Values)**

**Non-Cohesive Soil (Silty Sand to Sand):**  $\phi = 30^\circ$ ,  $N = 10$ ,  $\gamma = 105$  pcf,  $\mu = 0.25$

**Site-Specific Geotechnical Report Unavailable:**

**Presumptive Soil Parameters (IBC 2018 § 1806.2):**

- Allowable Bearing Pressure = 1,500 psf (3,000 psf Ultimate)
- Passive Sliding = 150 psf/ft (300 psf/ft Ultimate)

**Presumptive Soil Parameters (SNBCA, § 1803.2):**

- Allowable Bearing Pressure = 1,000 psf
- Passive Sliding = 100 psf/ft (May be doubled per IBC 2018, § 1806.3.4)

Per IBC 2018 §1806.3.4, the presumptive lateral soil values listed in Table 1806.2 may be doubled. The values specified in Table 1806.2 shall be used with the ASD load combinations specified in §1605.3 which include a 0.6 factor for wind loading and a 0.7 factor for seismic. This election was taken when evaluating required embedment as calculated by IBC 2018 Equation 18-1. An allowable one-third increase in presumptive soil lateral bearing pressure for short-term wind/seismic loads was elected per §1806.1.

**Table 4.4 – Maximum Global Structure Base Reactions**

Reaction Type	Current Analysis Reaction For Foundation Analysis (GeoTowers/Ameron Pole) <sup>1</sup>	Current Analysis Reaction For Foundation Analysis (Valmont Pole) <sup>1</sup>	Result
Axial Compression	1.10 k	0.718 k	See Below
Total Base Shear	1.43 k	0.469 k	
Overturning Moment	32.98 k-ft	10.942 k-ft	
Additional Moment Induced by Offset <sup>2</sup>	1 k-ft	1 k-ft	
Torsion	1 k-ft	2.132 k-ft	

1. Current analysis reactions shown are factored LRFD reactions based on an Ultimate Wind Load of 115 mph (per AASHTO) and an Ultimate Wind Load of 98 mph (Per ASCE 7-16).

2. For conservatism, a maximum pole offset of 6" from centerline of foundation was assumed.

**Table 4.5 – Required New Foundation Parameters (Unrestrained Condition)**

Foundation Element	Current Analysis (Demand) Parameter <sup>1</sup>	Replacement Foundation (Allowable) Value <sup>1</sup>	Result
Caisson Embedment Depth	7'-0"	7'-0"	Adequate
Soil Lateral Capacity	35.20 k-ft	51.09 k-ft	
Soil Vertical Capacity (Compression)	7.74 k	23.22 k	
Concrete Capacity (Compression)	35.20 k-ft	198.79 k-ft	

1. Refer to the Software Output portion of this report for additional information. Lateral soil capacity values up to 105% are deemed adequate per acceptable engineering practice.

## **5.0 Conclusion & Recommendations**

With the existing appurtenances and the proposed final antenna configuration, the *Extenet Various Locations - NV-S000000xxx* existing light pole structures do not satisfy the requirements of the applicable design codes and have insufficient capacity to carry the loading considered in this analysis.

**We recommend that the existing light poles and foundation systems be removed and replaced with structures capable of supporting the proposed loading (with future load capacity) based on the current design codes. The new foundation has been designed to support either the Ameron GeoTowers or Valmont replacement light pole structures.**

### **5.1 Analysis Assumptions**

- This analysis does not constitute a pole structural analysis nor a tower maintenance or condition assessment. No consideration has been given regarding fatigue loading limit states (truck gusts, vibration, vortex shedding, etc.) as specified per AASHTO, Chapter 11.
- The following soil parameters were assumed for the foundation analysis (Minimum Presumptive Values per IBC §1806.2, SNBCA §1803.2 & TIA-222-H Annex F):

**Non-Cohesive Soil (Silty Sand to Sand):**  $\phi = 30^\circ$ ,  $N = 10$ ,  $\gamma = 105$  pcf,  $\mu = 0.25$

**Site-Specific Geotechnical Report Unavailable:**

**Presumptive Soil Parameters (IBC 2018 § 1806.2):**

- Allowable Bearing Pressure = 1,500 psf (3,000 psf Ultimate)
- Passive Sliding = 150 psf/ft (300 psf/ft Ultimate)

**Presumptive Soil Parameters (SNBCA, § 1803.2):**

- Allowable Bearing Pressure = 1,000 psf
- Passive Sliding = 100 psf/ft (May be doubled per IBC 2018, § 1806.3.4)

We appreciate the opportunity to provide our structural engineering services to you. If you have any questions regarding the content of this structural analysis report, please don't hesitate to contact us.

Prepared by:



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Reviewed and Approved by:



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## **6.0 Standard Conditions**

- The default Structure Classification is Class II in accordance with ANSI/TIA-222 and has been assumed for this analysis. The owner shall verify this classification conforms with original or desired reliability criteria.
- This analysis assumes that the structure has been properly installed and maintained in accordance with ANSI/TIA-222 and that no physical deterioration has occurred in any of the components of the structure. Damaged, missing, or rusted members were not considered.
- This analysis verifies the adequacy of the main components of the structure. Where not specifically analyzed, the existing connection plates, welds, bolts, etc. were assumed adequate to develop the full capacity of the main structural members.
- No consideration has been made for unusual or extreme wind events, rime/in-cloud ice loadings, harmonic or nodal vibration, vortex shedding or other similar conditions.
- When applicable, certain foundation details (i.e. global dimensions, embedment depth, reinforcement, etc.) cannot be verified without extensive non-destructive testing. If desired, GeoStructural can provide these services under a subsequent contract.
- It is the owner's responsibility to determine the appropriate design wind speed and amount of ice accumulation beyond code minimum values that should be considered in the analysis.
- Miscellaneous non-structural components and appurtenances such as antenna mounts, arms, frames, coax supports, etc. have not been analyzed for their capacity and are assumed adequate to transfer the loads to the structure. No claim to their individual adequacy is implied.
- This analysis report does not constitute a tower maintenance and condition assessment. No certifications regarding maintenance and condition are expressed or implied.
- This analysis assumes that any existing tower members, guy anchors, etc. have been properly inspected and assessed in accordance with ANSI/TIA-222 (three year intervals for guyed masts and five year intervals for self supporting structures).

## **7.0 Attachments, Calculations & Software Output**

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Section	1
Length (ft)	30.00
Number of Sides	1
Thickness (in)	0.1793
Top Dia (in)	4.0000
Bot Dia (in)	8.0000
Grade	A595-55
Weight (K)	0.3

30.0 ft

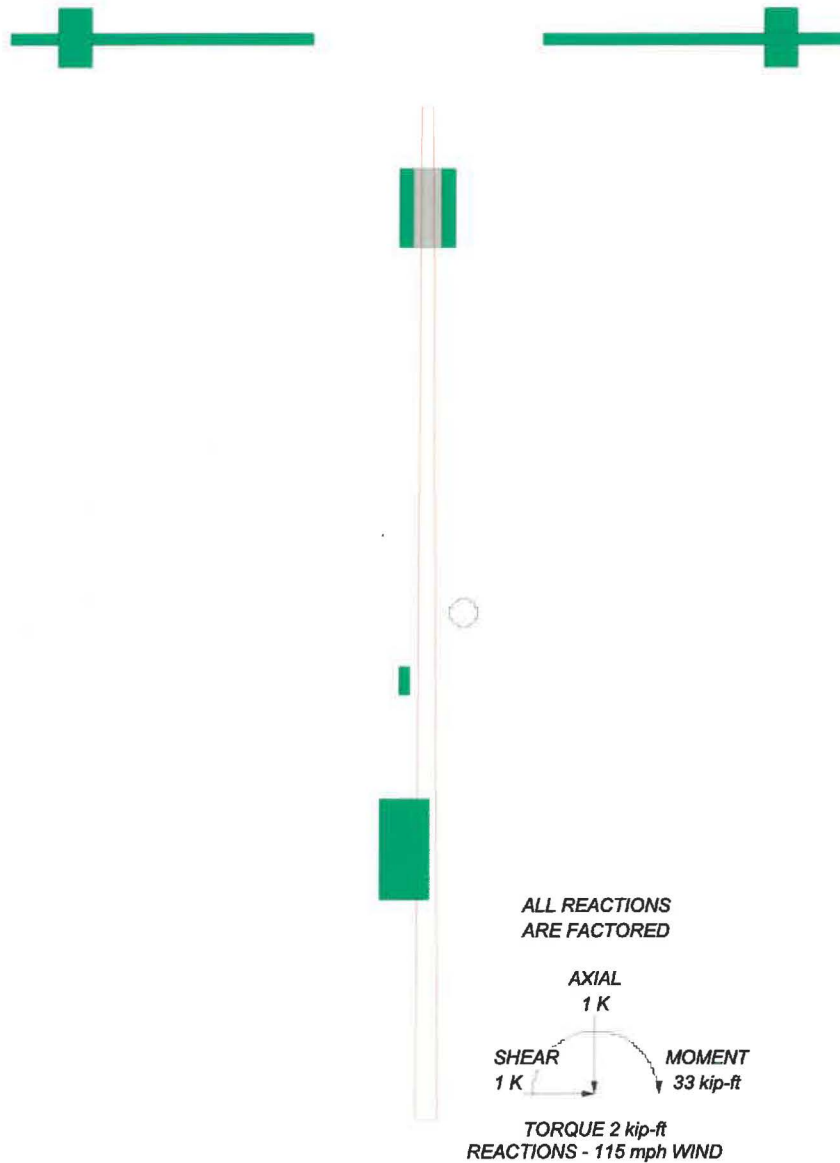
0.0 ft


## MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A595-55	55 ksi	65 ksi			

## TOWER DESIGN NOTES

1. Tower is located in Clark County, Nevada.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Deflections are based upon a 75 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
8. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
9. Welds are fabricated with E70XX electrodes.



