

LEASE FOR ANTENNA COLLOCATION AND FACILITIES SITE

Between

**INCORPORATED COUNTY OF LOS ALAMOS,
an incorporated county of the State of New Mexico,
as Landlord**

and

**COMMNET WIRELESS, LLC,
a Delaware limited liability company,
as Tenant**

Contents

1. DEFINITIONS AND CERTAIN BASIC PROVISIONS	1
2. LEASE OF PREMISES.....	3
3. RENT AND SECURITY DEPOSIT	4
4. EARLY TERMINATION	5
5. USE AND CARE OF PREMISES	6
6. MAINTENANCE AND REPAIR OF PREMISES	9
7. LEASEHOLD IMPROVEMENTS / ALTERATIONS.....	10
8. ACCESS	11
9. UTILITIES.....	12
10. INDEMNITY AND PUBLIC LIABILITY INSURANCE	13
11. EMINENT DOMAIN	166
12. CASUALTY	166
13. ASSIGNMENT AND SUBLETTING	177
14. TAXES AND ASSESSMENTS	199
15. DEFAULT BY TENANT AND REMEDIES	19
16. HOLDING OVER	233
17. NOTICES.....	233
18. MISCELLANEOUS	243
EXHIBIT A. LAND.....	1
EXHIBIT B. PREMISES.....	1
EXHIBIT C. OTHER COMMUNICATION USES.....	1

**INCORPORATED COUNTY OF LOS ALAMOS, NEW MEXICO
LEASE FOR ANTENNA COLLOCATION AND FACILITIES SITE**

This LEASE FOR ANTENNA COLLOCATION AND FACILITIES SITE ("Lease") is entered into as of _____, by and between the Incorporated County of Los Alamos, New Mexico, a political subdivision of the State of New Mexico, ("Landlord") and Commnet Wireless, LLC, a Delaware limited liability company ("Tenant").

1. DEFINITIONS AND CERTAIN BASIC PROVISIONS

1.1 The following definitions and basic provisions apply to this Lease:

1.1.1. Facility: The water tank known as the North Mesa Water Tank and all related equipment located on that certain parcel of property shown on the attached **Exhibit "A"** (Legal Description) incorporated herein by reference, also referred to herein as the "**Land**," owned by Landlord.

1.1.2. Effective Date: _____

1.1.3. Lease Term: The 60-month period (the "**Primary Term**") commencing on the Commencement Date. The Commencement Date is the first (1st) day of the month following the date this Lease is executed by the parties or the first (1st) day of the month following the date Tenant is granted a building permit by the governmental agency charged with issuing such permits, whichever event occurs last. The term "**Lease Term**," as used herein, shall include all valid renewals or extensions of the term of this Lease unless the context clearly indicates to the contrary.

1.1.4. Lease Year: The first twelve (12) calendar months of the term of this Lease shall constitute the first Lease Year of this Lease. The second Lease Year and each succeeding Lease Year shall consist of the twelve (12) months immediately following the expiration of the immediately preceding Lease Year.

1.1.5. Other Communication Uses: Those uses described on the attached **Exhibit "C"**, incorporated herein by reference.

1.1.6. Permitted Use: Tenant shall use the Premises only for the purpose of installing, maintaining, repairing, replacing, removing and operating certain communications equipment, which equipment is more particularly described in the attached **Exhibit "B"** ("**Tenant's Equipment**") and uses incidental thereto to provide communications services, and for no other purpose.

1.1.7. Premises: The portion of the Land and the Facility hereby leased to Tenant, as shown on the attached **Exhibit "B"**, incorporated herein by reference, containing approximately

two hundred forty-seven (247) square feet and space on the Facility at the seventy-five (75) foot above ground level.

1.1.8. Rent: Payment of Lease fees shall commence on the Effective Date. For the Primary Term, Tenant shall pay annual rental in the amount of NINE THOUSAND SEVENTY-FIVE DOLLARS AND FORTY-EIGHT CENTS (\$9,075.48 US) (hereafter “Rent” or “Lease Payment”) in advance, to Landlord’s Address stated below, or to such other person, firm or place as the Landlord may, from time to time, designate in writing at least thirty (30) days in advance of any Lease Payment date. Rent payments shall increase for any Renewal Term as provided in this Lease. Rent is payable in advance of or on the Rent Effective Date and on or before the same day of each succeeding calendar year throughout the Lease Term. Rent for any partial year upon the termination of the Lease Term shall be prorated based on a 365-day year. Landlord shall provide, upon request by Tenant, a properly executed W-9 showing the taxpayer ID of the Landlord.

1.1.9. Security Deposit: No security deposit shall be required unless Tenant fails to pay annual amount due as provided in this Lease.

1.1.10. Tenant's Address: For notices under this Lease, the Tenant’s address is:

Commnet Wireless, LLC
Attn: Property Management
1562 Park Street
Castle Rock, Colorado 80109

With a Copy To:
Commnet Wireless, LLC
Attn: Lease Administration
400 Northridge Road, Suite 325
Atlanta, Georgia 30350

1.1.11. Landlord’s Address: For notices under this Lease, the Landlord’s address is:

Utilities Manager
Incorporated County of Los Alamos
Department of Public Utilities
1000 Central Avenue, Suite 130
Los Alamos, New Mexico 87544

With Copy to:
Incorporated County of Los Alamos
County Attorney
1000 Central Avenue, Suite 340
Los Alamos, New Mexico 87544

1.1.12. Governing Body: The Governing Body of the Landlord is the County Council.

2. LEASE OF PREMISES

2.1. Landlord, in consideration of the Rent and other charges to be paid and the other covenants and agreements to be performed by Tenant, hereby demises and leases to Tenant, and Tenant hereby takes from Landlord, the Premises commencing on the Effective Date and ending on the last day of the Lease Term unless sooner terminated as herein provided. Tenant acknowledges and agrees that Tenant's use of space on the Facility is exclusive. Tenant may install and maintain transmission and utility wires, cables, conduits and pipes on the Land necessary to carry out the Permitted Use, provided that Tenant obtains Landlord's prior written consent of the specific location of all such installations, such consent not to be unreasonably withheld.

2.2 Tenant shall have the right to extend this Lease for five (5) periods of five (5) years each (the "**Renewal Terms**") by giving written notice of renewal to Landlord at least ninety (90) days prior to the expiration of the then-current Lease Term. Each Renewal Term shall be on the same terms and conditions set forth in this Lease, except that upon the first anniversary of the Effective Date and upon each subsequent anniversary of the Effective Date during the Primary Term and during any Renewal Terms, rental payments for each year shall be increased by three percent (3%) over the annual rental payment for the immediately preceding year.

2.3 The Premises are delivered to Tenant and are being leased "AS IS" and "WITH ALL FAULTS," and Landlord makes no representation or warranty of any kind, expressed or implied, with respect to the condition of the Premises (including habitability, fitness or suitability for particular purpose of the Premises). TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, LANDLORD HEREBY DISCLAIMS, AND TENANT WAIVES THE BENEFIT OF, ANY AND ALL IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTIES OF HABITABILITY, FITNESS OR SUITABILITY FOR TENANT'S PURPOSE. TENANT ACKNOWLEDGES THAT NEITHER LANDLORD NOR ANY AGENT OF LANDLORD HAS MADE ANY REPRESENTATION OR WARRANTY WITH RESPECT TO THE PREMISES OR WITH RESPECT TO THE SUITABILITY OF SAME FOR THE PURPOSE HEREIN INTENDED. BY OCCUPYING THE PREMISES, TENANT SHALL BE DEEMED TO

HAVE ACCEPTED THE SAME AS SUITABLE FOR THE PURPOSE HEREIN INTENDED.

2.4 Tenant shall peaceably and quietly hold and enjoy the Premises for the Lease Term, without hindrance from Landlord or Landlord's successors or assigns, subject to the terms and conditions of this Lease including the performance by Tenant of all of the terms and conditions of this Lease to be performed by Tenant and including the payment of Rent and other amounts due hereunder.

2.5 This Lease shall be subject to any and all easements, rights-of-way, covenants, liens, conditions, and restrictions relating to the Premises, to the extent, and only to the extent, the same still may be in force and effect and either shown of record in the Office of the County Clerk of the county in which the Land is located, or apparent on the Land, as of the date this Lease is fully executed by both parties. Nothing in this Lease grants to Tenant any rights to mineral or other subsurface rights.

3. RENT AND SECURITY DEPOSIT

3.1 In consideration of this Lease, Tenant promises and agrees to pay to Landlord at Landlord's Address stated or at such other address as Landlord may designate by notice in writing to Tenant at least thirty (30) days in advance of any rental payment date, the Rent, without demand, deduction or set-off. The Rent shall be paid in equal monthly installments on the first day of the month, in advance.

3.2 If Tenant fails to pay to Landlord when due any installment of Rental or any other sum to be paid to Landlord that may become due hereunder. If Tenant fails to pay Landlord any installment of Rent within five (5) days after it is due or any other sum to be paid hereunder when due, Tenant will pay Landlord on demand a late charge of five percent (5%) thereof. Failure to pay such late charge within thirty (30) days after receipt of written demand shall be an event of default hereunder. Such late charge shall be in addition to all other rights and remedies available to Landlord hereunder or at law or in equity and shall not be construed as liquidated damages or limiting Landlord's remedies in any manner.

3.3 Demand for Security Deposit. After the second timely cure of a failure to pay Rent during any five (5) year term, the Landlord reserves the right to demand a Security Deposit

from Tenant in the amount of five (5) year's annual Rent payment as provided herein. Any Security Deposit may then be used by Landlord to offset any future past due amounts, fees, and late charges. Tenant must then submit any amount of the Security Deposit applied to past due amounts within thirty (30) days from notice by Landlord.

4. EARLY TERMINATION

4.1 This Lease may be terminated, without penalty or further liability, as follows: (i) by either party on thirty (30) days prior written notice, if the other party remains in default under Section 15 of this Lease after the applicable cure periods; (ii) by Tenant upon written notice to Landlord, if Tenant is unable to obtain, or maintain, any required approval(s) or the issuance of a license or permit by any agency, board, court or other governmental authority necessary for the construction or operation of the Tenant's Equipment as now or hereafter intended by Tenant; (iii) by Tenant, upon written notice to Landlord, if Tenant determines, in its sole discretion, due to the title report results or survey results, that the condition of the Facility or Land is unsatisfactory for its intended uses; or (vi) by Landlord upon failure to obtain continued funding from the Governing Body for the Facility.

4.2.1 Landlord or Tenant may terminate this Lease without cause at any time upon providing one-year advance written notice to the other party of the notifying party's intent to terminate this Lease. Landlord's option under this Paragraph 4.2.1 to terminate this Lease shall not be exercised prior to the commencement of the sixth (6th) Lease Year.

4.3 Throughout the Lease Term, Landlord will not knowingly grant a lease to any other party for use of all or any part of the Facility if such use would adversely affect or interfere with Tenant's operation of Tenant's Equipment. It is understood that Tenant's rights are subordinate to the rights granted to prior tenants on the Facility. Tenant's sole remedy shall be Tenant's right to terminate this Lease upon thirty (30) days' notice to Landlord if another pre-existing user of the Facility causes interference with Tenant's operations that has not been corrected within thirty (30) days after notice to Landlord, or if new structures are built nearby that block or partially block Tenant's transmissions in a manner that significantly interferes with Tenant's operations.

4.4 If Tenant terminates this Lease for any reason, Tenant will be entitled to reimbursement for any advance Rent payments prior to the date of termination on a *pro rata* basis.

4.5 At or before the expiration or termination of this Lease for any reason, Tenant shall surrender to Landlord the Premises, remove Tenant's Equipment, and shall restore the Premises to substantially the same condition as existing on the Commencement Date, except for ordinary wear and tear, or as otherwise specifically requested in writing by Landlord. If Tenant fails to remove the Tenant Equipment as required by this Section 4.5, the Tenant Equipment shall be subject to disconnection, removal, and storage by Landlord upon thirty (30) days prior written notice to Tenant. In such event, Tenant shall pay to Landlord upon written demand thereof, the reasonable disconnection, removal and storage costs and other reasonable expenses incurred by or on behalf of Landlord. If after termination or expiration of this Lease Tenant's Equipment or any part thereof remains on the Premises, then Tenant shall be considered to occupy the Premises as a tenant at will and the provisions of Section 16 of this Lease will apply.

5. USE AND CARE OF PREMISES

5.1 The Premises may be used only for the Permitted Use, and for no other purpose or purposes without the prior written consent of Landlord.

5.2 Tenant, at its sole cost, shall observe, perform, and comply with all laws, statutes, ordinances, rules, and regulations promulgated by any governmental agency and applicable to the Premises or the use thereof, including all applicable zoning ordinances, building codes and environmental laws. Tenant shall not occupy or use the Premises or permit any portion of the Premises to be occupied or used for any use or purpose that is unlawful in part or in whole, or deemed by Landlord, in its reasonable discretion, to be disreputable in any manner or extra hazardous on account of fire.

5.3 Tenant shall take good care of the Premises and keep the Premises neat, clean and free from dirt, rubbish, weeds or other nuisance vegetation, insects, and pests at all times. Tenant shall arrange for the pick-up and removal of all trash and garbage at Tenant's expense. Tenant shall not operate an incinerator or burn trash or garbage on the Premises.

5.4 Tenant shall procure, at its sole expense, any permits or licenses required for Tenant's use of the Premises. Landlord will cooperate with Tenant, at Tenant's expense, in making application for and obtaining necessary licenses, permits and other necessary approvals that may be required for Tenant's Permitted Use; provided, however, that Landlord shall not be required to assume any liability, costs, expenses, or undertake any investigation or other similar activity.

5.5 None of Tenant's Equipment shall be installed on the Facility nor shall any construction commence on the Premises until Tenant has submitted its construction and installation plans and list of contractors and subcontractors to Landlord in writing and such plans and list have been approved in writing by Landlord, such approval not to be unreasonably withheld, delayed or conditioned. Tenant shall not alter the plans without the prior written approval of Landlord. Tenant shall be responsible for grounding all external and internal wiring and cabling installed by Tenant. Tenant shall obtain Landlord's prior written approval of such grounding plans. In the event any such plans are not approved or rejected, with the reasons for rejection specified in writing, by Landlord within thirty (30) days of submittal by Tenant, the plans shall be deemed approved. Title to Tenant's Equipment shall be held by Tenant. Tenant's Equipment shall remain Tenant's personal property and no part of Tenant's Equipment shall be considered fixtures.

5.6. Tenant shall not cause electrical interference to Landlord or to any other tenant or user who is occupying or using a portion of the Land or the Facility as of the date Tenant proposes to lease the Premises from Landlord. At Landlord's request, Tenant shall perform an intermod and interference study at the Facility and perform an interference evaluation. Tenant acknowledges that the Other Communication Uses as provided in **Exhibit "C"**, will not, if properly and lawfully operated, interfere with Tenant's use, and that Tenant's use will not interfere with the Other Communication Uses.

5.7 Tenant shall not bring or permit to remain on the Premises any asbestos containing materials, petroleum, explosives, toxic materials, or substances defined as hazardous wastes, hazardous materials, or hazardous substances under any federal, state, or local law or regulation ("Hazardous Materials"), except ordinary products commonly used in connection with the Permitted Use and stored in the usual and lawful manner and

quantities. Tenant's violation of the foregoing prohibition shall constitute a material breach and default hereunder and Tenant shall indemnify, hold harmless and defend Landlord from and against any claims, damages, penalties, liabilities, and costs (including reasonable attorneys' fees and court costs) caused by or arising out of (i) Tenant's violation of the foregoing prohibition, or (ii) the presence or any release of any Hazardous Materials on, under, or about the Premises during Tenant's occupancy or control of the Premises that is caused by Tenant; provided however, Tenant shall not be responsible for any claims or damages caused by the presence or release of any Hazardous Materials on, under, or about the Premises to the extent such claims or damages are caused by the willful misconduct or negligence of Landlord. Tenant shall remove, remedy and repair any soil or ground water contamination and damage caused by the presence and any release of any Hazardous Materials in, on, under, or about the Premises caused by Tenant in conformance with the requirements of applicable law; provided however Tenant shall not be required to remove, remedy and repair any soil or ground water contamination and damage to the extent such release, contamination or damage is caused by the negligence or willful misconduct of Landlord. Tenant shall immediately give Landlord written notice of any suspected breach of this Section, upon learning of the presence or any release of any Hazardous Materials, and upon receiving any notices from governmental agencies pertaining to Hazardous Materials that may affect the Premises. The obligations of Tenant hereunder shall survive the expiration or earlier termination, for any reason, of this Lease.