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	<b>Project: Structural Analysis - Rev 1</b>			
	Client: Extenet Systems	Drawn by: D George	App'd:	
	Code: TIA-222-H	Date: 09/19/22	Scale: 1/4" = 1'-0"	
	Path:	Dwg No.		

<b>tnxTower</b>  <b>GeoStructural</b> PO Box 2621 Boise, ID 83701 Phone: 208-602-6569 FAX:	<b>Job</b> Replacement 30-Foot - 7 Gauge Light Pole	<b>Page</b> 1 of 13
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	<b>Client</b> Extenet Systems	<b>Designed by</b> D George

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Clark County, Nevada.

Tower base elevation above sea level: 2000.00 ft.

Basic wind speed of 115 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Deflections calculated using a wind speed of 75 mph.

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.

Welds are fabricated with E70XX electrodes..

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	30.00-0.00	30.00		Round	4.0000	8.0000	0.1793		A595-55 (55 ksi)

## Monopole Base Plate Data

Base Plate Data	
Base plate is square	✓
Base plate is grouted	✓
Anchor bolt grade	F1554-55
Anchor bolt size	1.1250 in
Number of bolts	4
Embedment length	36.0000 in
$f_c$	5 ksi
Grout space	2.0000 in
Base plate grade	A36
Base plate thickness	1.0000 in
Bolt circle diameter	11.0000 in
Outer diameter	11.5000 in
Inner diameter	8.0000 in
Base plate type	Plain Plate

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## Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C<sub>A</sub>A<sub>A</sub> Front ft<sup>2</sup></i>	<i>C<sub>A</sub>A<sub>A</sub> Side ft<sup>2</sup></i>	<i>Weight K</i>
<b>* FINAL CONFIGURATION *</b>									
Arm - Luminaire Clark County - 18'	B	From Leg	9.00 0.00 2.50	0.0000	29.50	No Ice	3.00	3.00	0.15
Luminaire - Signal Pole	B	From Leg	12.00 0.00 2.50	0.0000	29.50	No Ice	4.20	4.20	0.06
Arm - Luminaire Clark County - 18'	C	From Leg	9.00 0.00 2.50	0.0000	29.50	No Ice	3.00	3.00	0.15
Luminaire - Signal Pole	C	From Leg	12.00 0.00 2.50	0.0000	29.50	No Ice	4.20	4.20	0.06
Sign - 36" x 36"	C	From Leg	0.50 0.00 0.00	0.0000	8.00	No Ice	10.80	1.18	0.01
<b>* PROPOSED EXTENET *</b>									
Ericsson AIR 6701 w/ Shrouds (Extenet)	A	From Leg	0.50 0.00 0.00	0.0000	27.00	No Ice	2.29	1.79	0.05
Ericsson AIR 6701 w/ Shrouds (Extenet)	B	From Leg	0.50 0.00 0.00	0.0000	27.00	No Ice	2.29	1.79	0.05
Ericsson AIR 6701 w/ Shrouds (Extenet)	C	From Leg	0.50 0.00 0.00	0.0000	27.00	No Ice	2.29	1.79	0.05
Disconnect (Extenet)	C	From Leg	0.50 0.00 0.00	0.0000	13.00	No Ice	0.81	0.55	0.01

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## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	Dead+Wind 0 deg - Service
27	Dead+Wind 30 deg - Service
28	Dead+Wind 60 deg - Service
29	Dead+Wind 90 deg - Service
30	Dead+Wind 120 deg - Service
31	Dead+Wind 150 deg - Service
32	Dead+Wind 180 deg - Service
33	Dead+Wind 210 deg - Service
34	Dead+Wind 240 deg - Service
35	Dead+Wind 270 deg - Service
36	Dead+Wind 300 deg - Service
37	Dead+Wind 330 deg - Service

## Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	30 - 0	Pole	Max Tension	26	0.00	-0.00	-0.00
			Max. Compression	24	-1.11	14.47	22.28
			Max. Mx	20	-1.10	30.63	-3.72
			Max. My	14	-1.10	1.01	-32.19
			Max. Vy	8	1.43	-30.60	-1.74
			Max. Vx	14	1.29	1.01	-32.19
			Max. Torque	21			2.49

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## Maximum Reactions

<i>Location</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Vertical K</i>	<i>Horizontal, X K</i>	<i>Horizontal, Z K</i>
Pole	Max. Vert	2	1.11	-0.12	1.29
	Max. H <sub>x</sub>	21	0.83	1.42	-0.12
	Max. H <sub>z</sub>	2	1.11	-0.12	1.29
	Max. M <sub>x</sub>	3	27.07	-0.12	1.29
	Max. M <sub>z</sub>	8	30.60	-1.42	0.12
	Max. Torsion	21	2.48	1.42	-0.12
	Min. Vert	21	0.83	1.42	-0.12
	Min. H <sub>x</sub>	8	1.11	-1.42	0.12
	Min. H <sub>z</sub>	14	1.11	0.12	-1.29
	Min. M <sub>x</sub>	14	-32.19	0.12	-1.29
	Min. M <sub>z</sub>	20	-30.63	1.42	-0.12
	Min. Torsion	9	-2.48	-1.42	0.12



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## Tower Mast Reaction Summary

<i>Load Combination</i>	<i>Vertical</i>	<i>Shear<sub>x</sub></i>	<i>Shear<sub>z</sub></i>	<i>Overturning Moment, M<sub>x</sub></i>	<i>Overturning Moment, M<sub>z</sub></i>	<i>Torque</i>
	<i>K</i>	<i>K</i>	<i>K</i>	<i>kip-ft</i>	<i>kip-ft</i>	<i>kip-ft</i>
Dead Only	0.92	0.00	-0.00	2.29	0.01	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	1.11	0.12	-1.29	-26.72	-0.97	-0.03
0.9 Dead+1.0 Wind 0 deg - No Ice	0.83	0.12	-1.29	-27.07	-0.97	-0.03
1.2 Dead+1.0 Wind 30 deg - No Ice	1.11	0.82	-1.17	-23.27	-16.14	1.21
0.9 Dead+1.0 Wind 30 deg - No Ice	0.83	0.82	-1.17	-23.67	-15.95	1.22
1.2 Dead+1.0 Wind 60 deg - No Ice	1.11	1.29	-0.75	-12.85	-26.99	2.12
0.9 Dead+1.0 Wind 60 deg - No Ice	0.83	1.29	-0.75	-13.39	-26.65	2.14
1.2 Dead+1.0 Wind 90 deg - No Ice	1.11	1.42	-0.12	1.74	-30.60	2.45
0.9 Dead+1.0 Wind 90 deg - No Ice	0.83	1.42	-0.12	1.01	-30.21	2.48
1.2 Dead+1.0 Wind 120 deg - No Ice	1.11	1.17	0.54	16.60	-26.00	2.13
0.9 Dead+1.0 Wind 120 deg - No Ice	0.83	1.17	0.54	15.68	-25.67	2.15
1.2 Dead+1.0 Wind 150 deg - No Ice	1.11	0.61	1.05	27.74	-14.44	1.24
0.9 Dead+1.0 Wind 150 deg - No Ice	0.83	0.61	1.05	26.69	-14.25	1.26
1.2 Dead+1.0 Wind 180 deg - No Ice	1.11	-0.12	1.29	32.19	1.01	0.03
0.9 Dead+1.0 Wind 180 deg - No Ice	0.83	-0.12	1.29	31.08	1.00	0.03
1.2 Dead+1.0 Wind 210 deg - No Ice	1.11	-0.82	1.17	28.73	16.18	-1.18
0.9 Dead+1.0 Wind 210 deg - No Ice	0.83	-0.82	1.17	27.67	15.98	-1.20
1.2 Dead+1.0 Wind 240 deg - No Ice	1.11	-1.29	0.75	18.31	27.03	-2.09
0.9 Dead+1.0 Wind 240 deg - No Ice	0.83	-1.29	0.75	17.39	26.68	-2.12
1.2 Dead+1.0 Wind 270 deg - No Ice	1.11	-1.42	0.12	3.72	30.63	-2.45
0.9 Dead+1.0 Wind 270 deg - No Ice	0.83	-1.42	0.12	2.98	30.23	-2.48
1.2 Dead+1.0 Wind 300 deg - No Ice	1.11	-1.17	-0.54	-11.14	26.03	-2.16
0.9 Dead+1.0 Wind 300 deg - No Ice	0.83	-1.17	-0.54	-11.68	25.69	-2.18
1.2 Dead+1.0 Wind 330 deg - No Ice	1.11	-0.61	-1.05	-22.28	14.47	-1.27
0.9 Dead+1.0 Wind 330 deg - No Ice	0.83	-0.61	-1.05	-22.68	14.27	-1.28
Dead+Wind 0 deg - Service	0.92	0.05	-0.49	-8.85	-0.36	-0.01
Dead+Wind 30 deg - Service	0.92	0.31	-0.45	-7.55	-6.10	0.47
Dead+Wind 60 deg - Service	0.92	0.49	-0.28	-3.61	-10.20	0.82
Dead+Wind 90 deg - Service	0.92	0.54	-0.05	1.91	-11.56	0.96
Dead+Wind 120 deg - Service	0.92	0.45	0.21	7.53	-9.82	0.83
Dead+Wind 150 deg - Service	0.92	0.23	0.40	11.74	-5.45	0.49
Dead+Wind 180 deg - Service	0.92	-0.05	0.49	13.42	0.39	0.01

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## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-0.92	0.00	0.00	0.92	0.00	0.000%
2	0.12	-1.11	-1.29	-0.12	1.11	1.29	0.000%
3	0.12	-0.83	-1.29	-0.12	0.83	1.29	0.000%
4	0.82	-1.11	-1.17	-0.82	1.11	1.17	0.000%
5	0.82	-0.83	-1.17	-0.82	0.83	1.17	0.000%
6	1.29	-1.11	-0.75	-1.29	1.11	0.75	0.000%
7	1.29	-0.83	-0.75	-1.29	0.83	0.75	0.000%
8	1.42	-1.11	-0.12	-1.42	1.11	0.12	0.000%
9	1.42	-0.83	-0.12	-1.42	0.83	0.12	0.000%
10	1.17	-1.11	0.54	-1.17	1.11	-0.54	0.000%
11	1.17	-0.83	0.54	-1.17	0.83	-0.54	0.000%
12	0.61	-1.11	1.05	-0.61	1.11	-1.05	0.000%
13	0.61	-0.83	1.05	-0.61	0.83	-1.05	0.000%
14	-0.12	-1.11	1.29	0.12	1.11	-1.29	0.000%
15	-0.12	-0.83	1.29	0.12	0.83	-1.29	0.000%
16	-0.82	-1.11	1.17	0.82	1.11	-1.17	0.000%
17	-0.82	-0.83	1.17	0.82	0.83	-1.17	0.000%
18	-1.29	-1.11	0.75	1.29	1.11	-0.75	0.000%
19	-1.29	-0.83	0.75	1.29	0.83	-0.75	0.000%
20	-1.42	-1.11	0.12	1.42	1.11	-0.12	0.000%
21	-1.42	-0.83	0.12	1.42	0.83	-0.12	0.000%
22	-1.17	-1.11	-0.54	1.17	1.11	0.54	0.000%
23	-1.17	-0.83	-0.54	1.17	0.83	0.54	0.000%
24	-0.61	-1.11	-1.05	0.61	1.11	1.05	0.000%
25	-0.61	-0.83	-1.05	0.61	0.83	1.05	0.000%
26	0.05	-0.92	-0.49	-0.05	0.92	0.49	0.000%
27	0.31	-0.92	-0.45	-0.31	0.92	0.45	0.000%
28	0.49	-0.92	-0.28	-0.49	0.92	0.28	0.000%
29	0.54	-0.92	-0.05	-0.54	0.92	0.05	0.000%
30	0.45	-0.92	0.21	-0.45	0.92	-0.21	0.000%
31	0.23	-0.92	0.40	-0.23	0.92	-0.40	0.000%
32	-0.05	-0.92	0.49	0.05	0.92	-0.49	0.000%
33	-0.31	-0.92	0.45	0.31	0.92	-0.45	0.000%
34	-0.49	-0.92	0.28	0.49	0.92	-0.28	0.000%
35	-0.54	-0.92	0.05	0.54	0.92	-0.05	0.000%
36	-0.45	-0.92	-0.21	0.45	0.92	0.21	0.000%
37	-0.23	-0.92	-0.40	0.23	0.92	0.40	0.000%

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## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00089756
4	Yes	6	0.00000001	0.00000001
5	Yes	5	0.00000001	0.00068668
6	Yes	6	0.00000001	0.00014255
7	Yes	6	0.00000001	0.00000001
8	Yes	6	0.00000001	0.00016487
9	Yes	6	0.00000001	0.00000001
10	Yes	6	0.00000001	0.00015231
11	Yes	6	0.00000001	0.00000001
12	Yes	6	0.00000001	0.00000001
13	Yes	5	0.00000001	0.00056685
14	Yes	5	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00099312
16	Yes	6	0.00000001	0.00000001
17	Yes	5	0.00000001	0.00053098
18	Yes	6	0.00000001	0.00014693
19	Yes	6	0.00000001	0.00000001
20	Yes	6	0.00000001	0.00016630
21	Yes	6	0.00000001	0.00000001
22	Yes	6	0.00000001	0.00014832
23	Yes	6	0.00000001	0.00000001
24	Yes	6	0.00000001	0.00000001
25	Yes	5	0.00000001	0.00071969
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00000001
28	Yes	5	0.00000001	0.00031726
29	Yes	5	0.00000001	0.00047381
30	Yes	5	0.00000001	0.00045948
31	Yes	5	0.00000001	0.00023935
32	Yes	4	0.00000001	0.00081161
33	Yes	5	0.00000001	0.00023321
34	Yes	5	0.00000001	0.00045648
35	Yes	5	0.00000001	0.00047841
36	Yes	5	0.00000001	0.00032187
37	Yes	5	0.00000001	0.00000001

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### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	30 - 0	12.543	32	4.2302	0.8988

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
29.50	Arm - Luminaire Clark County - 18'	32	12.334	4.1597	0.8848	Inf
27.00	Ericsson AIR 6701 w/ Shrouds	32	11.289	3.8072	0.8098	Inf
13.00	Disconnect	32	5.435	1.8331	0.3899	Inf
8.00	Sign - 36" x 36"	32	3.345	1.1281	0.2400	Inf

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	30 - 0	27.904	14	8.7976	2.3488

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
29.50	Arm - Luminaire Clark County - 18'	14	27.439	8.6509	2.3170	Inf
27.00	Ericsson AIR 6701 w/ Shrouds	14	25.113	7.9178	2.1206	Inf
13.00	Disconnect	14	12.092	3.8123	1.0210	Inf
8.00	Sign - 36" x 36"	14	7.441	2.3460	0.6283	Inf



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## Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
in		in						
1.0000	4	1.1250	28.63	2.664	30.819		Plate	0.95
			42.93	4.590	32.400			✓
			0.67	0.58	0.95			

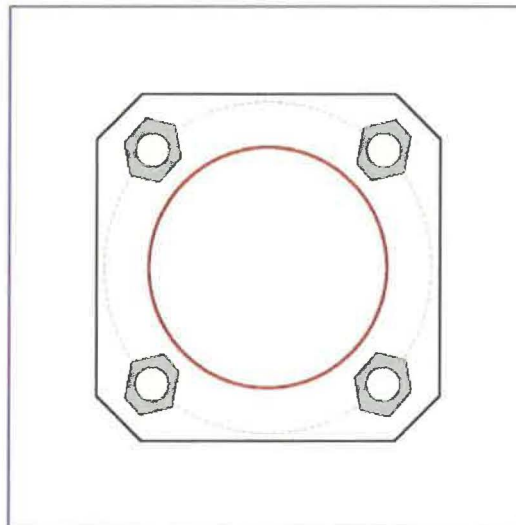
Alternative Base Plate & Anchor Bolt Design Methodology (Analysis Results Listed Above Extremely Conservative):

### Monopole Base Plate Connection

Site Info	
Site #	NV-S000000xxx
Site Name	Clark County
Client	Extenet Systems

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
$l_{br}$ (in)	4

Applied Loads	
Moment (kip-ft)	32.98
Axial Force (kips)	1.10
Shear Force (kips)	1.43