5.8 Landlord represents that it has not and shall not bring or permit to remain on the Land any Hazardous Materials, except ordinary products commonly used in connection with Landlord's use of the Land and the Facility and stored in the usual and lawful manner and quantities.

6. MAINTENANCE AND REPAIR OF PREMISES

6.1 Landlord shall have no obligation to repair or maintain the Premises and Landlord shall have no liability for any damages or injury arising out of any condition or occurrence causing a need for such repairs.

6.2 Tenant, at its sole cost and expense, shall repair or replace any damage or injury done to the Premises, the Land, or the Facility, or any part thereof, by Tenant or Tenant's agents, employees, invitees or visitors, including any damage occasioned by the installation, operation, maintenance or removal of Tenant's Equipment. If any repairs required to be made by Tenant hereunder are not made within thirty (30) days after written notice delivered to Tenant by Landlord, Landlord may, at its option, make such repairs without liability to Tenant for any loss or damage that may result by reason of such repairs, and Tenant shall pay to Landlord within thirty (30) days after demand as additional rental hereunder the cost of such repairs plus twenty percent (20%) of the amount thereof to cover overhead.

6.3 Tenant shall maintain the Premises in good, tenantable, and slightly condition in conformity with surrounding natural conditions. Tenant shall properly maintain any landscaping relating to the Premises reasonably required by Landlord to assure a slightly condition of the Land and the Facility; provided however that under no circumstances shall Tenant be required to install any water, irrigation, or watering system, nor shall Tenant be required to install landscaping that may require hand watering, irrigation, or a watering system in order to remain in good and slightly condition.

6.4 Tenant shall inform Landlord and comply with any and all requirements for marking and lighting, including any lighting automated alarm system, required by the Federal Communications Commission ("FCC"), the Federal Aviation Administration ("FAA"), or any other governmental entity with jurisdiction, as a result of Tenant's Facilities and if required, Tenant shall, at Landlord's option, install the same at Tenant's expense, or pay Landlord's expenses of installing same. Tenant shall be responsible for assuring compliance with all such requirements. If lighting requirements for Tenant's Equipment apply, and a lighting automatic system has been installed by Landlord, Landlord shall allow

Tenant to bridge-in to the system to permit a parallel alarm or to install a second alarm, at Landlord's option.

7. LEASEHOLD IMPROVEMENTS / ALTERATIONS

7.1 Except as contemplated in **Exhibit "B"**, Tenant shall not make or permit to be made any alterations, additions or improvements to the Premises or paint, install lighting or decorations, or install any signs, window or door lettering or advertising media of any type on or about the Premises without the prior written consent of Landlord, which shall not be unreasonably conditioned, withheld or delayed. Upon Landlord's written request, at the termination of this Lease Tenant shall restore those portions of the Premises that Tenant altered, added to or improved to the condition in which they existed on the Commencement Date, wear and tear excepted. Tenant's Equipment and all furniture, movable trade fixtures and equipment installed in the Premises by Tenant may be removed by Tenant at any time during the Lease Term and at the termination of this Lease if Tenant so elects, and shall be so removed if required by Landlord, or if not so removed shall, at the option of Landlord, become the property of Landlord without compensation to Tenant. In the event of any such removal, Tenant shall, at its expense, repair and restore to the condition in which it existed on the Commencement Date any portion of the Land or Facility that is damaged by such removal.

7.2 All construction work done by Tenant on or in the Premises shall be performed in a good and workmanlike manner, in compliance with all local, state and federal requirements. Tenant agrees to indemnify Landlord and hold Landlord harmless against any loss, liability or damage resulting from such work, and Tenant shall, if requested by Landlord, furnish a bond or other security satisfactory to Landlord against any such loss, liability or damage.

7.3 Tenant will not permit any mechanic's lien or other liens to be placed upon the Premises, the Land or the Facility, or any portion thereof, caused by or resulting from any work performed, materials furnished or obligation incurred by or at the request of Tenant, and in the case of the filing of any such lien, Tenant will immediately pay, obtain the release of, or bond around same. If any lien is not removed (or bonded around) within thirty (30)

days, Landlord shall have the right and privilege at Landlord's option of paying the same or any portion thereof without inquiry as to the validity thereof, and any amounts so paid, including expenses and interest, shall be so much additional rent hereunder due from Tenant to Landlord and shall be repaid to Landlord (together with interest at the lesser of the rate of eighteen percent (18%) per annum or the maximum rate permitted by law from the date paid by Landlord) within thirty (30) days after Tenant's receipt of a statement from Landlord therefor.

7.4 If Tenant's Equipment causes any measurable adverse interference with Other Communication Uses, then Tenant shall cause the elimination of such interference in a prompt and timely manner. If such measurable adverse interference by Tenant's Equipment with Other Communication Uses cannot be eliminated within a reasonable length of time, but not to exceed forty-eight (48) hours after notice thereof, Tenant shall cease operation of Tenant's Equipment except for brief tests necessary for the elimination of the interference.

8. ACCESS

8.1 Except as otherwise provided herein, Tenant and Tenant's employees, agents, and contractors shall have access to the Premises 24 hours per day, 7 days a week for the purpose of carrying out the Permitted Use. Landlord may fence and lock the Land, or any portion thereof. If Landlord chooses to fence and lock that portion of the Land that includes Tenant's equipment building on the ground, Landlord shall provide to Tenant the key or other information necessary to allow Tenant entry. Notwithstanding anything herein to the contrary, Tenant shall not be entitled in any circumstance to unattended access to the water tower and the cabling, antenna, and other Tenant equipment located in or on the water tower. To access Tenant equipment in or on the water tower, Tenant shall notify the County Department of Public Utilities and request attended access to the water tower. Tenant must provide as much advance notice to Landlord as reasonably possible. For each such access to the water tower that occurs outside regular County utility business hours (7:30 a.m. to 4:00 p.m. MST on business days, excluding county holidays), Tenant shall pay, within thirty (30) days the actual cost incurred by the County for providing an attendant. The

County estimates that the cost of attended access will be approximately \$120 per call out event.

Landlord reserves the right to require Tenant to provide the name, address, and background information on each and every employee, agent, or representative of Tenant that will access the Premises. Landlord further reserves the right to restrict access by one or more of Tenant's employees, agents, or representatives, or to refuse access to the Premises at any time Landlord deems necessary or desirable, in Landlord's sole discretion, for security purposes.

8.2 Landlord shall have the right to enter upon the Premises at any time in the event of an emergency and at any reasonable time for any reasonable purpose, including without limitation, inspecting same. County shall not handle, manipulate, or access Tenant's Equipment unless necessary to resolve an emergency condition.

8.3. Temporary Construction Easement. For a period of ninety (90) days following the start of Commencement Date, Landlord grants Tenant, its subtenants, licensees and sublicensees, the temporary right to use such portions of the Landlord's contiguous, adjoining or surrounding property as may reasonably be required during construction and installation of Tenant's Equipment.

9. UTILITIES

9.1. Landlord makes no representation with regard to utility services available to the Premises. Tenant shall pay promptly and before delinquency all charges for electricity, water, gas, telephone service, sewerage service, and other utilities furnished to the Premises and shall pay promptly any maintenance charges therefore. Such payments shall be made directly to the provider of the utility service. Utilities shall be separately metered.

9.2 Tenant, at Tenant's sole cost, shall install, maintain and repair all wiring, conduits, facilities, equipment (including meters or submeters) and cabling necessary to connect the Premises or Tenant's Equipment to the utility service providers and connections.

9.3 Landlord shall not be liable for any interruption or failure in utility services arising from any cause whatsoever other than Landlord's negligence or intentional misconduct, nor

shall any such interruption or failure be construed as an eviction of Tenant or work an abatement of rent, nor relieve Tenant from fulfillment of any covenant or agreement hereof, nor render Landlord liable in any respect for damages to either person, property or business. The County does not waive and reserves all sovereign immunity rights and privileges related to provision of utility services under the New Mexico Tort Claims Act, NMSA 1978, 41-4-1 *et seq.*

9.4. Tenant shall be solely responsible for any backup or emergency power requirements for its equipment.

10. INDEMNITY AND PUBLIC LIABILITY INSURANCE

10.1 FROM AND AFTER THE EFFECTIVE DATE, LANDLORD SHALL NOT BE LIABLE OR RESPONSIBLE TO TENANT FOR ANY LOSS OR DAMAGE TO ANY PROPERTY OR PERSON OCCASIONED BY THEFT, ACT OF GOD, PUBLIC ENEMY, INJUNCTION, RIOT, STRIKE, INSURRECTION, WAR, COURT ORDER, REQUISITION OR ORDER OF GOVERNMENTAL BODY OR AUTHORITY OR ANY SIMILAR MATTER OR BY THE PREMISES BEING OUT OF REPAIR OR BY DEFECT IN OR FAILURE OF EQUIPMENT, PIPES, OR WIRING, OR BROKEN GLASS, OR BY GAS, WATER, STEAM, ELECTRICITY OR OIL LEAKING, ESCAPING, OR FLOWING INTO THE PREMISES. LANDLORD SHALL NOT BE LIABLE TO TENANT, OR TO TENANT'S AGENTS, SERVANTS, EMPLOYEES, CUSTOMERS, CONTRACTORS OR INVITEES AND TENANT SHALL INDEMNIFY, DEFEND, AND HOLD LANDLORD, LANDLORD'S COUNCIL MEMBERS, EMPLOYEES, OFFICERS, AND CONTRACTORS HARMLESS FROM AND AGAINST ANY AND ALL FINES, SUITS, CLAIMS, DEMANDS, LOSSES, LIABILITIES, ACTIONS, AND COSTS (INCLUDING COURT COSTS AND ATTORNEYS' FEES) ARISING FROM (I) ANY INJURY TO PERSON OR DAMAGE TO PROPERTY CAUSED BY ANY ACT, OMISSION, OR NEGLECT OF TENANT, TENANT'S AGENTS, SERVANTS, EMPLOYEES, CUSTOMERS OR INVITEES, (II) TENANT'S USE OF THE PREMISES OR THE CONDUCT OF TENANT'S BUSINESS, (III) ANY ACTIVITY, WORK, OR THING DONE, PERMITTED OR SUFFERED BY TENANT IN OR ABOUT THE LAND AND THE FACILITY,

(IV) ANY BREACH OR DEFAULT IN THE PERFORMANCE OF ANY OBLIGATION ON TENANT'S PART TO BE PERFORMED UNDER THE TERMS OF THIS LEASE, OR (V) THE DESIGN OR CONSTRUCTION OF TENANT'S EQUIPMENT OR ANY OTHER IMPROVEMENTS CONSTRUCTED ON THE PREMISES, EXCEPT TO THE EXTENT CAUSED BY THE NEGLIGENT ACTS OR OMISSIONS OR WILLFUL MISCONDUCT OF LANDLORD, LANDLORD'S OFFICERS OR EMPLOYEES.

10.2 Tenant shall, at Tenant's expense, maintain a policy or policies of commercial general liability insurance with limits of: (i) not less than \$1,000,000 with respect to bodily injury or death to any number of persons in any one accident or occurrence, nor less than \$1,000,000 with respect to property damage in any one accident or occurrence, throughout the Lease Term; or (ii) not less than \$3,000,000 combined single limit for bodily injury, death or property damage in any one accident or occurrence, throughout the Lease Term. Landlord may reasonably increase the minimum limits for the policy or policies of commercial general liability insurance maintained by Tenant on the 5th anniversary date of this Lease and every 5th anniversary date thereafter by giving Tenant at least thirty (30) days written notice prior to the anniversary date on which the increase would be effective.

10.3 Tenant shall, at Tenant's expense, maintain a policy or policies of "All Risk" property insurance or self-insurance that insures Tenant's Equipment for its full replacement cost.

10.4 In the event that Tenant elects to carry the coverage enumerated in 10.2(i) above, Tenant shall also, at Tenant's expense, maintain a policy or policies of excess/umbrella insurance with limits of not less than \$2,000,000.

10.5 All policies of insurance that Tenant is required to maintain hereunder shall be issued by and binding upon solvent insurance companies eligible to do business in New Mexico, shall include Landlord as an additional insured on the general liability policy by endorsement as respects this Agreement, and shall contain a provision to the effect that Landlord, although included as an additional insured on the general liability policy by endorsement as respects this Agreement, shall nevertheless be entitled to recovery under said policy for any loss occasioned to Landlord, its servants, agents, and employees by

reason of the acts, omission, and/or negligence of Tenant, subject to standard policy provisions and exclusions. Prior to entering upon the Premises, Tenant shall furnish to Landlord a certificate of insurance verifying Tenant's compliance with the insurance coverage requirements of this Article 10. Tenant shall notify Landlord at least thirty (30) days prior to cancellation or non-renewal of any required coverage that is not replaced. All insurance required by this Article 10 shall be primary as related to Tenant's negligence and noncontributing with any insurance that may be carried by Landlord.

10.6. Tenant hereby waives any cause of action it might have against Landlord as a result of any loss or damage that is required to be insured against by Tenant under this Lease. Tenant agrees that it will obtain from its insurance carrier endorsements to all applicable policies waiving the carrier's rights of recovery under subrogation or otherwise against the other party. Where Tenant self-insures its property coverage and in satisfaction of the waiver of subrogation requirement, Tenant will include Landlord as joint loss payee to the extent of Landlord's insurable interest which would have been covered had Tenant purchased property insurance

10.7 Notwithstanding the foregoing, Tenant shall have the right to self-insure the coverages required in this Article 10. In the event Tenant elects to self-insure its obligation to include Landlord as an additional insured, the following provisions shall apply:

- a. Tenant or its parent company shall have and continuously maintain a tangible net worth of at least one hundred million dollars (\$100,000,000.00) and on an annual basis (or more frequently, if requested) until insurance is provided, the party satisfying the net worth requirement will provide Landlord with access to its annual report through: <https://investors.att.com/financial-reports/annual-reports>;
- b. Landlord shall promptly and in any event no later than sixty (60) days after notice thereof provide Tenant with written notice of any claim, demand, lawsuit, or the like for which it seeks coverage pursuant to this Article 10 and provide Tenant with copies of any demands, notices, summonses, or legal papers received in connection with such claim, demand, lawsuit, or the like;

- c. Tenant shall within 30 days of becoming aware of its inability to meet the coverage requirements as required in this Article provide additional proof of coverage as required herein;
- d. Landlord shall not settle any such claim, demand, lawsuit, or the like without the prior written consent of Tenant; and
- e. Landlord shall fully cooperate with Tenant in the defense of the claim, demand, lawsuit, or the like.

11. EMINENT DOMAIN

11.1 If all or a portion of the Premises is taken for any public or quasi-public use under any law, ordinance or regulation or by right of eminent domain or by private purchase in lieu thereof, this Lease shall terminate and the Rent shall abate during the unexpired portion of this Lease, effective on the date physical possession is taken by the condemning authority.

11.2 All compensation awarded for any taking (or the proceeds of private sale in lieu thereof) of the Premises shall be the property of Landlord, and Tenant hereby assigns Tenant's interest in any such award to Landlord; provided, however, Landlord shall have no interest in any award made to Tenant for loss of business, moving expenses, or for the taking of Tenant's Equipment and Tenant's other property if a separate award for such items is made to Tenant.