Connection Properties	Analysis Results		
<b>Anchor Rod Data</b>	<i>(units of kips, kip-in)</i>		
(4) 1-1/8" $\phi$ bolts (F1554-55 N; Fy=55 ksi, Fu=75 ksi) on 11" BC			
<b>Base Plate Data</b>			
11.5" W x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi); Cllp: 1.5 in			
<b>Stiffener Data</b>			
N/A			
<b>Pole Data</b>			
8" x 0.1793" round pole (A595-55; Fy=55 ksi, Fu=65 ksi)			
	<b>Anchor Rod Summary</b>	<b>Base Plate Summary</b>	
	Pu_t = 35.55	Max Stress (ksi):	28.69 (Flexural)
	Vu = 0.36	Allowable Stress (ksi):	32.4
	Mu = 0.93	Stress Rating:	88.5% Pass
	$\phi P_{n_t}$ = 42.92		
	$\phi V_n$ = 27.96		
	$\phi M_n$ = 11.75		
			82.4% Pass



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## Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	$\phi P_n$ K	Ratio $\frac{P_u}{\phi P_n}$
L1	30 - 28.5	TP8x4x0.1793	30.00	0.00	0.0	2.2648	-0.44	112.11	0.004
	28.5 - 27					2.3775	-0.45	117.69	0.004
	27 - 25.5					2.4901	-0.62	123.26	0.005
	25.5 - 24					2.6028	-0.64	128.84	0.005
	24 - 22.5					2.7154	-0.66	134.41	0.005
	22.5 - 21					2.8281	-0.68	139.99	0.005
	21 - 19.5					2.9408	-0.70	145.57	0.005
	19.5 - 18					3.0534	-0.73	151.14	0.005
	18 - 16.5					3.1661	-0.75	156.72	0.005
	16.5 - 15					3.2787	-0.78	162.30	0.005
	15 - 13.5					3.3914	-0.80	167.87	0.005
	13.5 - 12					3.5040	-0.84	173.45	0.005
	12 - 10.5					3.6167	-0.87	179.03	0.005
	10.5 - 9					3.7294	-0.90	184.60	0.005
	9 - 7.5					3.8420	-0.94	190.18	0.005
	7.5 - 6					3.9547	-0.96	195.76	0.005
	6 - 4.5					4.0673	-1.00	201.33	0.005
	4.5 - 3					4.1800	-1.03	206.91	0.005
	3 - 1.5					4.2927	-1.07	212.49	0.005
	1.5 - 0					4.4053	-1.10	218.06	0.005

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	$\phi M_{ux}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> kip-ft	$\phi M_{uy}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	30 - 28.5	TP8x4x0.1793	4.21	11.96	0.352	0.00	11.96	0.000
	28.5 - 27		5.06	13.18	0.384	0.00	13.18	0.000
	27 - 25.5		6.26	14.46	0.433	0.00	14.46	0.000
	25.5 - 24		7.49	15.80	0.474	0.00	15.80	0.000
	24 - 22.5		8.74	17.20	0.508	0.00	17.20	0.000
	22.5 - 21		10.02	18.65	0.537	0.00	18.65	0.000
	21 - 19.5		11.33	20.17	0.562	0.00	20.17	0.000
	19.5 - 18		12.66	21.74	0.582	0.00	21.74	0.000
	18 - 16.5		14.02	23.37	0.600	0.00	23.37	0.000
	16.5 - 15		15.42	25.07	0.615	0.00	25.07	0.000
	15 - 13.5		16.84	26.82	0.628	0.00	26.82	0.000
	13.5 - 12		18.31	28.63	0.640	0.00	28.63	0.000
	12 - 10.5		19.83	30.50	0.650	0.00	30.50	0.000
	10.5 - 9		21.37	31.95	0.669	0.00	31.95	0.000
	9 - 7.5		23.00	33.72	0.682	0.00	33.72	0.000
	7.5 - 6		24.75	35.53	0.696	0.00	35.53	0.000
	6 - 4.5		26.75	37.39	0.715	0.00	37.39	0.000
	4.5 - 3		28.78	39.30	0.732	0.00	39.30	0.000
	3 - 1.5		30.86	41.25	0.748	0.00	41.25	0.000
	1.5 - 0		32.98	43.25	0.762	0.00	43.25	0.000

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### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	30 - 28.5	TP8x4x0.1793	0.56	33.63	0.017	0.00	11.89	0.000
	28.5 - 27		0.58	35.31	0.016	0.00	13.10	0.000
	27 - 25.5		0.81	36.98	0.022	0.00	14.37	0.000
	25.5 - 24		0.83	38.65	0.021	0.00	15.70	0.000
	24 - 22.5		0.85	40.32	0.021	0.00	17.09	0.000
	22.5 - 21		0.86	42.00	0.021	0.00	18.54	0.000
	21 - 19.5		0.88	43.67	0.020	0.00	20.04	0.000
	19.5 - 18		0.90	45.34	0.020	0.00	21.61	0.000
	18 - 16.5		0.92	47.02	0.020	0.00	23.23	0.000
	16.5 - 15		0.94	48.69	0.019	0.00	24.92	0.000
	15 - 13.5		0.96	50.36	0.019	0.00	26.66	0.000
	13.5 - 12		1.00	52.03	0.019	0.01	28.46	0.000
	12 - 10.5		1.02	53.71	0.019	0.01	30.32	0.000
	10.5 - 9		1.04	55.38	0.019	0.01	32.24	0.000
	9 - 7.5		1.17	57.05	0.021	0.03	34.21	0.001
	7.5 - 6		1.34	58.73	0.023	1.19	36.25	0.033
	6 - 4.5		1.36	60.40	0.023	1.18	38.34	0.031
	4.5 - 3		1.38	62.07	0.022	1.18	40.50	0.029
	3 - 1.5		1.41	63.75	0.022	1.18	42.71	0.028
	1.5 - 0		1.43	65.42	0.022	1.18	44.98	0.026

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### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	30 - 28.5	0.004	0.352	0.000	0.017	0.000	0.356	1.000	4.8.2 ✓
	28.5 - 27	0.004	0.384	0.000	0.016	0.000	0.388	1.000	4.8.2 ✓
	27 - 25.5	0.005	0.433	0.000	0.022	0.000	0.439	1.000	4.8.2 ✓
	25.5 - 24	0.005	0.474	0.000	0.021	0.000	0.480	1.000	4.8.2 ✓
	24 - 22.5	0.005	0.508	0.000	0.021	0.000	0.514	1.000	4.8.2 ✓
	22.5 - 21	0.005	0.537	0.000	0.021	0.000	0.543	1.000	4.8.2 ✓
	21 - 19.5	0.005	0.562	0.000	0.020	0.000	0.567	1.000	4.8.2 ✓
	19.5 - 18	0.005	0.582	0.000	0.020	0.000	0.588	1.000	4.8.2 ✓
	18 - 16.5	0.005	0.600	0.000	0.020	0.000	0.605	1.000	4.8.2 ✓
	16.5 - 15	0.005	0.615	0.000	0.019	0.000	0.620	1.000	4.8.2 ✓
	15 - 13.5	0.005	0.628	0.000	0.019	0.000	0.633	1.000	4.8.2 ✓
	13.5 - 12	0.005	0.640	0.000	0.019	0.000	0.645	1.000	4.8.2 ✓
	12 - 10.5	0.005	0.650	0.000	0.019	0.000	0.655	1.000	4.8.2 ✓
	10.5 - 9	0.005	0.669	0.000	0.019	0.000	0.674	1.000	4.8.2 ✓
	9 - 7.5	0.005	0.682	0.000	0.021	0.001	0.688	1.000	4.8.2 ✓
	7.5 - 6	0.005	0.696	0.000	0.023	0.033	0.704	1.000	4.8.2 ✓
	6 - 4.5	0.005	0.715	0.000	0.023	0.031	0.723	1.000	4.8.2 ✓
	4.5 - 3	0.005	0.732	0.000	0.022	0.029	0.740	1.000	4.8.2 ✓
	3 - 1.5	0.005	0.748	0.000	0.022	0.028	0.756	1.000	4.8.2 ✓
	1.5 - 0	0.005	0.762	0.000	0.022	0.026	0.770	1.000	4.8.2 ✓

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## Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	30 - 0	Pole	TP8x4x0.1793	1	-1.10	218.06	77.0	Pass
							Summary	
							Pole (L1)	77.0 Pass
							Base Plate	95.3 Pass
							<b>RATING =</b>	<b>95.3 Pass</b>

Program Version 8.1.1.0 - 6/3/2021 File:H:/My Drive/zz King Communications/Nevada/Pole Type\_GeoTowers Replacement 7 Gauge - 30-Foot Light Pole/Reports/Calculations/Pole Analysis\_R1 220919/30-Foot 7 Gauge Light Pole\_R1 220919.eri