12. CASUALTY

12.1 If substantially all of the Facility is destroyed by fire, tornado or other casualty or if the Premises or the Facility is so damaged that rebuilding or repairs cannot, in the reasonable judgment of Landlord, be completed within one hundred eighty (180) days after the date of such damage, Landlord may at its option terminate this Lease without cause, in which event, this Lease shall terminate effective as of the date of such damage. If the Premises or the Facility is damaged by fire, tornado or other casualty covered by Landlord's insurance, if any, but only to such extent that rebuilding or repairs can, in the reasonable

judgment of Landlord, be completed within one hundred eighty (180) days after the date of such damage, or if the damage is more serious but Landlord does not elect to terminate this Lease, in either such event Landlord shall promptly commence actions to rebuild or repair the Premises and/or the Facility and shall proceed with reasonable diligence to restore same to substantially the same condition in which it was immediately prior to the happening of the casualty, except that Landlord shall not be required to rebuild, repair or replace any part of Tenant's Equipment or other equipment, fixtures and improvements that may have been placed by Tenant within the Premises or the Facility. Landlord shall allow Tenant a diminution of Rent during the time the Premises are unfit for the purposes herein intended, which diminution shall be based upon the diminished usefulness of the Premises to Tenant. Any insurance that may be carried by Landlord or Tenant against loss or damage to the Premises or to the Facility shall be for the sole benefit of the party carrying such insurance and under its sole control.

12.2 Landlord will give notice to Tenant of any casualty affecting the Premises and/or Facility as soon as practicable, especially in the event of any casualty which may appear to prevent Tenant's Permitted Use. Within thirty (30) days after the date of the casualty, Landlord shall notify the Tenant in writing whether, in Landlord's opinion, repairs and/or rebuilding can be completed within one hundred and eighty (180) days, and whether or not Landlord is electing to terminate the Lease, as permitted in Section 12.1. If Landlord fails to give Tenant such notice timely, or if Tenant disagrees with Landlord's determination that repairs or rebuilding can be completed within one hundred eighty (180) days, or if Landlord fails to timely commence repairs or rebuilding, Tenant has the right to terminate this Lease upon written notice to Landlord, whereupon the Lease Term shall automatically expire retroactively as of the date of such casualty.

13. ASSIGNMENT AND SUBLETTING

13.1. Tenant shall not assign or in any manner transfer this Lease or any estate or interest therein, or sublet the Premises or any part thereof, or grant any license, concession, or other right to occupy any portion of the Premises without the prior written consent of Landlord, which may not be unreasonably withheld, conditioned or delayed; provided, however, that Tenant may sell, assign or transfer its interest in the Lease and Premises without any

approval or consent of Landlord to Tenant's principal, affiliates, subsidiaries of its principal; to any entity which acquires all or substantially all of Tenant's assets in the market defined by the FCC in which the Land is located by reason of a merger, acquisition or other business reorganization; or to any entity which acquires or receives an interest in a majority of Tenant's communication facilities in the market defined by the FCC in which the Land is located.

13.1.1 Notwithstanding the foregoing, Tenant shall, upon prior written notice to Landlord, have the right to transfer and assign, in whole or in part, all of Tenant's rights and obligations hereunder and in the Premises to New Cingular Wireless PCS, LLC ("AT&T"), and in such event and upon assumption by the transferee of Tenant's obligations under this Lease (any such transferee to have the benefit of, and be subject to, the provisions of this Lease), no further liability or obligation shall thereafter accrue against Tenant hereunder, and Landlord agrees to look solely to such successor in interest of Tenant for performance of such obligations.

13.2 Consent by Landlord to any assignment or subletting shall not operate as a waiver of Landlord's rights as to any subsequent assignment or subletting. Notwithstanding any assignment or subletting, Tenant shall at all times remain fully responsible and liable for the payment of the rental herein specified and for compliance with all of Tenant's other obligations under this Lease.

13.3 Landlord shall, upon prior written notice to Tenant, have the right to transfer and assign, in whole or in part, all of Landlord's rights and obligations hereunder and in the Premises, and in such event and upon assumption by the transferee of Landlord's obligations under this Lease (any such transferee to have the benefit of, and be subject to, the provisions of this Lease), no further liability or obligation shall thereafter accrue against Landlord hereunder, and Tenant agrees to look solely to such successor in interest of Landlord for performance of such obligations.

13.4 Tenant may mortgage, pledge or otherwise encumber Tenant's leasehold interest in the Tenant's Equipment, but in no event shall Tenant mortgage, pledge or otherwise encumber Landlord's interest in the Premises, the Facility, the Land, or any improvements thereon. Landlord further acknowledges that Landlord shall provide notice to any Lender of which Landlord has been advised in writing at least thirty (30) days before the occurrence of an event of default, of any demand for cure issued by Landlord and the Lender shall have the right to cure any default of Tenant within the applicable cure period provided for in this Lease, and may, by assuming all of Tenant's obligations under this Lease and providing written notice of same to Landlord, be substituted as Tenant hereunder. Nothing contained herein shall be deemed or construed to obligate any Lender or any replacement or refinancing lender to take any action under this Lease or to perform or discharge any indebtedness, liability, obligations or duty of Tenant hereunder unless such Lender has assumed Tenant's obligations under this Lease as provided above.

14. TAXES AND ASSESSMENTS

14.1 Tenant shall be liable for all taxes levied against Tenant's Equipment and any other improvements, personal property or trade fixtures placed by Tenant on the Premises, all taxes levied or assessed on Tenant's leasehold interest in the Premises, and any other levies, assessments, fees, or business or other taxes of any kind levied or accruing because of Tenant's occupancy of the Premises or on the business or income of Tenant generated from the Premises. Tenant shall pay the same directly to the tax assessing authority prior to delinquency.

14.2 Upon Landlord's request and following Tenant's failure to pay such taxes, levies, assessments or fees prior to delinquency, Tenant shall pay to Landlord additional monthly installments of Rent in an amount sufficient to pay all taxes and assessments that are Tenant's obligation and that accrue during the then current Lease Year.

15. DEFAULT AND REMEDIES

15.1 The following events shall be deemed to be events of default by Tenant under this Lease:

- a. Tenant fails to pay any installment of Rent or any other sum payable by Tenant under this Lease within ten (10) days after written notice it is past due.
- b. Tenant fails to comply with any other term, provision or covenant of this Lease within thirty (30) days after written notice thereof to Tenant; provided, however, that if the nature of Tenant's obligation is of such a nature that it cannot reasonably be cured within said thirty-day period, Tenant shall not be deemed in default so long as Tenant commences curing such failure within said thirty-day period and diligently prosecutes same to completion. Notwithstanding the foregoing, in no event shall the time within which Tenant may cure a failure to timely correct interference with Other Communication Uses exceed fifteen (15) days.
- c. Tenant or any guarantor of Tenant's obligation hereunder becomes insolvent, or makes any transfer in fraud of creditors, or makes an assignment for the benefit of creditors.
- d. Tenant or any guarantor of Tenant's obligations hereunder files a petition under any section or chapter of any applicable federal or state bankruptcy or insolvency law or is adjudged bankrupt or insolvent in proceedings filed against Tenant or such guarantor.
- e. A receiver or trustee is appointed for all or substantially all of the assets of Tenant or any guarantor of Tenant's obligations hereunder.
- f. Tenant does or permits to be done anything that creates a lien upon the Premises and the lien is not removed or bonded within thirty (30) days after written notice thereof from Landlord to Tenant.

15.2 Upon the occurrence of any event of default by Tenant specified in this Lease, Landlord shall have the option to pursue any and all remedies that Landlord then may have hereunder or at law or in equity, including, without limitation, any one or more of the following, in each case, without any further notice or demand whatsoever:

a. Terminate this Lease, in which event Tenant shall immediately surrender the Premises to Landlord, and if Tenant fails to do so, Landlord may, without prejudice to any other remedy that Landlord may have for possession or arrearage in rent, enter upon and take possession of the Premises by any lawful means, including by picking or changing locks if necessary, and lock out, expel or remove Tenant and any other person who may be occupying the Premises or any part thereof, without being liable for prosecution or any claim for damages therefor. Tenant agrees to pay to Landlord on demand the amount of all loss and damage that Landlord suffers by reason of such termination.

b. Make such payments, and/or take such action (including entering the Premises by picking or changing locks if necessary, without being liable for prosecution or any claim for damages therefor), and pay or perform whatever Tenant is obligated to do under the terms of this Lease. Tenant agrees to reimburse Landlord within thirty (30) days of receipt of written demand for any reasonable and direct expenses that Landlord incurs in thus effecting compliance with Tenant's obligations under this Lease (including reasonable attorneys' fees), and Tenant further agrees that Landlord shall not be liable for any damages resulting to Tenant from such action.

15.3 Pursuit of any of the foregoing remedies shall not preclude pursuit of any of the other remedies herein provided or any other remedies provided by law, nor shall pursuit of any remedy herein provided constitute a forfeiture or waiver of any rent due to Landlord hereunder or of any damages accruing to Landlord by reason of the violation of any of the terms, provisions, and covenants herein contained. Landlord's acceptance of Rent following an event of default hereunder shall not be construed as Landlord's waiver of such event of default. No waiver by Landlord of any violation or breach of any of the terms, provisions and covenants herein contained shall be deemed or construed to constitute a waiver of any other violation or default. No payment by Tenant or receipt by Landlord of any amount less than the amounts due by Tenant hereunder shall be deemed to be other than on account of the amounts due by Tenant hereunder, nor shall any endorsement or

statement on any check or document accompanying any payment be deemed an accord and satisfaction.

15.4 In the event of termination for an event of default, Landlord shall not have any obligation to relet or attempt to relet the Premises, or any portion thereof, or to collect rental after reletting; and in the event of reletting, Landlord may relet the whole or any portion of the Premises for any period, to any tenant, and for any use and purpose.

15.5 Landlord's failure to perform any term, provision, covenant or obligation of this Lease within thirty (30) days, unless otherwise provided herein, after written notice by Tenant to Landlord specifying wherein Landlord has failed to perform such term, provision, covenant or obligation; provided, however, that if the nature of Landlord's obligation is such that more than thirty (30) days are reasonably required for Landlord's performance, then Landlord shall not be deemed to be in default if Landlord shall commence such performance within such thirty-day period and thereafter diligently prosecute the same to completion.

Unless and until Landlord fails to so cure any default after such notice, Tenant shall not have any remedy or cause of action by reason thereof. Tenant hereby waives any right Tenant may have to assert a lien upon any of Landlord's property or upon any rental due to Landlord.

15.6 In the event that Landlord shall have taken possession of the Premises pursuant to the authority herein granted, Tenant shall be liable to Landlord for costs incurred by Landlord in connection with such removal and storage and shall indemnify and hold Landlord harmless from all loss, damage, cost, expense and liability in connection with such removal and storage. Landlord shall also have the right to relinquish possession of all or any portion of such furniture, fixtures, equipment, and other property to any person ("Claimant") claiming to be entitled to possession thereof who presents to Landlord a copy of any instrument represented to Landlord by Claimant to have been executed by Tenant (or any predecessor of Tenant) granting Claimant the right under various circumstances to take possession of such furniture, fixtures, equipment, or other property, without the necessity on the part of Landlord to inquire into the authenticity of said instrument's copy of Tenant's

or Tenant's predecessor's signature thereon and without the necessity of Landlord's making any nature of investigation or inquiry as to the validity of the factual or legal basis upon which Claimant purports to act; and Tenant agrees to indemnify and hold Landlord harmless from all cost, expense, loss, damage and liability incident to Landlord's relinquishment of possession of all or any portion of such furniture, fixtures, equipment, or other property to Claimant. The rights of Landlord herein stated shall be in addition to any and all other rights which Landlord has or may hereafter have at law or in equity; and Tenant stipulates and agrees that the rights herein granted Landlord are commercially reasonable.

16. HOLDING OVER

16.1 If Tenant remains in possession of the Premises after the expiration, or after termination as provided herein, of this Lease and without the execution of a new lease, it shall be deemed to be occupying the Premises as a tenant at will at a rental equal to one hundred fifty percent (150%) of the Rent in effect as of termination or expiration date, calculated on a daily basis, and otherwise subject to all the conditions, provisions, and obligations of this Lease insofar as the same are applicable to a tenancy at will.

17. NOTICES

17.1 Wherever any notice is required or permitted hereunder, such notice shall be in writing. Any notice or document required or permitted to be delivered hereunder shall be deemed to be delivered when actually received, refused, or returned undeliverable, provided it is deposited in the United States mail, postage prepaid, certified mail, return receipt requested, or with a reliable overnight courier, return receipt requested, addressed to the parties hereto at the respective addresses set out in Section 1.1, or at such other addresses as they have hereafter specified by written notice.

17.2 If and when included within the term "Tenant" as used in this instrument there are more than one person, firm or corporation, all shall arrange among themselves for their joint execution of such notices specifying some individual at some specific address for the receipt of notices and payments to Tenant. All parties included within the term "Tenant"

shall be bound by notices and payments given in accordance with the provisions of this Article to the same effect as if each had received such notice or payment.

18. MISCELLANEOUS

18.1 Nothing contained in this Lease shall be deemed or construed by the parties hereto, nor by any third party, as creating the relationship of principal and agent or of partnership or of joint venture between the parties hereto, it being understood and agreed that neither the method of computation of Rent, nor any other provisions contained herein, nor any acts of the parties hereto, shall be deemed to create any relationship between the parties hereto other than the relationship of Landlord and Tenant. Whenever herein the singular number is used, the same shall include the plural, and words of any gender shall include each other gender.

18.2 Except as expressly set forth in this Lease, Landlord shall not be required to make any expenditure, incur any obligation, or incur any liability of any kind whatsoever in connection with this Lease or the financing, ownership, construction, maintenance, operation, or repair of the Premises.

18.3 The captions used herein are for convenience only and do not limit or amplify the provisions hereof.

18.4 One or more waivers of any covenant, term or condition of this Lease by either party shall not be construed as a waiver of a subsequent breach of the same covenant, term or condition. The consent or approval by either party shall not be construed as a waiver of a subsequent breach of the same covenant, term or condition. The consent or approval by either party to any act of the other party requiring such consent or approval shall not be deemed to waive or render unnecessary consent to or approval of any subsequent similar act.

18.5 Whenever a period of time is herein prescribed for action to be taken by either party hereto, such party shall not be liable or responsible for and there shall be excluded from the computation of any such period of time, any delays due to strikes, riots, force majeure, shortages of labor or materials, war, governmental laws, regulations or restrictions or any

other causes of any kind whatsoever which are beyond the reasonable control of such party. This provision shall not excuse or extend the time for payment of any monetary obligation of Tenant to Landlord.

18.6 This Lease and the exhibits attached hereto contain the entire agreement between the parties, and no agreement shall be effective to change, modify or terminate this Lease in whole or in part unless such agreement is in writing and duly signed by the party against whom enforcement of such change, modification or termination is sought.

18.7 Tenant warrants that it has had no dealing with any broker or agent in connection with the negotiation or execution of this Lease. If any agent or broker shall make a claim for a commission or fee as a result of the actions or alleged actions of Tenant, Tenant shall be responsible for payment thereof and hereby indemnifies and holds Landlord harmless from such claim for commission or fees.

18.8 If any clause or provision of this Lease is illegal, invalid or unenforceable under present or future laws effective during the Lease Term, then and in that event, it is the intention of the parties hereto that the remainder of this Lease shall not be affected thereby, and it is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added as a part of this Lease a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible in order to make such clause or provision legal, valid and enforceable.

18.9 Tenant warrants that it has the full right, power and authority to enter into this Lease and to carry out Tenant's obligations under this Lease, and the person signing this Lease on behalf of Tenant has been duly authorized by Tenant to execute this Lease. Landlord warrants that it has the full right, power and authority to enter into this Lease and to carry out Landlord's obligations under this Lease, and the person signing this Lease on behalf of Landlord has been duly authorized by Landlord to execute this Lease.

18.10 The terms, provisions and covenants contained in this Lease shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, successors in interest and legal representatives except as otherwise herein expressly provided.

18.11 Notwithstanding anything contained in this Lease to the contrary, Landlord does not warrant or represent that the Premises contains any particular number of square feet, and the Rental specified in this Lease shall not vary based upon the actual number of square feet contained in the Premises.

18.12 The submission of this Lease to Tenant for examination does not constitute an offer, reservation or option in favor of Tenant, and Tenant shall have no rights with respect to this Lease or the Premises unless and until both Tenant and Landlord shall execute a copy of this Lease and deliver the same to the other.

18.13 Nothing herein expressed or implied is intended, or shall be construed, to confer upon or give to any person or entity, other than the parties hereto, any right or remedy under or by reason of this Lease.

18.14 This Lease shall be construed and enforced in accordance with the laws of the State of New Mexico. Venue shall be in the First Judicial District of New Mexico in Los Alamos County. Tenant understands that Landlord is public body subject to public information requests pursuant to NMSA 1978, §§ 14-2-1 through 14-2-12. Landlord will timely notify Tenant of any public information request related to the Lease. Tenant will cooperate in providing non-protected public records in Tenant's possession, but is solely responsible for taking any action in law or equity to prevent disclosure of confidential, sensitive, or otherwise protected records and documents.

18.15 The parties hereby agree that both parties are represented by legal counsel or have been provided adequate opportunity to have this Lease reviewed by legal counsel and therefore each party agrees that the Lease shall not be construed against the drafter of the Lease. Both parties have agreed to accept electronic signatures as permitted under state law.

Executed on the dates set forth below to be effective on the Effective Date.

LANDLORD:

INCORPORATED COUNTY OF LOS ALAMOS, an
incorporated county of the State of New Mexico

By: _____
Harry Burgess
County Manager

Date: _____

Approved as to form:

Alvin Leaphart
County Attorney

ATTEST: (SEAL)

Naomi D. Maestas
Los Alamos County Clerk

TENANT:

Commnet Wireless, LLC,
a Delaware limited liability company

By: _____
Name: Ken Borner
Title: SVP Network Operations
Date: _____

List of Exhibits:

Exhibit A - Land

Exhibit B - Premises

Exhibit C – Other Communication Uses (This exhibit describes the communication uses existing at the Facility as of the Effective Date and other anticipated communications frequencies and uses with which Tenant’s Equipment must not interfere.)

EXHIBIT A. LAND

The Land is legally described and/or depicted as follows:

Site No. 53

Tract: G

Subdivision Plat: North Mesa No. 1

Filed for Record: Plat Book 1, Page 76, Document No. 6164

Date of Filing: March 4, 1966

Parcel: 1034113252403

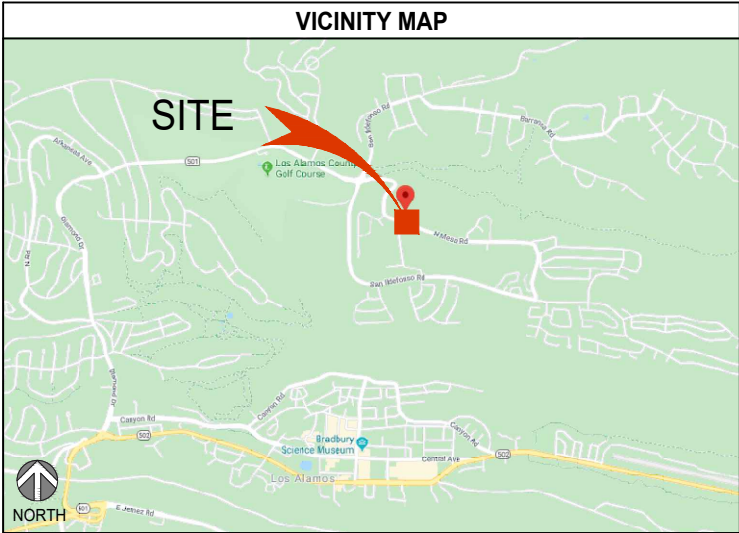
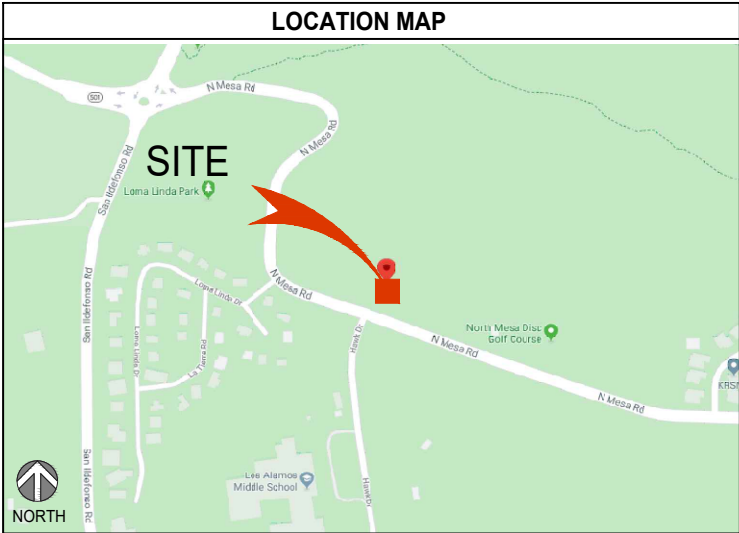
EXHIBIT B. PREMISES

PROJECT: FIRSTNET
SITE NUMBER: NML02662A
FA #: 15066552
PACE #: MRANM031826
SITE NAME: LOS ALAMOS
ADDRESS: 280 N. MESA ROAD
LOS ALAMOS, NM 87544



PROJECT INFORMATION	
SITE NAME:	LOS ALAMOS
SITE NUMBER:	NML02662A
SITE ADDRESS:	280 N. MESA ROAD LOS ALAMOS, NM 87544
JURISDICTION:	LOS ALAMOS COUNTY
COUNTY:	LOS ALAMOS
TOWER OWNER:	INCORPORATED COUNTY OF LOS ALAMOS
LATITUDE:	35.8966389
LONGITUDE:	-106.295056
CONSTRUCTION TYPE:	1034113252403
OCCUPANCY:	PL
PROPOSED USE:	UNMANNED TELECOMMUNICATION FACILITY
PROPERTY OWNER:	LOS ALAMOS COUNTY DEPT. OF PUBLIC UTILITIES
CONTACT:	ALLISON MAJURE PHONE: 505-662-8333
COMMNET PROJECT MANAGER:	POLLY PATRICK OFFICE: (720) 733-5399 MOBILE: (303) 628-2034 EMAIL: ppatrick@atni.com
APPLICANT:	SAC WIRELESS ON BEHALF OF COMMNET STEPHANY ROSS (720) 240-6226 stephany.ross@sacw.com

PROJECT TEAM	
ARCHITECT:	JOHN M. BANKS ARCHITECT 604 FOX GLEN BARRINGTON, IL 60010 CONTACT: JOHN BANKS PHONE: (847) 277-0070 EMAIL: jbanks@westchesterservices.com
PLANNING/ZONING CONSULTANT:	SAC WIRELESS CONTACT: STEPHANY ROSS PHONE: (720) 240-6226 E-MAIL: stephany.ross@sacw.com
CONSTRUCTION MANAGER:	SAC WIRELESS WALTER RAYPOLE 10375 PARK MEADOWS DR STE 250 LONE TREE, CO 80124 PHONE: (719) 466-9629 EMAIL: walt.raypole@sacw.com





Know what's below.
Call before you dig.

TO OBTAIN LOCATION OF PARTICIPANTS
UNDERGROUND FACILITIES BEFORE YOU DIG IN
NEW MEXICO CALL NEW MEXICO 811

TOLL FREE: 1-800-321-2537 OR
www.nm811.org

NEW MEXICO STATUTE REQUIRES MIN OF 2
WORKING DAYS NOTICE BEFORE YOU
EXCAVATE (DAY OF THE CALL NOT INCLUDED)

SCOPE OF WORK
COMMNET PROPOSES TO:
<ul style="list-style-type: none">• INSTALL (3) NEW COMMNET PANEL ANTENNAS• INSTALL (3) NEW COMMNET RADIOS (AHLBA)• INSTALL (3) NEW COMMNET RADIOS (AHFIB)• INSTALL (3) NEW COMMNET ANTENNA MOUNTS W/ MOUNTING PIPES• INSTALL (1) NEW COMMNET DC12 SURGE SUPPRESSOR• INSTALL (1) NEW COMMNET FIBER TRUNK 24 PAIR CABLE• INSTALL (3) NEW COMMNET DC TRUNK CABLES• INSTALL (1) NEW COMMNET DELTA 2-BAY EQUIPMENT CABINET• INSTALL (1) NEW COMMNET CABLE LADDER• INSTALL (1) NEW COMMNET 8'-0"X9'-6" EQUIPMENT PLATFORM• INSTALL (1) NEW COMMNET 15KW DC GENERATOR ON NEW 4'-0"X6'-0" EQUIPMENT PLATFORM• INSTALL (1) NEW COMMNET METER IN EXISTING EMPTY METER BANK SOCKET• INSTALL (1) NEW COMMNET ELECTRICAL PANEL• INSTALL (1) NEW COMMNET GENERATOR RECEPTACLE• INSTALL NEW CHAIN LINK FENCE COMPOUND W/(1) DOUBLE SWING GATE

DRIVING DIRECTIONS
DIRECTIONS FROM LOS ALAMOS AIRPORT:
<ul style="list-style-type: none">• HEAD WEST ON AIRPORT RD• TURN RIGHT ONTO E RD• TURN RIGHT ONTO CANYON RD• TURN RIGHT TO STAY ON CANYON RD• TURN RIGHT ONTO NM-501 E/DIAMOND DR• AT THE TRAFFIC CIRCLE, CONTINUE STRAIGHT ONTO N MESA RD• DESTINATION WILL BE ON THE LEFT

SPECIAL NOTES
<ol style="list-style-type: none">1. ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT CARRIER CONSTRUCTION INSTALLATION GUIDE.2. EXISTING CONDITIONS WILL BE VERIFIED IN FIELD. IF SIGNIFICANT DEVIATIONS OR DETERIORATION ARE ENCOUNTERED AT THE TIME OF CONSTRUCTION, A REPAIR PERMIT WILL BE OBTAINED & CONTRACTOR SHALL NOTIFY ARCHITECT OR ENGINEER OF RECORD IMMEDIATELY.3. CONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER OF RECORD IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.4. THESE DRAWINGS ARE FULL SIZE & SCALEABLE ON 22"X34" SHEET SIZE & ARE NOT REDUCED IN SIZE.5. STATEMENT THAT COMPLIANCE WITH THE ENERGY CODE IS NOT REQUIRED. -SCOPE OF WORK DOES NOT INVOLVE MODIFICATIONS TO EXTERIOR ENVELOPE OF BUILDING, HVAC SYSTEMS OR ELECTRICAL LIGHTING.

DRAWING INDEX	
SHEET	DESCRIPTION
T-1.0	TITLE SHEET
T-2.0	GENERAL NOTES
T-3.0	SECTOR COLOR CODE
A-1.0	OVERALL SITE PLAN
A-1.1	SITE PLAN
A-2.0	PROPOSED ANTENNA & EQUIPMENT PLANS
A-3.0	EXISTING & PROPOSED ELEVATIONS
A-4.0	EQUIPMENT DETAILS & SPECIFICATIONS
A-4.1	EQUIPMENT DETAILS & SPECIFICATIONS
A-4.2	EQUIPMENT DETAILS & SPECIFICATIONS
A-4.3	EQUIPMENT DETAILS & SPECIFICATIONS
E-1.0	1-LINE DIAGRAM & SYMBOLS KEY
G-1.0	EQUIPMENT & ANTENNA GROUNDING PLANS
G-2.0	GROUNDING NOTES & DETAILS
S-1.0	STRUCTURAL DETAILS

NOT FOR CONSTRUCTION UNLESS APPROVED BY JURISDICTION

GENERAL NOTES
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

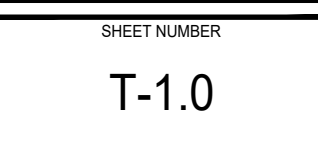
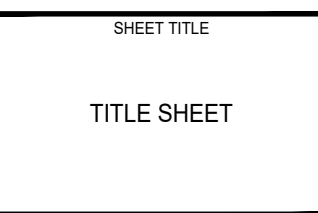
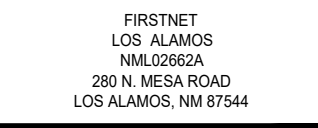
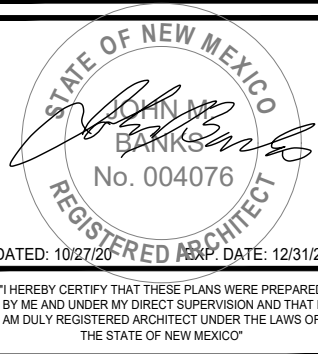
DO NOT SCALE DRAWINGS
CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS & FIELD CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ARCHITECT OR ENGINEER OF RECORD IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

PROJECT NOTES
FCC: EVERY WIRELESS TELECOMMUNICATIONS FACILITY SHALL MEET THE REGULATIONS OF THE FCC REGARDING PHYSICAL AND ELECTROMAGNETIC INTERFERENCE. THE ONLY SIGNAGE WHICH IS PERMITTED IS THAT WHICH IS REQUIRED BY STATE OR FEDERAL LAW.

CODE COMPLIANCE
<ul style="list-style-type: none">• 2015 INTERNATIONAL BUILDING CODE• 2017 NEW MEXICO ELECTRICAL CODES



REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA



THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

GENERAL NOTES:

1.

THIS FACILITY IS EXEMPT FROM ACCESSIBILITY REQUIREMENTS PER NEW MEXICO/INTERNATIONAL BUILDING CODE SECTION 11B-203.5. THIS FACILITY IS NON-OCCUPIABLE SPACE AND ENTERED ONLY BY SERVICE PERSONNEL.
2.

ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST EDITION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
3.

CONTRACTOR SHALL CONSTRUCT SITE IN ACCORDANCE WITH THESE DRAWINGS AND CONSTRUCTION SPECIFICATIONS. THE SPECIFICATION IS THE RULING DOCUMENT AND ANY DISCREPANCIES BETWEEN THE SPECIFICATION AND THESE DRAWINGS SHOULD BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER OF RECORD PRIOR TO PROCEEDING WITH CONSTRUCTION.
4.

CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PREVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFORMING THAT THE WORK MAY BE ACCOMPLISH AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER OF RECORD PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OF FIELD CONDITIONS.
5.

PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6.

DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE WORK.
7.

DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
8.

CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENT.
9.

CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
10.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
11.

CONTRACTOR SHALL COORDINATE HIS WORK WITH THE SUPERINTENDENT OF THE BUILDING & GROUNDS & SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.
12.

CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
13.

INSTALL ALL EQUIPMENT AND MATERIAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
14.

MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACE, EQUIPMENT, IMPROVEMENTS, PIPING, ETC. AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
15.

IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC., IT MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES (UNLESS NOTED OTHERWISE). LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT.
16.

REPAIR ALL EXISTING WALL SURFACE DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACE.
17.

SEAL PENETRATION THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS.
18.

KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITIONS AND FREE FROM PAINT SPOT, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
19.

MINIMUM BEND RADIUS OF ANTENNA CABLE SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURER'S RECOMMENDATIONS.
20.

DAMAGE TO EXISTING STRUCTURES AND/OR UTILITIES RESULTING FROM CONTRACTORS NEGLIGENCE SHALL BE REPAIRED AND/OR REPLACED TO THE OWNERS SATISFACTION AT NO ADDITIONAL COST TO THE CONTRACT.
21.

ALL CONSTRUCTION IS TO ADHERE TO COMMNET'S INTEGRATED CONSTRUCTION STANDARDS UNLESS NEW MEXICO CODE IS MORE STRINGENT.
22.

THE INTENT OF THE PLANS AND SPECIFICATIONS IS TO PERFORM THE CONSTRUCTION IN ACCORDANCE WITH THE NEW MEXICO BUILDING STANDARDS CODE. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE APPROVED PLANS AND SPECIFICATIONS WHEREIN THE FINISH WORK WILL NOT COMPLY WITH THE REFERENCED CODE ON SHEET T-1.0, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE JURISDICTION BEFORE PROCEEDING WITH THE WORK.
23.