GeoStructural LLC

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 \* CAISSON - Pier Foundations Analysis and Design - Copyright Power Line Systems, Inc.  
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Project Title: GeoStructural LLC

Project Notes: Extenet Systems - Small Cell Replacement Pole

Calculation Method: Full 8CD

## \*\*\*\*\* I N P U T D A T A

**Pier Properties**

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
2.50	0.50	4.50	60.00

**Soil Properties**

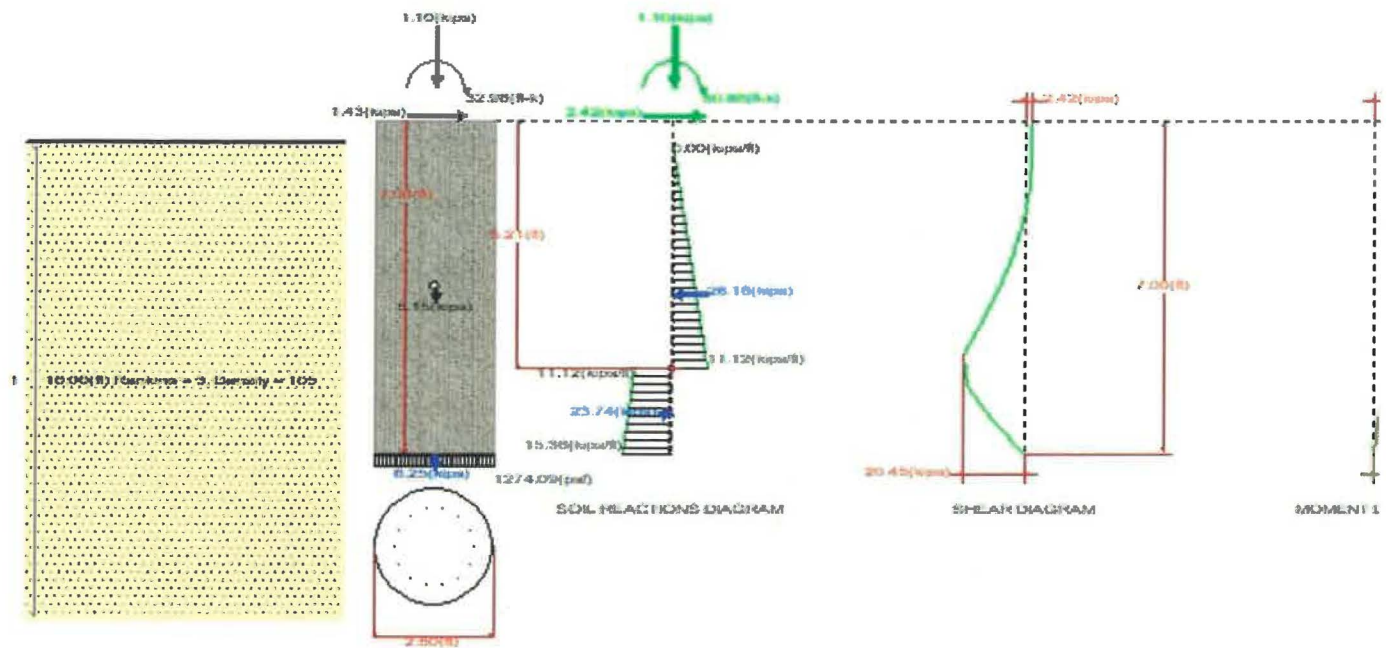
Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Sand	10.00	0.00	105.0		3.000	30.00

**Design (Factored) Loads at Top of Pier**

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
33.0	1.1	1.43	1.50

## \*\*\*\*\* R E S U L T S





#### Calculated Pier Properties

Length (ft)	Weight (kips)	Pressure Due To Axial Load (psf)	Pressure Due To Weight (psf)	Total End-Bearing Pressure (psf)
7.000	5.154	224.1	1050.0	1274.1

#### Ultimate Resisting Forces Along Pier

Type Force	Distance of Top of Layer Arm to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft <sup>3</sup> )	CU (psf)	KP
(kips)	(ft)				
Sand	0.50	4.71	105.0	3.000	
26.16	3.64				
Sand	5.21	1.79	105.0	3.000	-
23.74	6.15				

#### Shear and Moments Along Pier

Distance below Shear Top of Pier Factor)	Distance below Top of Pier (without Safety Factor) (ft)	Moment (with Safety Factor) (ft-k)	Shear (with Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
(kips)				

	0.00		2.4	50.9	
1.6		33.9			
	0.70		2.4	52.6	
1.6		35.0			
	1.40		1.5	54.0	
1.0		36.0			
	2.10		-0.6	54.3	-
0.4		36.2			
	2.80		-3.8	52.9	-
2.6		35.2			
	3.50		-8.2	48.7	-
5.5		32.5			
	4.20		-13.8	41.1	-
9.2		27.4			
	4.90		-20.5	29.2	-
13.6		19.5			
	5.60		-19.2	14.0	-
12.8		9.3			
	6.30		-10.2	3.6	-
6.8		2.4			
	7.00		0.0	-0.0	
0.0		-0.0			

#### Reinforcement and Capacity

Total Reinforcement Percent	Reinforcement Area (in^2)	Usable Axial Capacity (kips)	Usable Moment Capacity (ft-k)
0.38	2.69	1.1	147.3

#### US Standard Re-Bars (Select one of the following)

Quantity	Name	Area (in^2)	Diameter (in)	Spacing (in)
14	#4	0.20	0.500	4.49
9	#5	0.31	0.625	6.98
7	#6	0.44	0.750	8.98
5	#7	0.60	0.875	12.57
4	#8	0.79	1.000	15.71
3	#9	1.00	1.128	20.94
3	#10	1.27	1.270	20.94
2	#11	1.56	1.410	31.42
2	#14	2.25	1.693	31.42

## Drilled Pier Foundation

BU # :	Extenel Systems
Site Name:	NV-S000000xxx
Order Number:	Clark County
TIA-222 Revision:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	32.97	
Axial Force (kips)	1.11	
Shear Force (kips)	1.43	

Material Properties		
Concrete Strength, f'c:	4.5	ksi
Rebar Strength, Fy:	60	ksi
Tie Yield Strength, Fyt:	40	ksi

Pier Design Data		
Depth	7	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 7' below grade		
Pier Diameter	2.5	ft
Rebar Quantity	8	
Rebar Size	6	
Clear Cover to Ties	3	in
Tie Size	4	
Tie Spacing	12	in