GENERAL CONTRACTOR TO ENSURE THAT ALL BUILDING PENETRATIONS ARE SEALED AND WEATHERPROOFED

SITE WORK NOTES:

1.

DO NOT SCALE BUILDING DIMENSIONS FROM DRAWINGS.
2.

SIZE, LOCATION, AND TYPE OF ANY UNDERGROUND UTILITIES OR IMPROVEMENTS SHALL BE ACCURATELY NOTED AND PLACED ON AS-BUILT DRAWINGS BY GENERAL CONTRACTOR AND ISSUED TO ARCHITECT OR ENGINEER OF RECORD AT COMPLETION OF PROJECT.
3.

ALL EXISTING UTILITIES, FACILITIES, CONDITIONS AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ARCHITECT OR ENGINEER OF RECORD AND OWNER ASSUME NO RESPONSIBILITY WHATSOEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL EXISTING UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORK SCHEDULES AND METHODS OF REMOVING OR ADJUSTING EXISTING UTILITIES.
4.

CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES BOTH HORIZONTAL AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHALL BE IMMEDIATELY REPORTED TO THE ARCHITECT OR ENGINEER OF RECORD FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL THE DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT OR ENGINEER OF RECORD. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS/HER OWN RISK AND EXPENSE. CONTRACTOR SHALL CALL LOCAL DIGGER HOT LINE FOR UTILITY LOCATIONS 48 HOURS PRIOR TO START OF CONSTRUCTION.
5.

CONTRACTOR SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO PAPER, TRASH, WEEDS, BRUSH OR ANY OTHER DEPOSITS WILL REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE DISPOSED OF OFF-SITE BY THE GENERAL CONTRACTOR.

6.

ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY THE GENERAL CONTRACTOR WITH LOCAL UTILITY COMPANY, TELEPHONE COMPANY, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

PAINTING NOTES & SPECIFICATIONS:

A. GENERAL

1.

ALL PAINT PRODUCT LINES SHALL BE SHERWIN WILLIAMS UNLESS SPECIFICALLY NOTED OTHERWISE.
2.

CONTRACTOR SHALL PREPARE ALL SURFACES AND APPLY ALL FINISHES PER LATEST EDITION OF MANUFACTURER'S SPECIFICATIONS.
3.

COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS REGARDING SUFFICIENT DRYING TIME BETWEEN COATS WITH PROVISIONS AS RECOMMENDED BY MANUFACTURER FOR EXISTING WEATHER CONDITIONS.
4.

FINISH COLOR AND TEXTURE OF ALL PAINTED SURFACES SHALL MATCH EXISTING ADJACENT SURFACES UNLESS OTHERWISE NOTED.
5.

ALL PAINT MATERIAL DATA SHEETS SHALL BE PROVIDED TO THE COMMNET CONSTRUCTION MANAGER.
6.

PREPARE PREVIOUSLY PAINTED SURFACE BY LIGHT SANDING WITH 400 GRIT SANDPAPER AND NON-HYDROCARBON WASH. PREPARE GALVANIZED SURFACES BY ACID ETCH OR SOLVENT CLEANING IN ACCORDANCE WITH SSPC-SP1.
7.

FURNISH DROP CLOTHES, SHIELDS, MASKING AND PROTECTIVE METHODS TO PREVENT SPRAY OR DROPPINGS FROM DAMAGING ADJACENT SURFACES AND FACILITIES.
8.

APPLY PAINT BY AIRLESS SPRAY, SANDING LIGHTLY BETWEEN EACH SUCCEEDING ENAMEL COAT ON FLAT SURFACES. APPLY MATERIAL TO ACHIEVE A COATING NO THINNER THAN THE DRY FILM THICKNESS INDICATED.
9.

APPLY BLOCK FILTER TO CONCRETE BLOCK CONSTRUCTION AT A RATE TO ENSURE COMPLETE COVERAGE WITH PORES COMPLETELY FILLED.
10.

CONTRACTOR SHALL CORRECT RUNS, SAGS, MISSES AND OTHER DEFECTS INCLUDING INADEQUATE COVERAGE AS DIRECTED BY THE COMMNET CONSTRUCTION MANAGER. REPAINT AS NECESSARY TO ACHIEVE SURFACES WHICH ARE SMOOTH, EVENLY COATED WITH UNIFORM SHEEN AND FREE FROM BLEMISHES.

B. COATING SYSTEM SPECIFICATIONS

1.

DTM ACRYLIC COATING (SERIES B66) BY SHERWIN WILLIAMS CO. 1ML DFT PER COAT APPLIED IN TWO COATS OVER DTM BONDING PRIMER (B66A50).
2.

100% ACRYLIC, LATEX COATING EQUIVALENT TO A-100 (SERIES A-82) BY SHERWIN WILLIAMS CO. 1 DFT PER COAT APPLIED IN TWO COATS OVER SPECIFIED PRIMER. PAINT & PRIMER

ANTENNAS - PAINT SHALL BE VERIFIED WITH MANUFACTURER IF ACCEPTABLE
PRIMER - KEM AQUA E61-W525
TOPCOAT - COROTHANE II B65W200/B60V22

BTS CABINET
PRIMER - KEM AQUA E61-W525
TOPCOAT - COROTHANE II B65W200/B60V22
COAXIAL JUMPER CABLES

PRIMER - AS REQUIRED FOR ADHESION. APPLY ONE COAT OF KEM AQUA WATER REDUCIBLE PRIMER E61W25 REDUCED 25%
TOPCOAT - 2 COATS COROTHANE II POLYURETHANE B65W200/B60V2

RAW STEEL
PRIMER - KEM BOND HS B50WZ4, DMT ACRYLIC PRIMER
TOPCOAT - 2 COATS COROTHANE II POLYURETHANE B65W200/B60V2

GALVANIZED METAL
ACID ETCH WITH COMMERCIAL ETCH OR VINEGAR PRIMER COAT AND FINISH COAT (GALVITE HIGH SOLIDS OR DTM PRIMER/FINISH)

STAINLESS STEEL
PRIMER - OTM WASH PRIMER, B71Y1
TOPCOATS - 2 COATS COROTHANE II POLYURETHANE B65W200/B60V2

PRE-PRIMED STEEL
TOUCH UP ANY RUST OR UN-PRIMED STEEL WITH KEM BOND HS, SS0WZ4

ALUMINUM & COPPER
PRIMER - DTM WASH PRIMER, B71Y1
TOPCOAT - 2 COATS COROTHANE II POLYURETHANE B65W200/B60V2

CONCRETE MASONRY
PRIMER - PRO MAR EXTERIOR BLOCK FILLER
TOPCOAT - 2 COATS A-100 LATEX HOUSE & TRIM, SHEEN TO MATCH

CONCRETE STUCCO (EXISTING)
2 COATS A-100 LATEX HOUSE & TRIM, SHEEN TO MATCH

STUCCO
PRIMER - PRO MAR MASONRY CONDITIONED B-46 W21000
TOPCOAT - SUPERPAINT A-80 SERIES A-89 SATIN A-84 GLOSS

WOOD
PRIMER - A-100 EXTERIOR ALKYD W009D PRIMER Y-24W20
TOPCOAT - 2 COATS A-100 LATEX HOUSE & TRIM SHEEN TO MATCH ADJACENT SURFACES

FIELD CUTS/ DAMAGE (PRIOR TO PRIME & PAINT)
FIRST & SECOND COAT - CUPRINOL CLEAR WOOD PRESERVATIVE #158-0356 ALL PENETRATIONS INTO FINISHED GLU-LAMS SHALL BE CAULKED WITH "SIKAFLEX" SEALANT
STEEL TOUCH UP
STEEL THAT HAS BEEN WELDED, CUT OR SCRATCHED IN THE FIELD SHALL BE TOUCHED UP WITH COLD GALVANIZED PAINT.

GROUNDING NOTES:

1.

COMPRESSION CONNECTIONS (2), 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2.

ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.
3.

FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.

4.

NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE.
5.

NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
6.

ALL ELECTRICAL AND GROUNDING AT THE CELL SITE SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 780 (LATEST EDITION), NEW MEXICO BUILDING STANDARDS AND MANUFACTURER.

FIRE DEPARTMENT NOTES:

1.

IF FIRE DEPARTMENT FINAL INSPECTION IS REQUIRED, SCHEDULE INSPECTION 2 DAYS IN ADVANCE.
2.

A NEW MEXICO/INTERNATIONAL FIRE CODE PERMIT TO OPERATE BATTERY SYSTEMS WITH STATIONARY LEAD-ACID BATTERIES IS NOT REQUIRED FOR THE QUANTITIES ON SITE.
3.

A NEW MEXICO/INTERNATIONAL FIRE CODE PERMIT MAY BE REQUIRED FOR THE HAZARDOUS MATERIALS ON SITE.
4.

REQUIRED SIGNAGE SHALL INCLUDE LETTERING HEIGHT OF AT LEAST ONE INCH, IN A COLOR THAT CONTRASTS TO THE SIGN BACKGROUND, AND SHALL BE PROMINENTLY DISPLAYED.
5.

AN APPROVED METHOD TO NEUTRALIZE SPILLED ELECTROLYTE SHALL BE PROVIDED IN THE BATTERY ROOM.
6.

BATTERIES SHALL BE PROVIDED WITH SAFETY VENTING CAPS.
7.

CONTRACTOR SHALL VERIFY IN FIELD THE EXISTENCE OR INSTALLATION OF A FIRE EXTINGUISHER WITH A MINIMUM RATING OF 2A-10BC, WITH A CHARGE STATUS ACCEPTABLE TO THE LOCAL FIRE AUTHORITY HAVING JURISDICTION.
8.

LOCATIONS AND CLASSIFICATIONS OF EXTINGUISHERS SHALL BE IN ACCORDANCE WITH THE NEW MEXICO INTERNATIONAL FIRE CODE STANDARD 10-1 AND PLACEMENT IS SUBJECT TO APPROVAL OF THE COUNTY BUILDING FIRE INSPECTOR.
9.

STORAGE, DISPENSING OR USE OF ANY FLAMMABLE AND COMBUSTIBLE LIQUIDS, FLAMMABLE AND COMPRESSED GASES, AND OTHER HAZARDOUS MATERIALS SHALL COMPLY WITH UNIFORM FIRE CODE REGULATIONS.
10.

EXIT DOORS SHALL BE ABLE TO OPEN FROM THE INSIDE WITHOUT THE USE OF KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
11.

ADDRESS NUMBERS SHALL BE A MINIMUM 6 INCHES HIGH AND PLAINLY VISIBLE FROM ROADWAY BUILDING IS ADDRESSED ON.
12.

ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE CONSTRUCTED SO AS TO MAINTAIN AN EQUAL OR GREATER FIRE RATING.
13.

DECORATIVE MATERIALS SHALL BE MAINTAINED IN A FLAME-RETARDANT CONDITION. [NEW MEXICO/INTERNATIONAL FIRE CODE 807.3]

CONCRETE:

PART 1 - GENERAL

1.

WORK INCLUDES FORMWORK, REINFORCEMENT, ACCESSORIES, CAST-IN-PLACE CONCRETE, FINISHING, AND CURING.
2.

INSPECTIONS

A.

CONTRACTOR IS RESPONSIBLE FOR SCHEDULING BUILDING DEPARTMENT INSPECTIONS REQUIRED FOR THE SCOPE OF WORK BEING PERFORMED.

B.

ALL REINFORCING STEEL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND UPLOADED TO TALON VIEW FOR APPROVAL.
3.

QUALITY ASSURANCE

A.

CONSTRUCT AND ERECT CONCRETE FORM WORK IN ACCORDANCE WITH ACI 301 AND ACI 318.

B.

PERFORM CONCRETE REINFORCING WORK IN ACCORDANCE WITH ACI 301, ACI 318, AND ASTM A184.

C.

PERFORM CAST-IN-PLACE CONCRETE WORK IN ACCORDANCE WITH ACI 301, ACI 318, AND ACI 117-90.
4.

SUBMITTALS

SUBMIT CONCRETE MIX DESIGN AND REINFORCING STEEL SHOP DRAWINGS FOR APPROVAL BY COMMNET CONSTRUCTION MANAGER. THE SHOP DRAWINGS SHALL BE SUBMITTED IN THE FORM OF TWO (2) CONCRETE MIX DESIGN INFORMATION SHEETS AND TWO (2) DRAWINGS FOR REINFORCING STEEL.

PART 2 - PRODUCTS

1.

REINFORCEMENT MATERIALS

A.

REINFORCEMENT STEEL, ASTM A615, 60KSI YIELD GRADE, REINFORCING STEEL RODS, PLAIN FINISH.

B.

WELDED STEEL WIRE FABRIC ASTM A185 PLAIN TYPE, IN FLAT SHEETS, PLAIN FINISH.

C.

CHAIRS, BOLSTERS, BAR SUPPORTS, SPACERS, SIZED AND SHAPED FOR SUPPORTS OF REINFORCING.

D.

FABRICATE CONCRETE REINFORCING IN ACCORDANCE WITH ACI 315, AND ACI 318, AND ASTM A184.
2.

CONCRETE MATERIALS

A.

CEMENT: ASTM C150, PORTLAND TYPE.

B.

FINE AND COURSE AGGREGATES: ASTM C33 - MAXIMUM SIZE OF CONCRETE AGGREGATE SHALL NOT EXCEED ONE (3/4) INCH SIZE SUITABLE FOR INSTALLATION METHODS UTILIZED FOR ONE-THIRD CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING.

C.

WATER: CLEAN AND NOT DETRIMENTAL TO CONCRETE.

D.

AIR ENTRAINING ADMIXTURE: ASTM C260.
3.

CONCRETE MIX

A.

COMPRESSIVE STRENGTH 2500 PSI AT 28 DAYS. SLUMP : 3 INCHES.

REFERENCED DOCUMENTS:

- **CONSTRUCTION DRAWINGS:** REFERENCE CDs
- **SCOPE OF WORK:** 11/01/2019 (DATE OF REFERENCE SPREADSHEET)
- **SITE VISIT:** 11/08/2019



Commnet
Connecting Rural America



A Nokin company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com



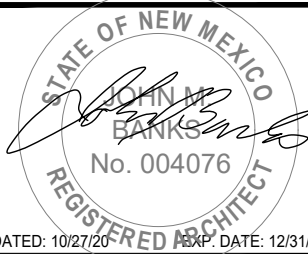
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com

JOHN M. BANKS
ARCHITECT

604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA



"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

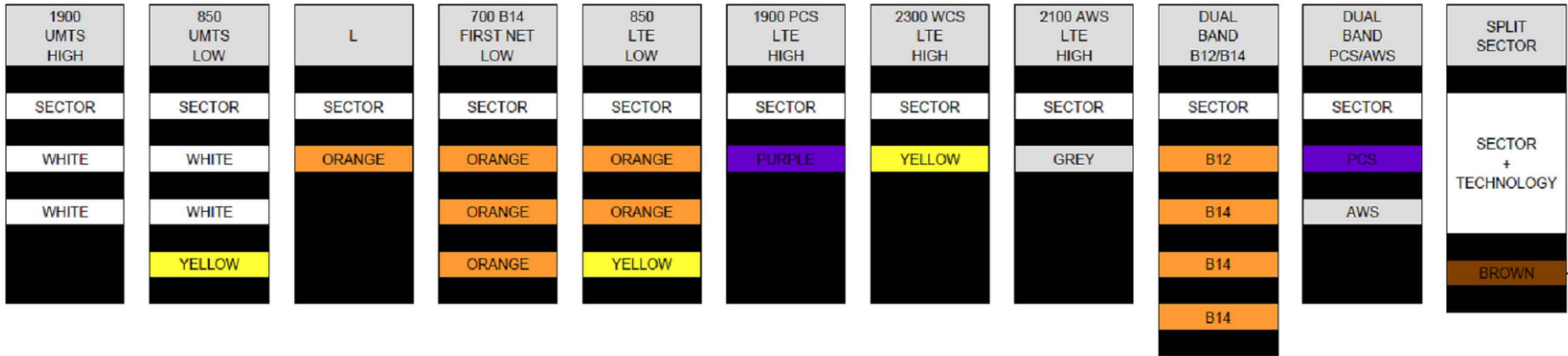
T-2.0

DSW (DESERT SOUTHWEST)

SECTOR COLORS



TECHNOLOGY COLOR CODE



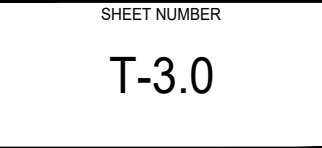
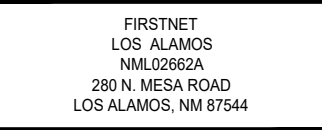
COLOR CODE REPRESENTS ALPHA SECTOR, FIRST MAIN LINE - RED 1, WITH LTE700, WCS, AWS, PCS

1 BROWN STRIPE = SPLIT SECTOR

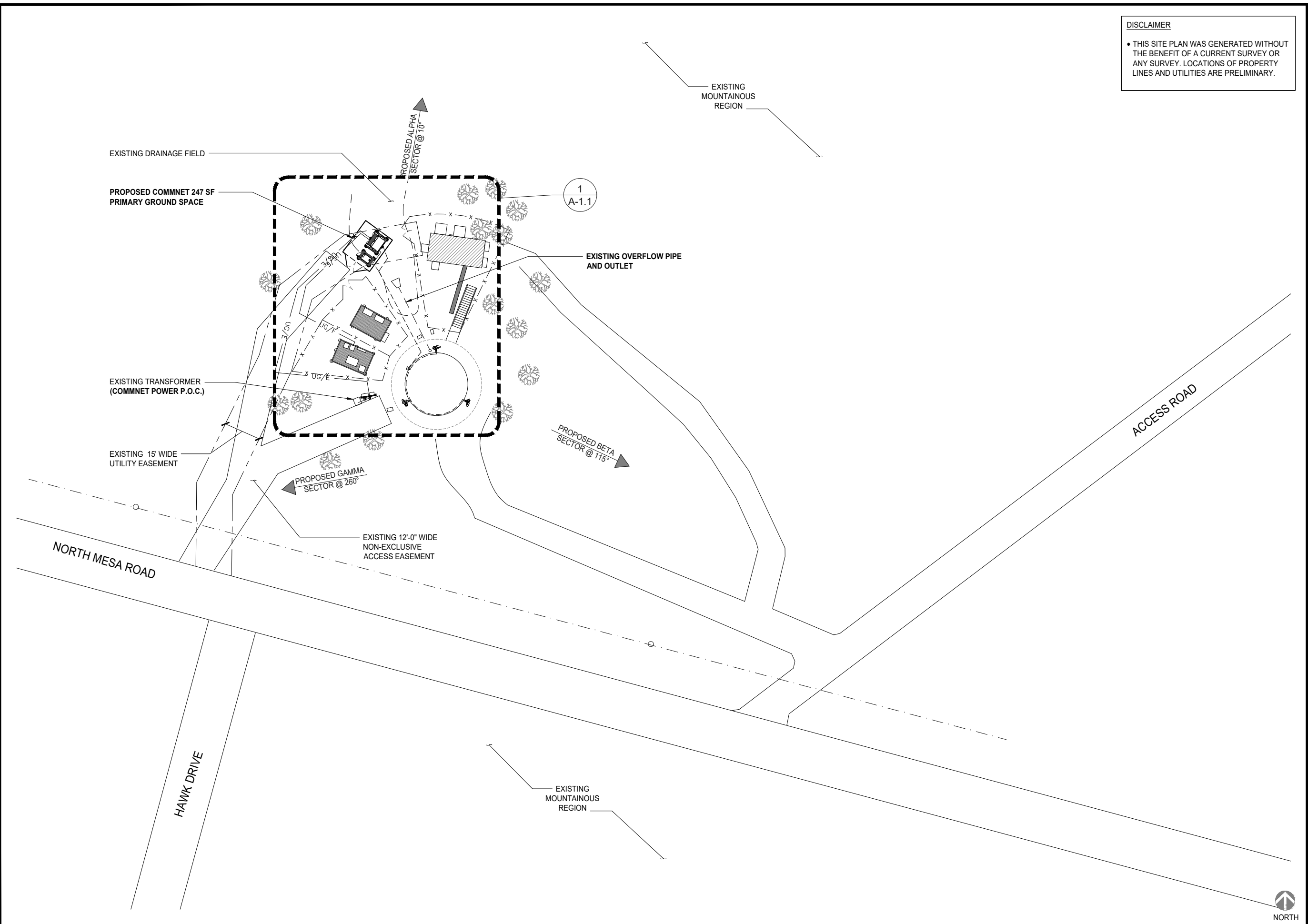
TECHNOLOGY/JUMPER								QUADPLEXER PORT	TAPE BAND COLOR ON MAINLINE COAX										
1C-LTE 700 TX1/RX1	PORT1	SECTOR			SPLIT			LTE LOW 700 B12	1										
WCS TX1/RX1	PORT2	SECTOR						WCS	4	A	B12	PCS	WCS	AWS	SPLIT				
2C/6C-AWS TX1/RX1	PORT3	SECTOR						AWS	3										
2C/5C-PCS TX1/RX1	PORT4	SECTOR						PCS	2										
1C-LTE 700 TX2/RX2	PORT1	SECTOR	SECTOR					LTE LOW 700 B12	1										
WCS TX2/RX2	PORT2	SECTOR	SECTOR					WCS	4	A	A	B12	PCS	WCS	AWS				
2C/6C-AWS TX2/RX2	PORT3	SECTOR	SECTOR					AWS	3										
2C/5C-PCS TX2/TX2	PORT4	SECTOR	SECTOR					PCS	2										
FIRST NET-LTE 700 TX1/RX1	PORT1	SECTOR	SECTOR	SECTOR				LTE LOW 700 B12	1										
WCS TX3/RX3	PORT2	SECTOR	SECTOR	SECTOR				WCS	4	A	A	A	B14	B14	B14	PCS	WCS	AWS	
2C/6C-AWS TX3/RX3	PORT3	SECTOR	SECTOR	SECTOR				AWS	3										
2C/5C-PCS TX3/RX3	PORT4	SECTOR	SECTOR	SECTOR				PCS	2										
FIRST NET-LTE 700 TX2/RX2	PORT1	SECTOR	SECTOR	SECTOR	SECTOR			LTE LOW 700 B12	1										
WCS TX4/RX4	PORT2	SECTOR	SECTOR	SECTOR	SECTOR			WCS	4	A	A	A	A	B14	B14	B14	PCS	WCS	AWS
2C/6C-AWS TX4/RX4	PORT3	SECTOR	SECTOR	SECTOR	SECTOR			AWS	3										
2C/5C-PCS TX4/RX4	PORT4	SECTOR	SECTOR	SECTOR	SECTOR			PCS	2										



REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA




THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.




DISCLAIMER


- THIS SITE PLAN WAS GENERATED WITHOUT THE BENEFIT OF A CURRENT SURVEY OR ANY SURVEY. LOCATIONS OF PROPERTY LINES AND UTILITIES ARE PRELIMINARY.



Commnet
Connecting Rural America



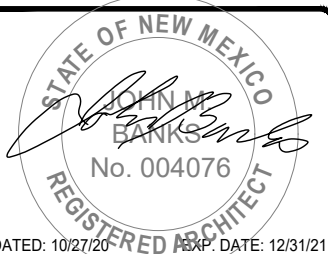
SAC
A Nalco company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com



WESTCHESTER SERVICES LLC
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com

JOHN M. BANKS ARCHITECT
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA



DATED: 10/27/2020 EXP. DATE: 12/31/21

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

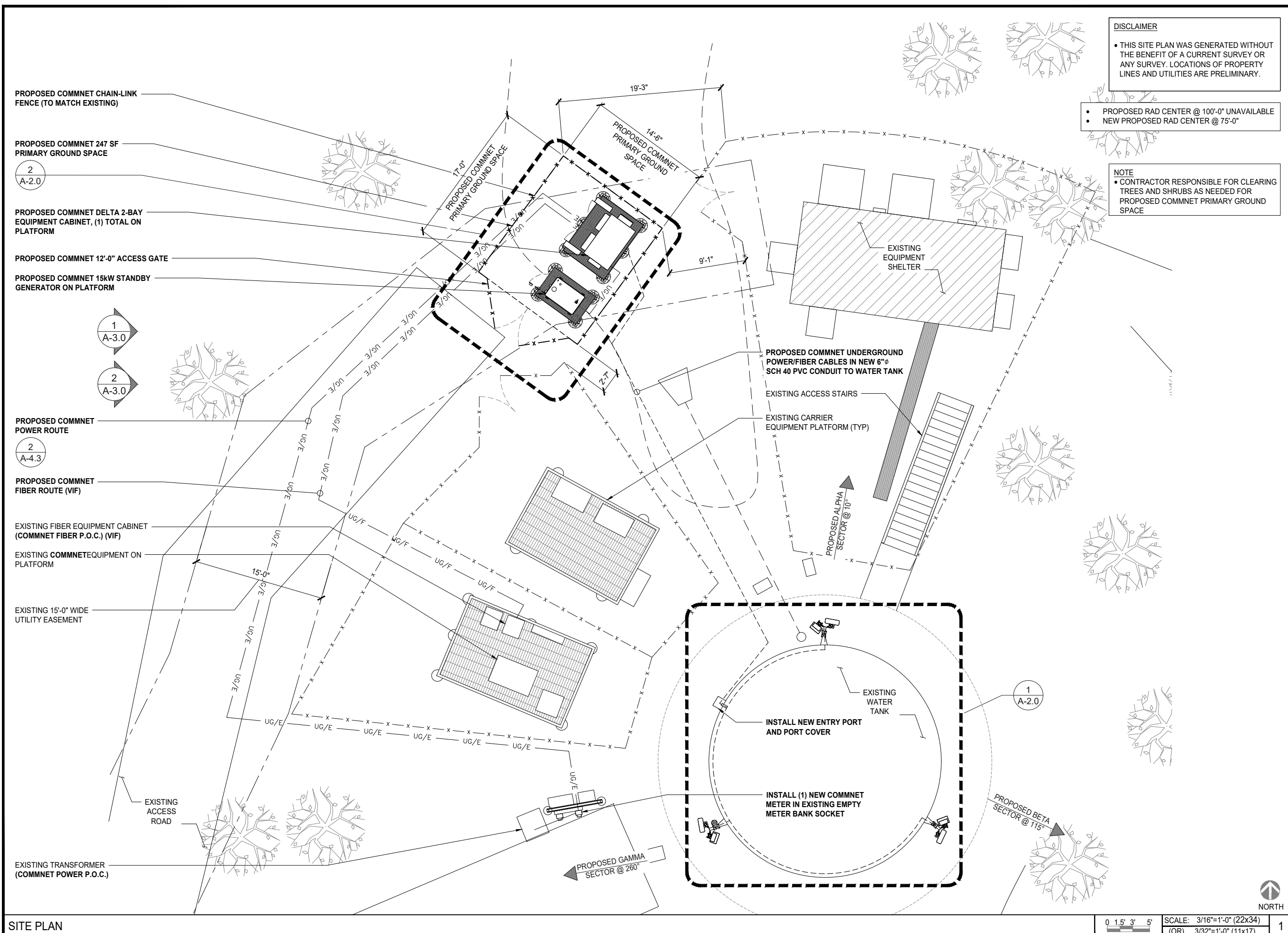
FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

A-1.0



DISCLAIMER

- THIS SITE PLAN WAS GENERATED WITHOUT THE BENEFIT OF A CURRENT SURVEY OR ANY SURVEY. LOCATIONS OF PROPERTY LINES AND UTILITIES ARE PRELIMINARY.

- PROPOSED RAD CENTER @ 100'-0" UNAVAILABLE
- NEW PROPOSED RAD CENTER @ 75'-0"

NOTE

- CONTRACTOR RESPONSIBLE FOR CLEARING TREES AND SHRUBS AS NEEDED FOR PROPOSED COMMNET PRIMARY GROUND SPACE



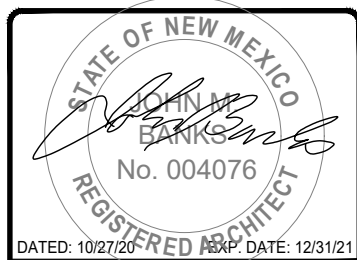
A Nolina company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com



**604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com**

**JOHN M. BANKS
ARCHITECT**

604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

[illegible]

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED
BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I
AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF
THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

SHEET TITLE

SITE PLAN

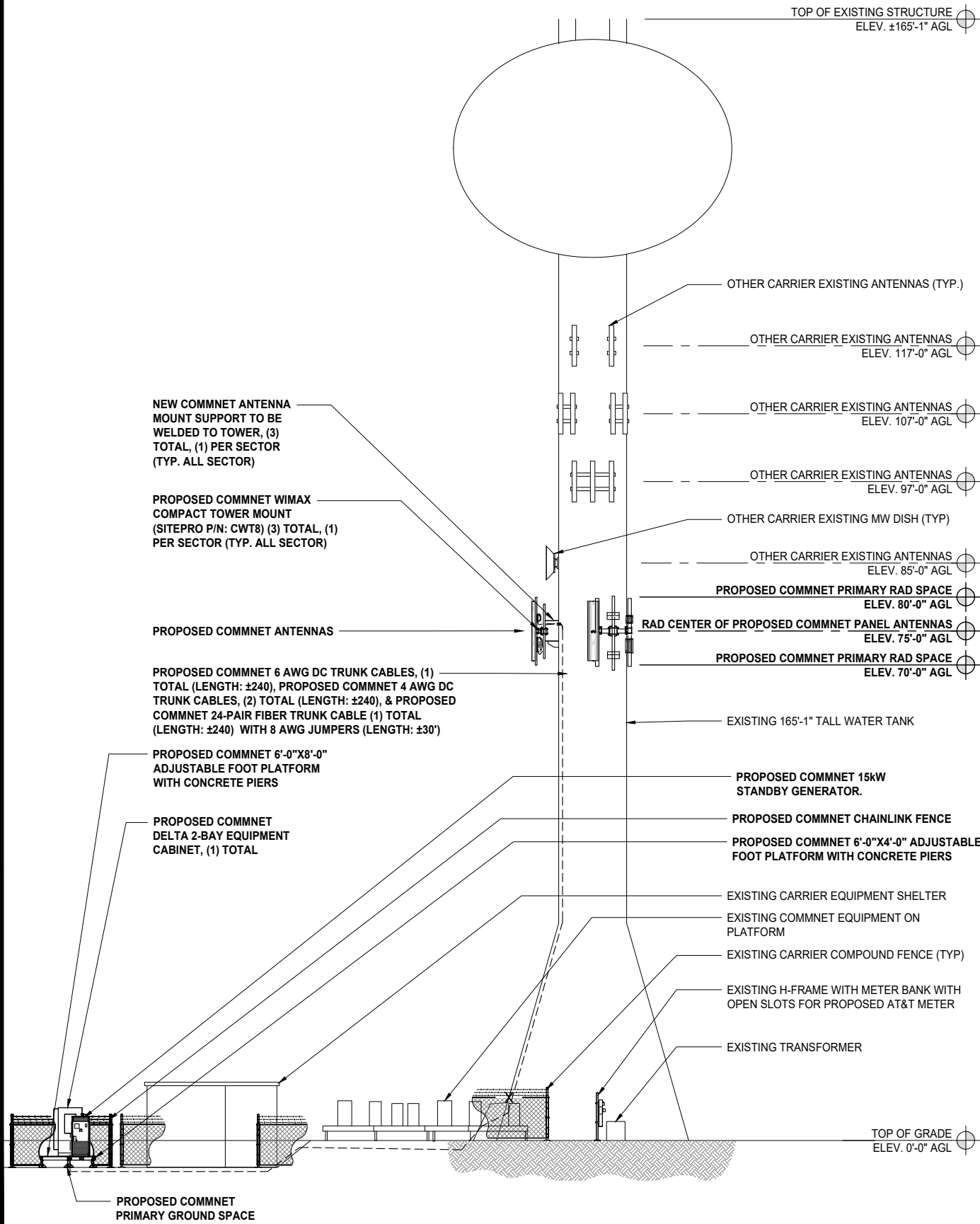
SHEET NUMBER

A-1.1

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

NOTE:
• ALL PROPOSED ANTENNAS AND MICROWAVE DISHES SHALL BE PAINTED TO MATCH THE EXISTING STRUCTURE.