Rebar & Pier Options

Embedded Pole Inputs

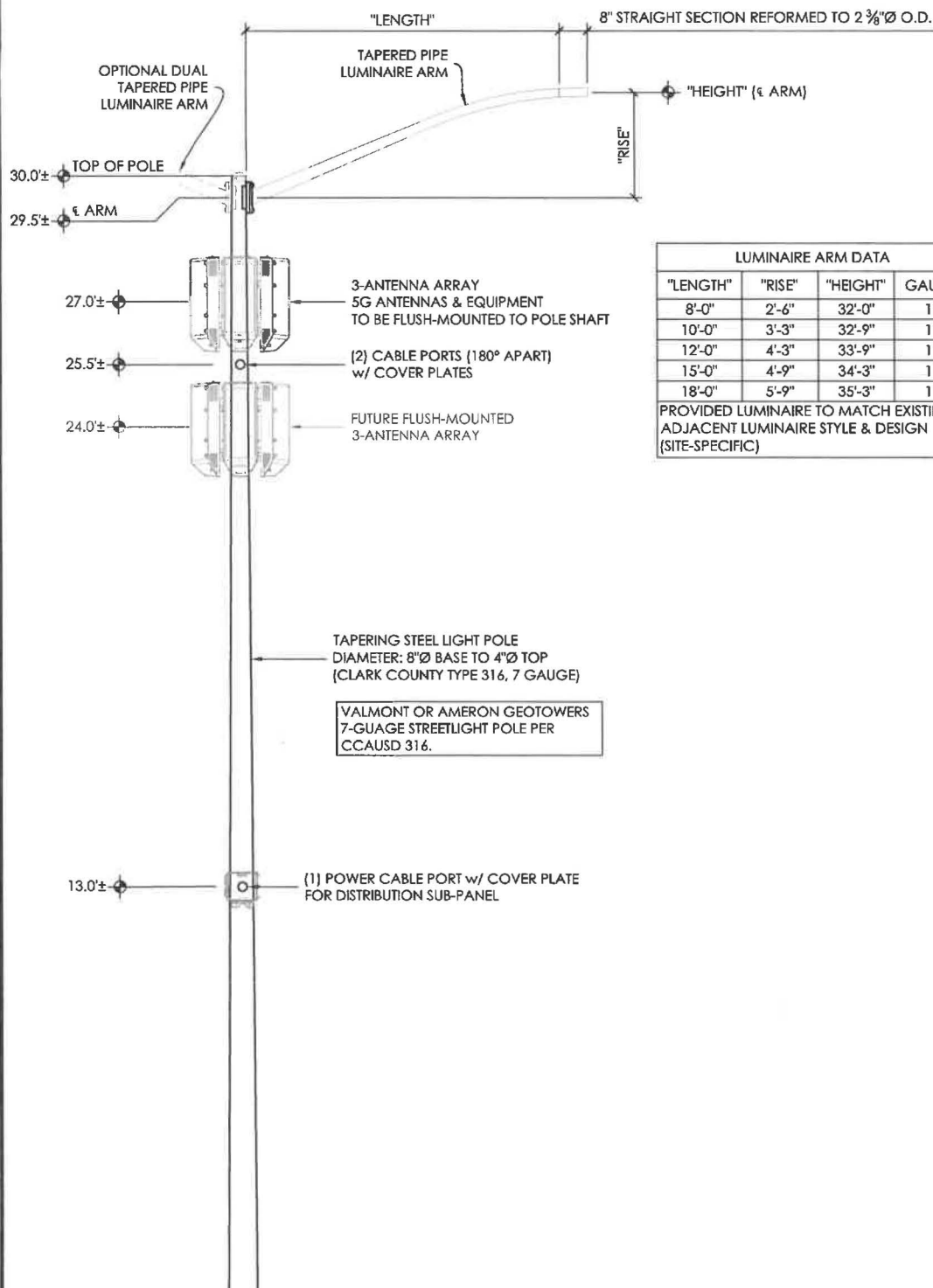
Belled Pier Inputs

Analysis Results		
Soil Lateral Check	Compression	Uplift
D <sub>yo</sub> (ft from TOC)	2.04	-
Soil Safety Factor	1.93	-
Max Moment (kip-ft)	35.20	-
Rating	68.9%	-
Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	12.17	-
End Bearing (kips)	11.04	-
Weight of Concrete (kips)	6.63	-
Total Capacity (kips)	23.22	-
Axial (kips)	7.74	-
Rating	33.3%	-
Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	2.04	-
Critical Moment (kip-ft)	35.20	-
Critical Moment Capacity	198.79	-
Rating	17.7%	-
Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	5.57	-
Critical Shear (kip)	14.00	-
Critical Shear Capacity	96.78	-
Rating	14.5%	-
Structural Foundation Rating	17.7%	
Soil Interaction Rating	68.9%	

Check Limitation	
Apply TIA-222-H Section 15.5:	<input type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth		N/A		# of Layers		2								
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	V <sub>soil</sub> (pcf)	V <sub>concrete</sub> (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	1	1	105	150	0	30	0.049	0.049	0.00	0.00		10	Cohesionless
2	1	7	6	105	150	0	30	0.344	0.344			3	10	Cohesionless

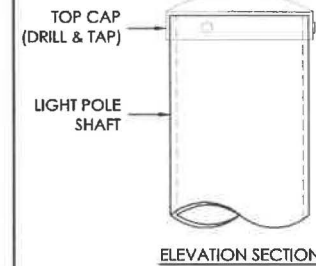


LUMINAIRE ARM DATA			
"LENGTH"	"RISE"	"HEIGHT"	GAUGE
8'-0"	2'-6"	32'-0"	11
10'-0"	3'-3"	32'-9"	11
12'-0"	4'-3"	33'-9"	11
15'-0"	4'-9"	34'-3"	11
18'-0"	5'-9"	35'-3"	11

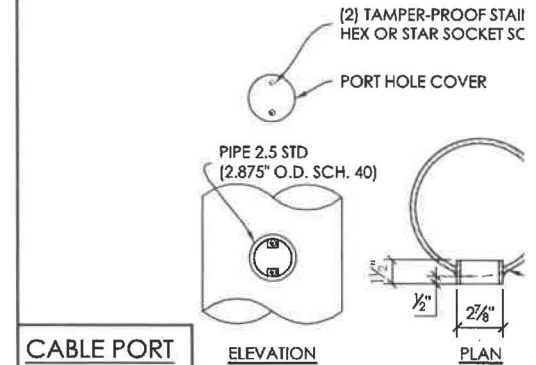
PROVIDED LUMINAIRE TO MATCH EXISTING ADJACENT LUMINAIRE STYLE & DESIGN (SITE-SPECIFIC)

## GENERAL NOTES

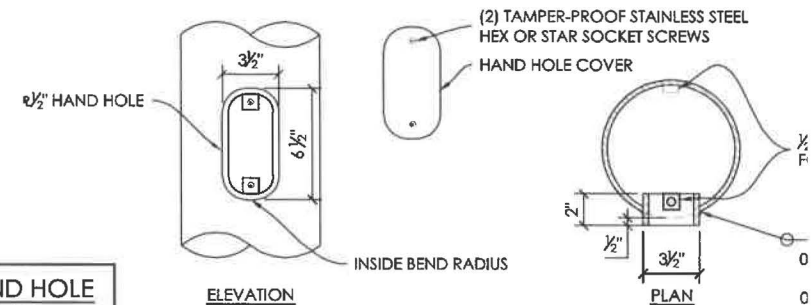
- STRUCTURAL DESIGN ACCEPTANCE IS VALID ONLY FOR POLE FOUNDATIONS INSTALLED ON LEVELED & FOUNDATION INSTALLED WITHIN (5 ft) FROM A SLOPE WILL REQUIRE SLOPE STABILITY ANALYSIS AND C, A SEPARATE STRUCTURAL REVIEW AND FEE. GEOTECHNICAL WILL BE NEEDED FOR THE REVIEW.
- SIDEWALKS MUST BE UNOBSTRUCTED AND HAVE AN ACCESS OF AT LEAST 4.0 ft FROM BACK OF CURB.
- NEC CODE TO BE FOLLOWED.
- WORK TO COMPLY WITH CLARK COUNTY STANDARD SPECIFICATIONS DRAWINGS #: 313, 316, 320, 321 OTHER APPLICABLE STANDARD DRAWINGS. STANDARDS CAN BE FOUND AT: [http://rtcws.rtcnv.com/mpo/streets/v4\\_streets\\_drawings.cfm](http://rtcws.rtcnv.com/mpo/streets/v4_streets_drawings.cfm)



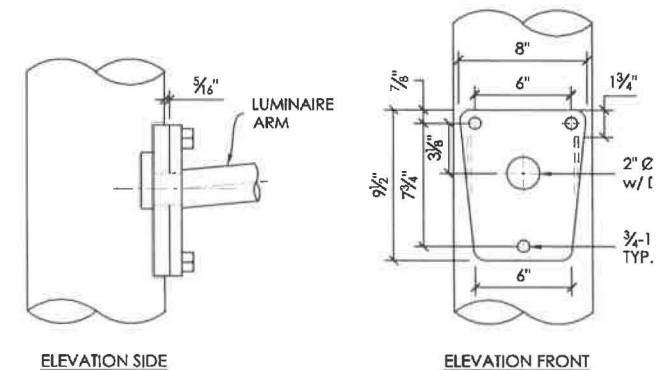
TOP OF POLE  
N.T.S.



CABLE PORT  
N.T.S.



HAND HOLE  
N.T.S.



## CONCRETE NOTES

1. PRIOR TO EXCAVATION, CONTRACTOR TO CHECK THE AREA FOR UNDERGROUND FACILITIES.
2. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4,500 PSI @ 28 DAYS. CONCRETE SLUMP SHALL BE BETWEEN 1" TO 3" WITH TYPE V CEMENT.
3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
4. CONTRACTOR SHALL PROVIDE CLEARANCE FOR ALL REBAR OF 3" UNLESS NOTED OTHERWISE.
5. ALL REBAR SHALL BE SUPPORTED ABOVE SOIL SURFACE WITH ACI-APPROVED METAL REBAR CHAIRS.
6. STEEL REINFORCEMENT AND CONCRETE SHOULD BE PLACED IMMEDIATELY UPON COMPLETION OF THE FOUNDATION EXCAVATION. CONTRACTOR SHALL NOT ALLOW A COLD JOINT TO FORM IN THE CONCRETE. PORTION AT GRADE SHOULD BE FORMED & FINISHED. TEMPORARY CASING MAY BE REQUIRED TO PREVENT CAVING PRIOR TO CONCRETE PLACEMENT.

**NOTE:**  
ANCHOR RODS SHALL BE 1 1/8" Ø x 40" (MIN.) x 4" FOR 7-GAUGE POLES IN ACCORDANCE WITH CLARK COUNTY STANDARD, DRAWING #: 313.

CONTRACTOR **MUST** VERIFY ANCHOR ROD ALIGNMENT IS PARALLEL WITH RESPECT TO THE STREET

4" CLR. @ VERTICAL REINFORCING, TYP.

SECTION

(4) 1 1/8" Ø ANCHOR RODS ON AN 11" Ø BOLT CIRCLE w/ BOTTOM NUT & TOP NUT

(8) #6 VERTICALS, EQUALLY SPACED

30" Ø REINFORCED CONCRETE CAISSON FOUNDATION

#4 TIES w/ STAGGERED 3" END HOOKS

OPENING IN BASE PLATE (SEE CONDUIT PLAN)

(4) 1 1/8" Ø ANCHOR RODS, 4" HOOK & 36" MIN. EMBED w/ DOUBLE NUTS & WASHERS

HAND HOLE (FACE AWAY FROM ONCOMING TRAFFIC)  
TWO-PIECE GALVANIZED BASE COVER  
HIGH-STRENGTH NON-SHRINK GROUT CAP (f'c = 8,000 psi)

MIN. ANCHOR ROD PROJECTION  
10" (FOR 4" GROUT CAP)  
12" (FOR 6" GROUT CAP)

TOP OF SIDEWALK/GROUT CAP  
TOP OF CAISSON

FOUNDATION DESIGN BASED ON AN UNRESTRAINED CONDITION.

FOUNDATION DESIGNED FOR POLE OFFSET FROM CENTERLINE OF FOUNDATION (ONLY ALLOWED AT SITES REQUIRING CLEARANCES). ANCHOR RODS MUST BE SET WITHIN TIES & VERTICAL REBAR CAGE.

4" MAXIMUM POLE OFFSET  
FOUNDATION  
POLE



## GROUNDING & CONDUIT NOTES

1. CONTINUOUS BARE COPPER GROUNDING CONDUCTOR SHALL BE LOOPED AROUND ANCHOR RODS ONE (1) CONNECTED TO EACH ANCHOR ROD BEFORE CONTINUING DOWN TO THE POLE GROUNDING PLATE PER THE VEGAS AND/OR CLARK COUNTY.
2. FOR CARRIER EQUIPMENT GROUNDING, SEE CARRIER APPROVED CONSTRUCTION DRAWINGS (BY OTHERS).
3. EACH CONDUCTOR SHALL HAVE A MINIMUM OF 18" OF SLACK.

**NOTE:**  
CONTRACTOR SHALL VERIFY ALL GROUNDING AND CONDUIT REQUIREMENTS PER THE CITY OF LAS VEGAS, CLARK COUNTY AND THE CARRIER.

(2) 2" Ø CONDUIT FOR CLV/CLARK COUNTY

(4) 2" Ø CONDUIT FOR CARRIER(S)

HEX HEAD NON-CORROSIVE CAP SCREW WITH FLAT WASHER WITH A SINGLE-STRAND BARE #4 AWG COPPER GROUNDING CONDUCTOR

1/2"-13 NC SQUARE NUT FOR GROUNDING (2) OPTIONS FOR ATTACHMENT LOCATION

#8 GREEN THWN BONDING CONDUCTOR CONNECTED TO POLE GROUND WITH SPLIT-BOLT CONNECTOR

(4) BRONZE ANCHOR ROD GROUNDING CONNECTORS, (1) PER ANCHOR ROD (UL LISTED FOR UNDERGROUND USE) FOR #4 WIRE

CONTINUOUS #4 AWG SINGLE-STRAND BARE COPPER WIRE LOOP AROUND EACH ANCHOR ROD ONE TIME AND CONNECTED TO EACH ANCHOR ROD, THEN CONNECTED TO FOUNDATION REINFORCING MAT/CAGE BEFORE CONTINUING DOWN TO THE POLE GROUNDING PLATE

15# FELT (2 LAYERS)

GROUNDING - ELEVATION

CONDUIT LAS VEGAS COUNTY (MIN. 18")

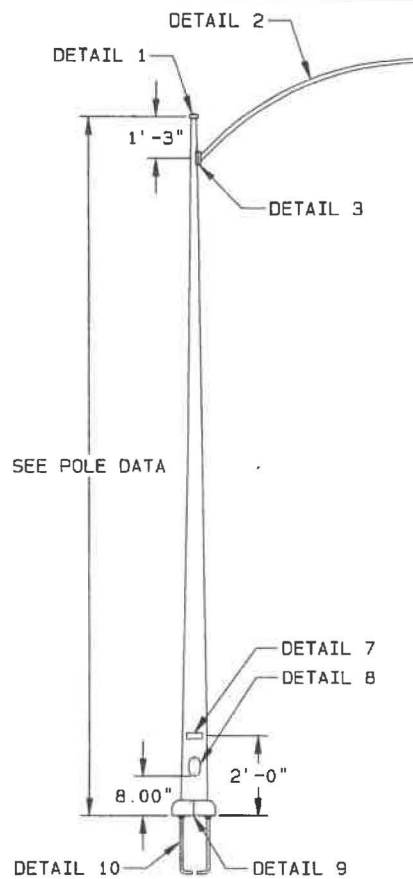
**GROUNDING**  
N.T.S.

## STANDARD SETBACK NOTES

1. DESIGN IS VALID ONLY FOR FOUNDATIONS INSTALLED ON LEVELED SURFACES. ANY FOUNDATION INSTALLED FEET OF A SLOPE WILL REQUIRE A SLOPE STABILITY ANALYSIS WITH A SEPARATE STRUCTURAL REVIEW AND FEE. EXPLORATION WILL ALSO BE REQUIRED.
2. SIDEWALKS MUST BE UNOBSTRUCTED AND HAVE AN ACCESS OF AT LEAST 48 INCHES FROM BACK OF CURB.
3. FOUNDATIONS SHALL BE LOCATED OUTSIDE OF THE SIDEWALK WHENEVER FEASIBLE. A CLEARANCE OF 48 INCHES MAINTAINED ON SIDEWALK TO COMPLY WITH THE AMERICANS WITH DISABILITIES ACT.  
**\*EXCEPTION:**  
THE CLEAR WIDTH SHALL BE PERMITTED TO BE REDUCED TO 32 INCHES MINIMUM FOR A LENGTH OF 24" MAXIMUM THAT THE REDUCED WIDTH SEGMENTS ARE SEPARATED BY SEGMENTS THAT ARE 48 INCHES LONG MINIMUM A MINIMUM.
4. LIGHT POLE, BASE PLATE, ANCHOR RODS AND FOUNDATION SHALL BE PLACED AND INSTALLED IN ACCORDANCE WITH COUNTY UNIFORM STANDARD DRAWING NO. 320. CONTRACTOR SHALL CONSULT STANDARD DRAWING NO. 320 CONSTRUCTION.

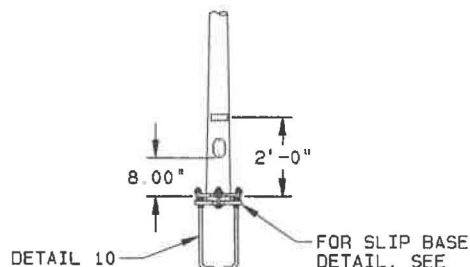






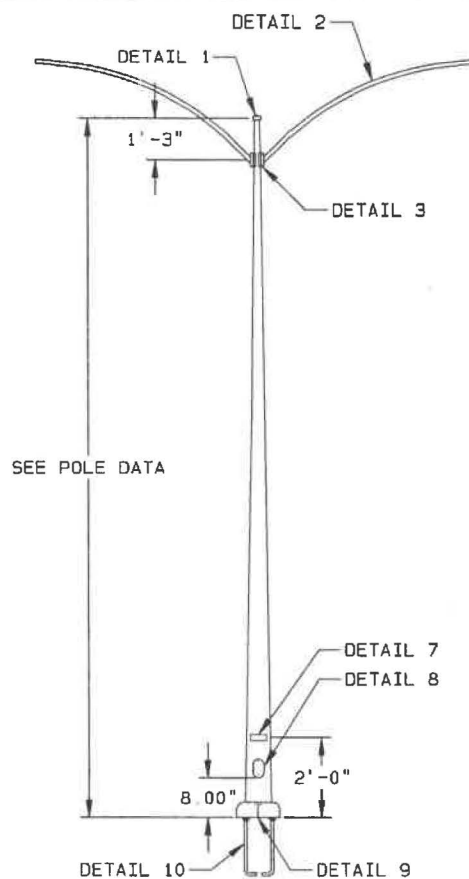
TYPE 314

TYPE 314 POLE IS EQUIVALENT TO  
OBSOLETE 400.1 DESIGN. OBSOLETE  
623L.0030 DESIGN AND 309 DESIGN.



TYPE 315

NOTE:  
BOTH POLES ARE DESIGNED  
WITH SAFETY BASES.