- PROPOSED RAD CENTER @ 100'-0" UNAVAILABLE
- NEW PROPOSED RAD CENTER @ 75'-0"



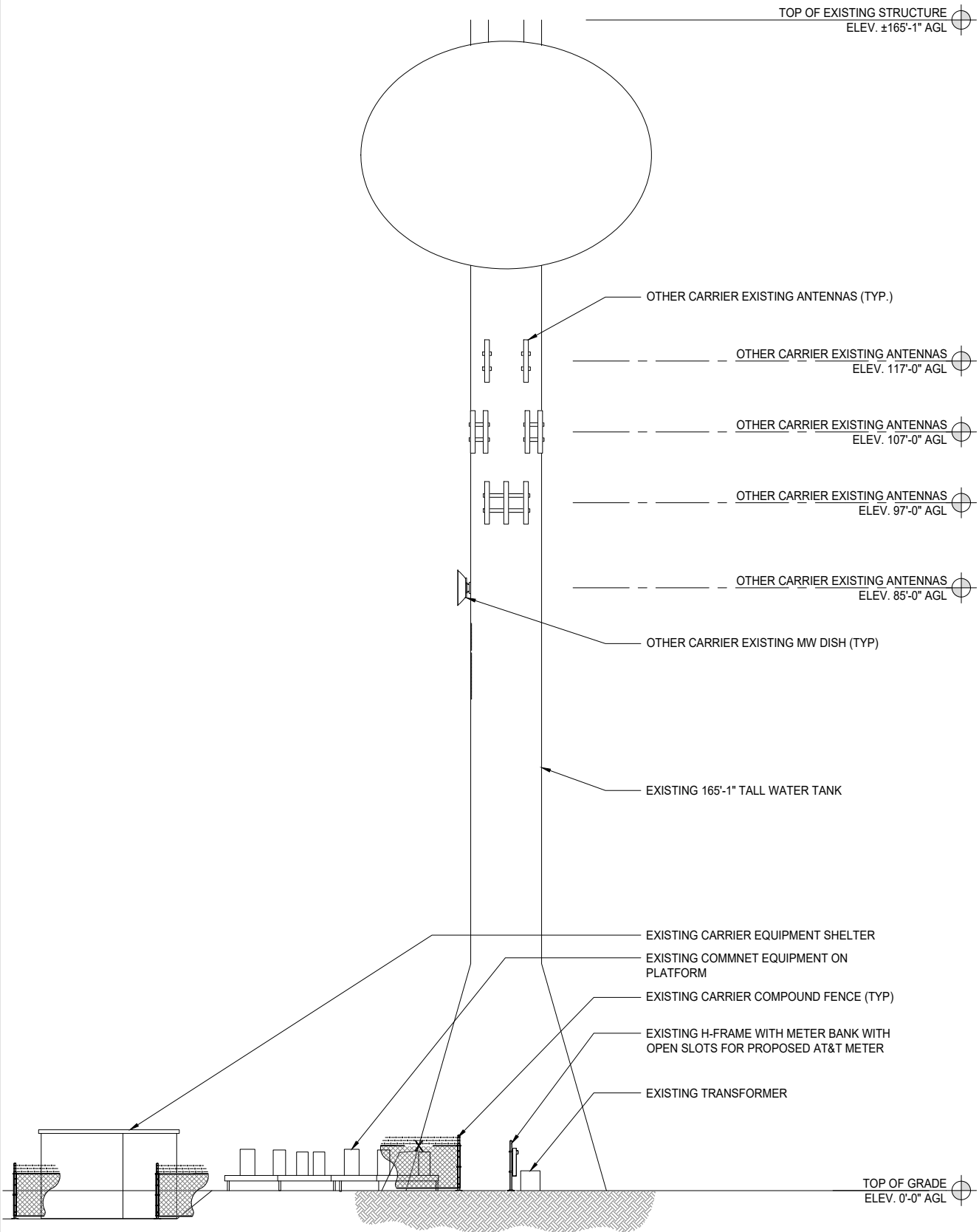
PROPOSED WEST ELEVATION

0 5' 10'

SCALE: 1"=10'-0" (22x34)
(OR) 1"=20'-0" (11x17)

2

EXISTING WEST ELEVATION



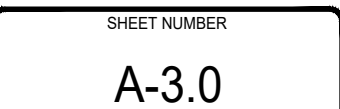
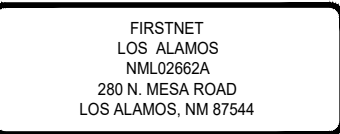
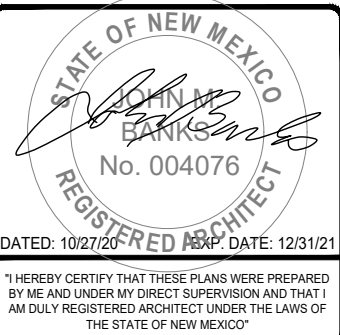
0 2' 4' 8'

SCALE: 1/8"=1'-0" (22x34)
(OR) 1/16"=1'-0" (11x17)

1



REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA





ESOF020-HCV02 2-Bay Walk Upto Cabinet (WUC)

Product Features

- Sealed Multi-bay Equipment and Power Compartment
- Sealed Battery Compartment
- Corrosion Resistant Aluminum enclosure
- Thermo-siphon HEX cooling
- R6 Thermal Insulation Material
- Attachment Rails for AC Load Center
- Rear Access Hatches
- Optional Dual GPS Antenna Mount



Specifications

Model	ESOF020-HCV02 Walk Upto Cabinet (WUC)
1. General	
System cooling capacity	2.5kW Equip Heat Load with Equip Inlet <55C @ 46C ambient
Dimensions (W x H x D)	68W" x 42"D (50" including HEX) x 80"H (add 6" plinth)
Protection class	NEMA4
Door latches	3 point latches (can be pad locked)
Ground bar	2ea 10-positions
Lifting Mechanism	4 lifting brackets
Equipment Compartment	Bay 1 – 23", 19RU for DC Power System and PDU Bay 2 – 23", 44RU for equipment
Battery Compartment	Shelves for 3 strings batteries, designed for: GNB Marathon M12V180FT Energys SBS190F Energys SBS170F
Weight	1860 lbs (Batteries, Power System and Load Equipment excluded)
Materials:	Enclosure Aluminum AL5052, Inner frames Galvanized steel
Finish	Powder Paint RAL7032
Safety	cULus LISTED pending
2. Environment	
Operating temperature	-40°C to +50°C (-40°F to +122°F)
Storage temperature	-40°C to +75°C (-40°F to +158°F)
Acoustics	65 dBA @ 40C equipment inlet, 75 dBA @ 55C equipment inlet
Humidity (relative)	95%, non-condensing (Max.)
3. Thermal management	
Cooling system	Equipment compartment: 2 200W/"K Thermosiphon HEX
Heating system	Equipment compartment: 2 1500W DC heaters Battery compartment: 1 1500W DC heater
4. Equipment	
Arranged for third-party equipment:	AC Load Center (not provided) DC Power System (not provided) Batteries (not provided)
Cable Entry:	
AC Cable	(2) Trade Size 2" ports
Bottom Cable	Arranged for (3) Roxtec EzEntry 24/24 multi-port (not provided) Arranged for (3) Roxtec EzEntry 16/16 multi-port (not provided)
Lower Rear	(4) Trade Size 3" ports
Upper Rear	Arranged for (1) Valmont E575 port kit (not provided)
5. Optional Items	
Optional items	NEQ.20115 – Dual GPS Antenna Mast Kit (Delta 3798100742-S) NEQ.20114 – Wave Guide Top Plate (Valmont E575)
6. Ordering information	
System	NEQ.20212– Cabinet 2-Bay 2-HEX (Delta ESOF020-HCV02)

Delta Group Website:
www.deltaww.com

Product Website:
www.deltapowersolutions.com

United States of America & Canada
Delta Electronics (USA) Inc.
2925 E. Plano Parkway
Plano, Texas 75074

Sales
Bryan Kearse
Office 919-767-3836
Cell 919-800-7107
Bryan.Kearse@deltaww.com

Hari Subramanian
Cell 214-415-4977
Hari.Subramanian@deltaww.com

Support
Field Support
1-877-DELTA-08 option 3
(877-335-8208 option 3)
DEUSTPS.Support@deltaww.com

Installation Services
DEUSTPS.Services@deltaww.com

Orders
DEUSTPS.Orders@deltaww.com

Sales
DEUSTPS.Sales@deltaww.com

RMA
DEUSTPS.RMA@deltaww.com

*All specifications are subject to change without prior notice.

www.deltaww.com

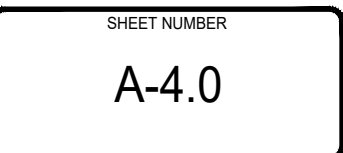
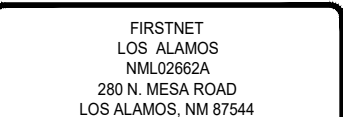
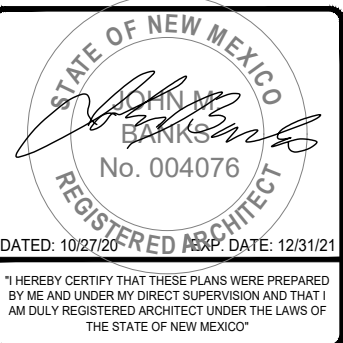


2

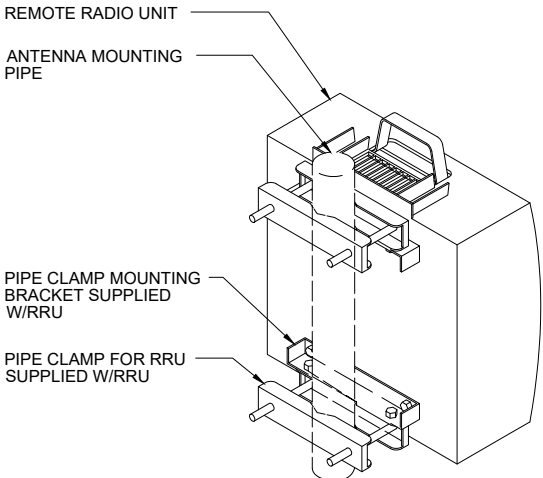
EN_V0.1 / VB 09062018



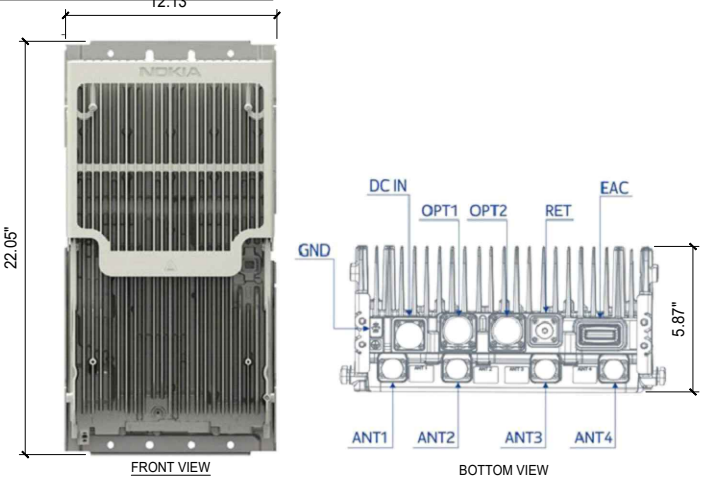
REVISIONS				
REV.	DATE	DESCRIPTION	INITIALS	
0	10/27/2020	PERMIT/CONSTRUCTION	RA	



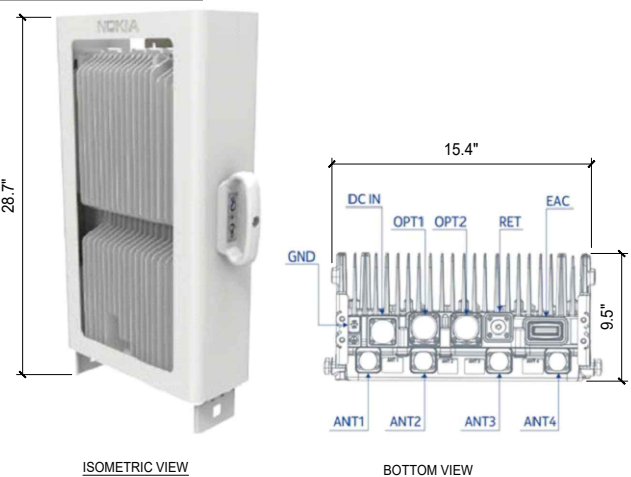
THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



MANUFACTURER: NOKIA
MODEL: AHFIB
MECHANICAL
NET WEIGHT: 66.1 LBS
DIMENSION (LxWxD): 22.05"x12.13"x5.87"



MANUFACTURER: NOKIA
MODEL: AHLBA
MECHANICAL
NET WEIGHT: 101.4 LBS
DIMENSION (LxWxD): 28.7"x15.4"x9.5"



PIPE CLAMP MOUNTING BRACKET

NTS

7

RADIO AHFIB (OR SIMILAR)

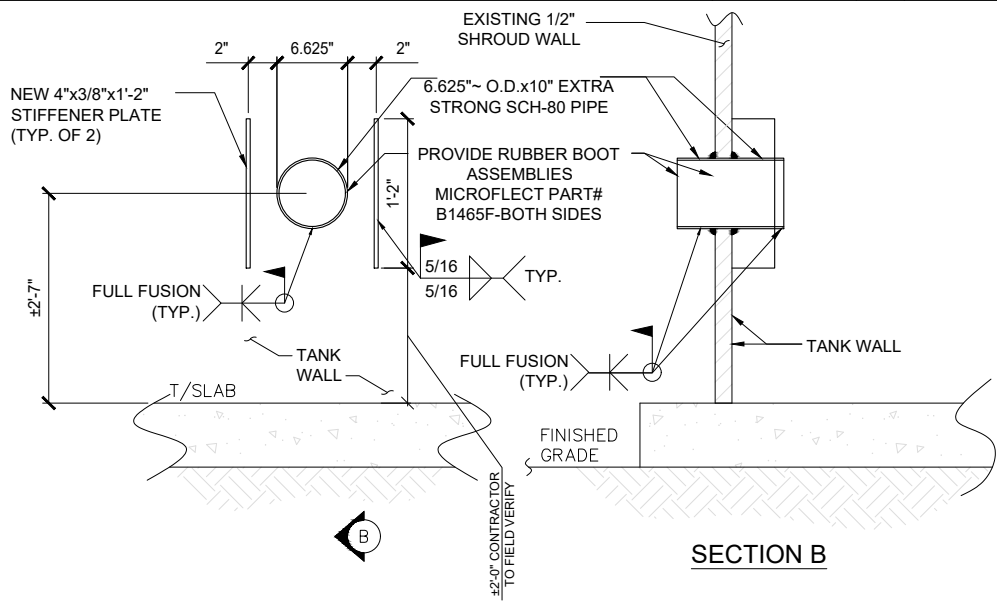
NTS

6

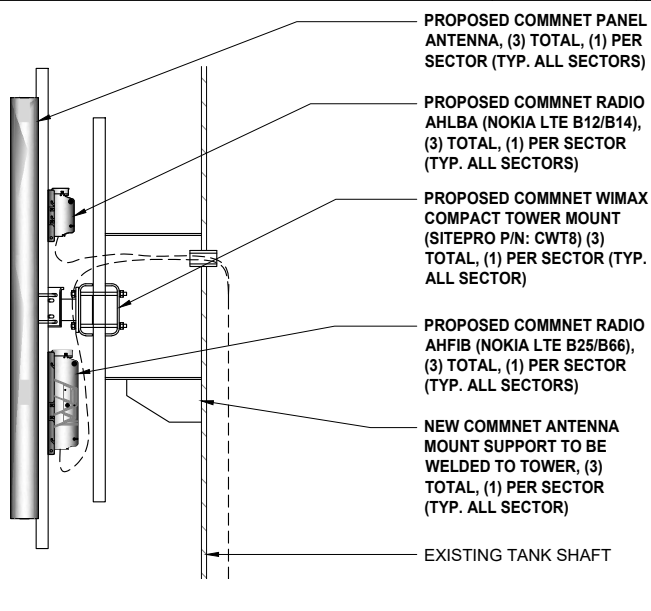
RADIO AHLBA (OR SIMILAR)