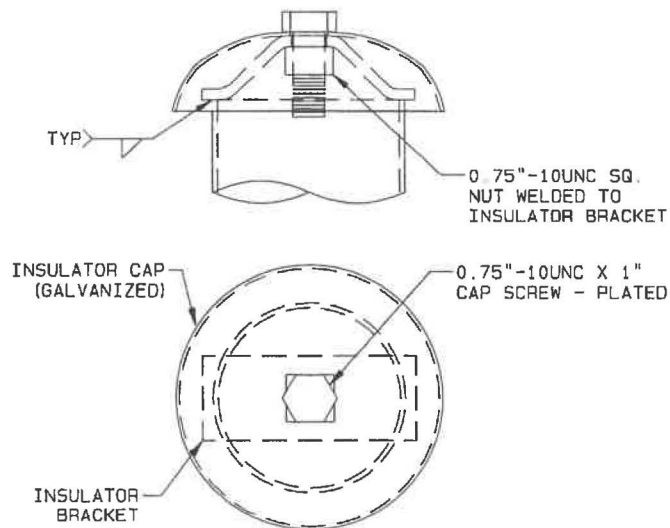
TYPE 316

TYPE 314 AND 315 LIGHTING STANDARD

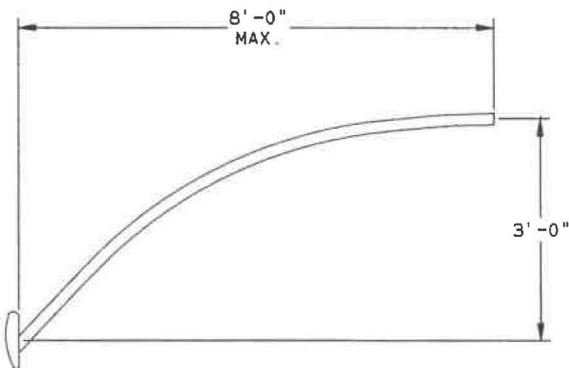
POLE SCHEDULE

QTY.	POLE TYPE	POLE TUBE				POLE BASE				ANCHOR BOLT				LUMINAIRE ARMS  NOMINAL SPAN LENGTH
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE / SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	
	314	8.00	3.80	30.00	11	11.50	11.00	1.000	1.25 X 1.75	1.00	36.00	4.00	8.00	8
	314	8.00	3.80	30.00	11	SEE SHEET 3 OF 3				1.00	36.00	4.00	8.00	8
	315	8.00	3.80	30.00	11	11.50	11.00	1.000	1.25 X 1.75	1.00	36.00	4.00	8.00	8
	315	8.00	3.80	30.00	11	SEE SHEET 3 OF 3				1.00	36.00	4.00	8.00	8
	316	8.00	3.80	30.00	11	11.50	11.00	1.000	1.25 X 1.75	1.00	36.00	4.00	8.00	8, 10, 12, 15
	316	8.00	3.80	30.00	11	SEE SHEET 3 OF 3				1.00	36.00	4.00	8.00	8, 10, 12, 15

COMPONENT
POLE SHAFT
BASE PLATE
LUMINAIRE ARM SHAFT (314 & 315)
LUMINAIRE ARM SHAFT (316 & 317)
SIMPLEX PLATES (316 & 317)
GUSSET PLATES (316 & 317)
ANCHOR BOLTS
ARM CONNECTION BOLTS
GALVANIZE - HARDWARE
LUMIN



DETAIL 1 POLE TOP WIRE ENTRANCE

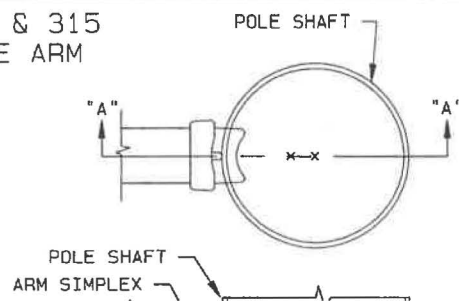


ARM TUBE: 2.375\" O.D. X 0.154\" WALL

TYPE 314 & 315 LUMINAIRE ARM

DETAIL 2 LUMINAIRE ARM

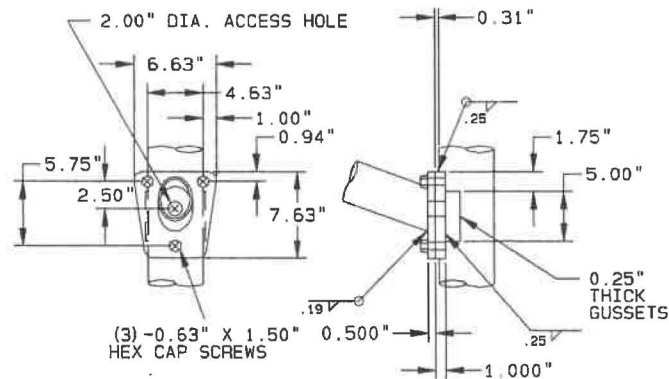
TYPE 314 & 315  
LUMINAIRE ARM



8.00\" NOMINAL STRAIGHT SECTION  
REFORMED TO 2 38\" O.D.

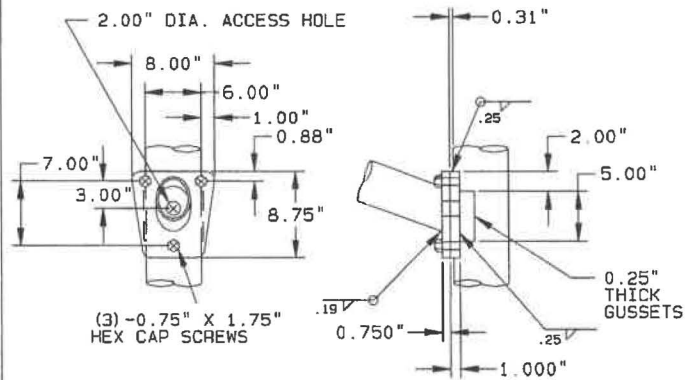


DETAIL 4 LUMINAIRE ARM END



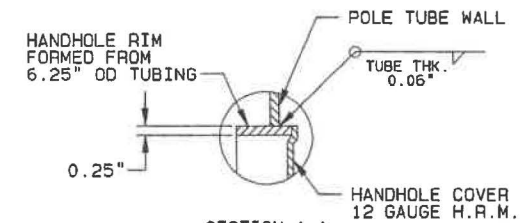
8', 10', 12' LUMINAIRE ARMS  
15' LUMINAIRE ARM (TYPE 316)

DETAIL 5 LUMINAIRE ARM ATTACHMENT

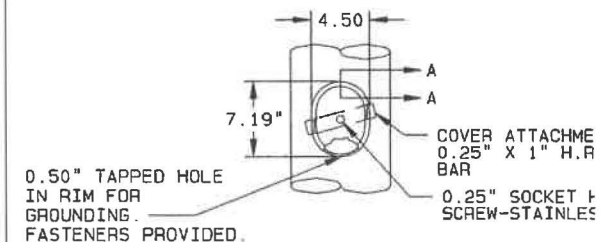


15' LUMINAIRE ARM (TYPE 317)  
18' LUMINAIRE ARM

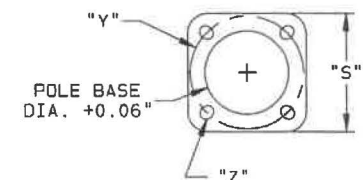
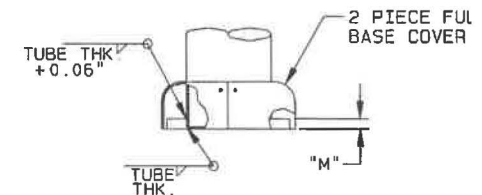
DETAIL 6 LUMINAIRE ARM ATTACHMENT



SECTION A-A

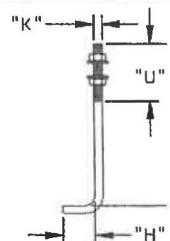


DETAIL 8 HANDHOLE



DETAIL 9 POLE BASE

(4) -ANCHOR BOLTS WITH  
(2) HEX NUTS AND (2) WASHERS  
PER BOLT.  
FINISH: FULLY GALVANIZED.



DETAIL 10 ANCHOR BOLT

1"-8UNC X 6.00" LONG  
BOLT WITH 1 HEX NUT,  
1 FLAT WASHER, AND  
2 PLATE WASHERS  
(TYP. 4 PLACES)

POLE BASE PLATE

28 GA. KEEPER PLATE

SLIP BASE ASSEMBLY

GALVANIZED SHEET METAL

GALVANIZED SHEET METAL TO  
KEEP GROUT FROM SLIP BOLTS

ANCHOR BOLT

BREAKAWAY BASE

WALL THK

19

1.000"

1.50"

1.000"

1.50"

0.53"  
RADIUS

1'-1" DIA.  
BOLT CIRCLE

POLE BASE PLATE

1.13" DIA. BOLT  
HOLE (4 REQ'D)

0.53" RADIUS

11.50"

A

45°

45°

1'-1.50"