NTS

3



SECTION B



PROPOSED COMMNET PANEL ANTENNA, (3) TOTAL, (1) PER SECTOR (TYP. ALL SECTORS)

PROPOSED COMMNET RADIO AHLBA (NOKIA LTE B12/B14), (3) TOTAL, (1) PER SECTOR (TYP. ALL SECTORS)

PROPOSED COMMNET WIMAX COMPACT TOWER MOUNT (SITEPRO P/N: CWT8) (3) TOTAL, (1) PER SECTOR (TYP. ALL SECTOR)

PROPOSED COMMNET RADIO AHFIB (NOKIA LTE B25/B66), (3) TOTAL, (1) PER SECTOR (TYP. ALL SECTORS)

NEW COMMNET ANTENNA MOUNT SUPPORT TO BE WELDED TO TOWER, (3) TOTAL, (1) PER SECTOR (TYP. ALL SECTOR)

EXISTING TANK SHAFT

WALL PENETRATION DETAIL

3/4"=1'-0" (22x34)

3/8"=1'-0" (11x17)

8

ANTENNA MOUNTING DETAIL

NTS

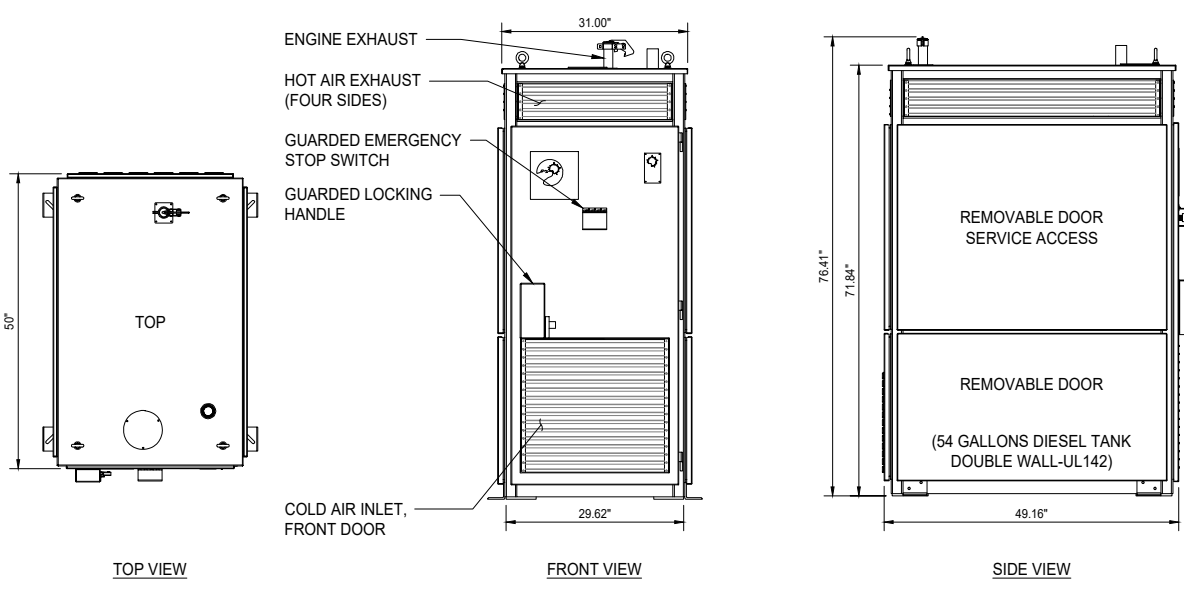
5

NOT USED

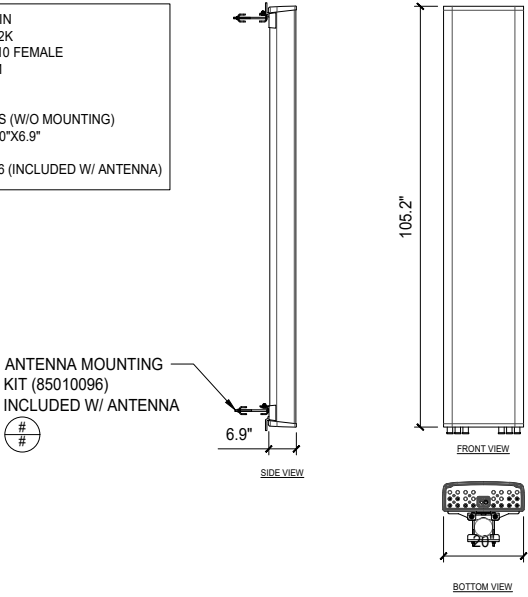
NTS

2

MANUFACTURER: POLAR POWER INC.
GENERATOR MODEL: YANMAR 3TNV88
ENCLOSURE MODEL: 88-25-0603
GENSET: UL 2200 LISTED
DIESEL TANK: DOUBLE WALL - UL 142
ENGINE HP: 24 HP
CABINET DIMENSIONS:
HEIGHT: 72"
WIDTH: 32"
DEPTH: 50"
OPERATING TEMPERATURE RANGE:
-40°F TO 162°F
FUEL DIESEL TANK UL 142 SIZE: 54 GALLONS
DC GENERATOR WEIGHT (EMPTY TANK): 1,248 LBS



MANUFACTURER: KATHREIN
MODEL: 80010992K
CONNECTOR: (12) 4.3-10 FEMALE
CONNECTOR POSITION: BOTTOM
MECHANICAL
WEIGHT: 133.3 LBS (W/O MOUNTING)
DIMENSIONS (HxWxD): 105.2"x20"x6.9"
MOUNTING HARDWARE: 85010096 (INCLUDED W/ ANTENNA)



POLAR DIESEL 15kW -48 VDC GENERATOR (8220-603-D-15-03)

NTS


4


80010992K ANTENNA (OR SIMILAR)

3/4"=1'-0" (22x34)


3/8"=1'-0" (11x17)

1





5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com




604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com

JOHN M. BANKS
ARCHITECT

604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA



DATED: 10/27/2020 EXP. DATE: 12/31/21

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

SHEET TITLE

EQUIPMENT DETAILS & SPECIFICATIONS

SHEET NUMBER

A-4.1

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

MANUFACTURER: RAYCAP
MODEL: DC12-48-60-0-25E-SS
CEQ/ANT#: CEQ.32407
OF CIRCUITS PROTECTED: 12
SURGE PROTECTIVE DEVICE: TYPE 2
MAX. CONTINUOUS
OPERATING DC VOLTAGE: 60 VDC
ENCLOSURE TYPE: TYPE 4
ENCLOSURE DIMS (LxWxH): 22.0"x20.0"x8.0"
WEIGHT (SYSTEM): 39 LBS

NOT USED

NTS

4

COAX MINI BLOCK

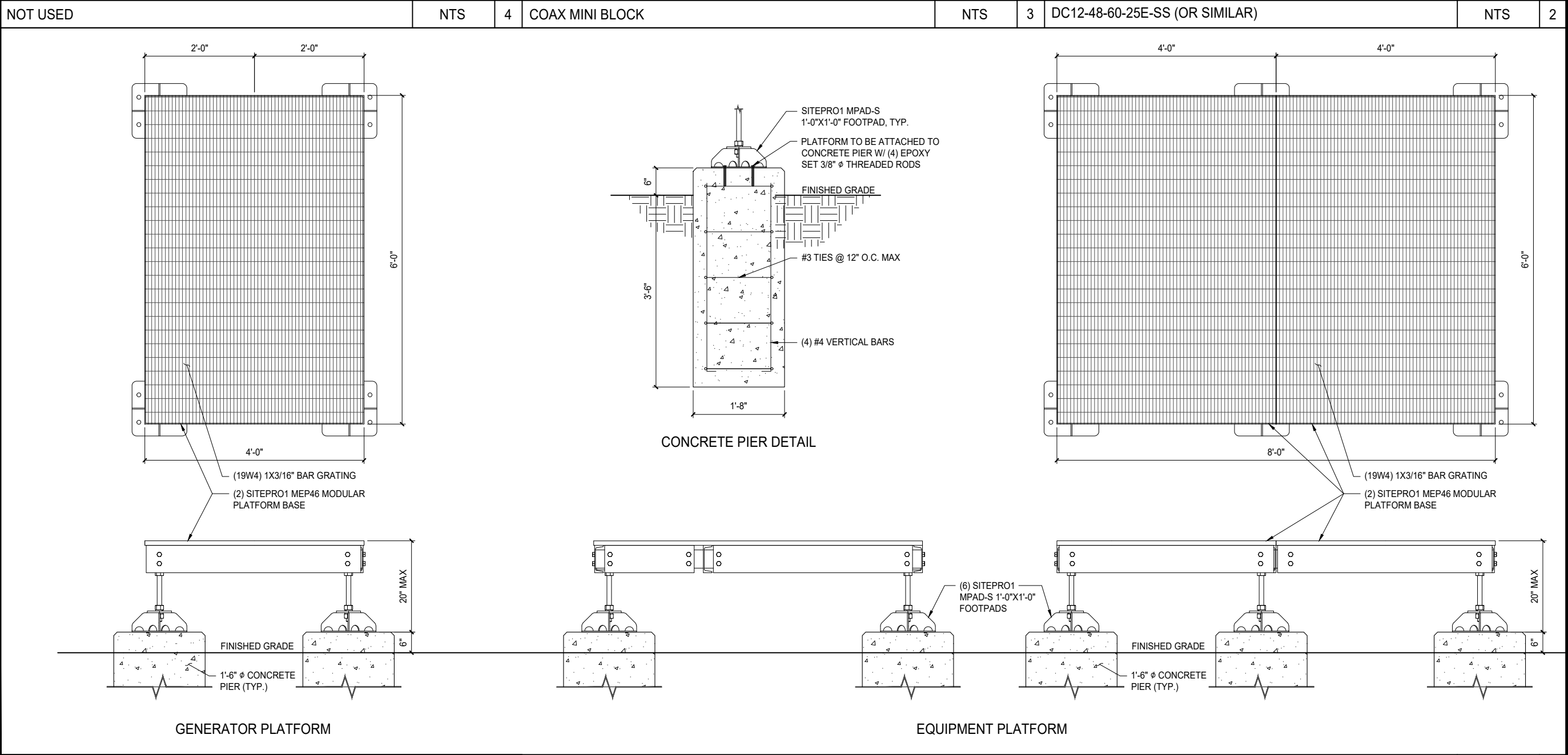
NTS

3

DC12-48-60-25E-SS (OR SIMILAR)

NTS

2



Connecting Rural America

A Nokia company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com

604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com

JOHN M. BANKS
ARCHITECT
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

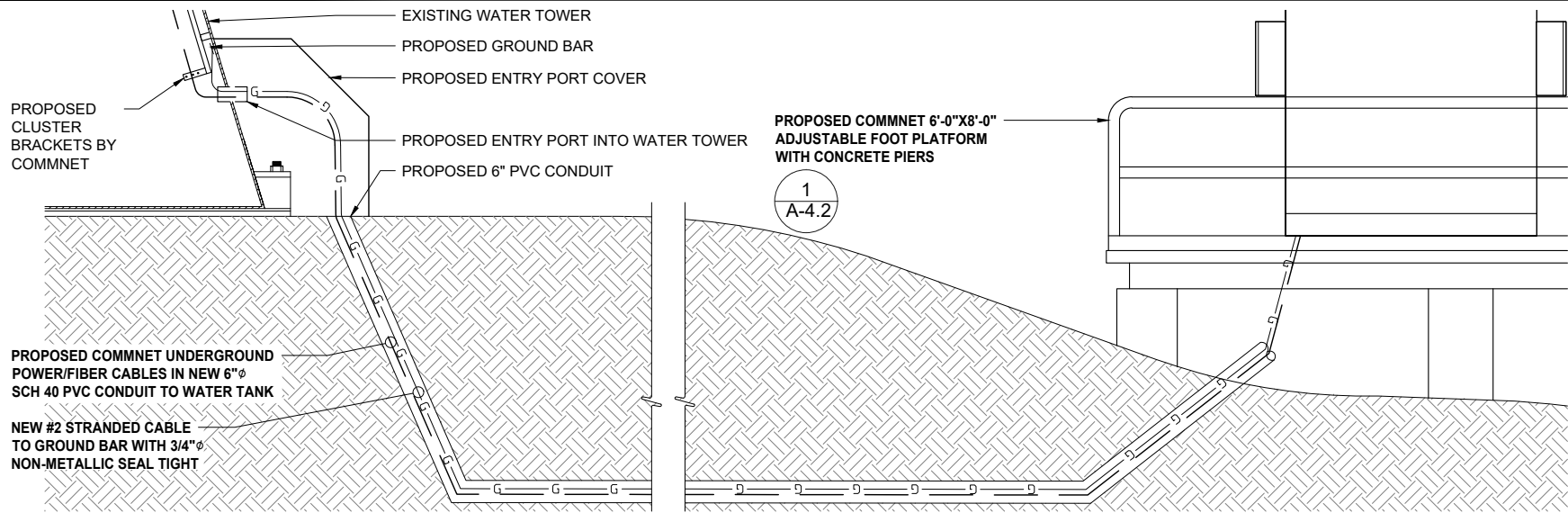
SHEET TITLE

EQUIPMENT DETAILS & SPECIFICATIONS

SHEET NUMBER

A-4.2

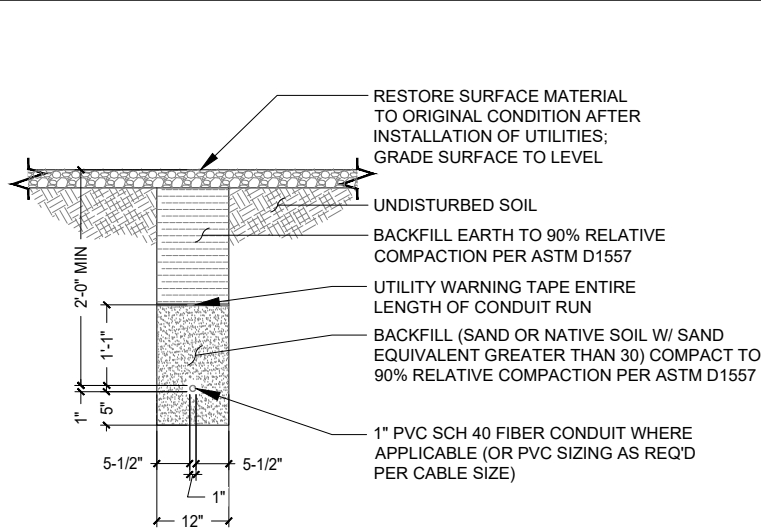
THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



CABLE ENTRY INTO WATER TOWER

NTS

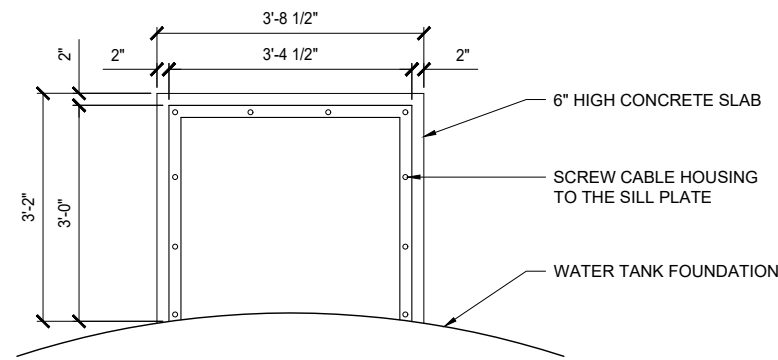
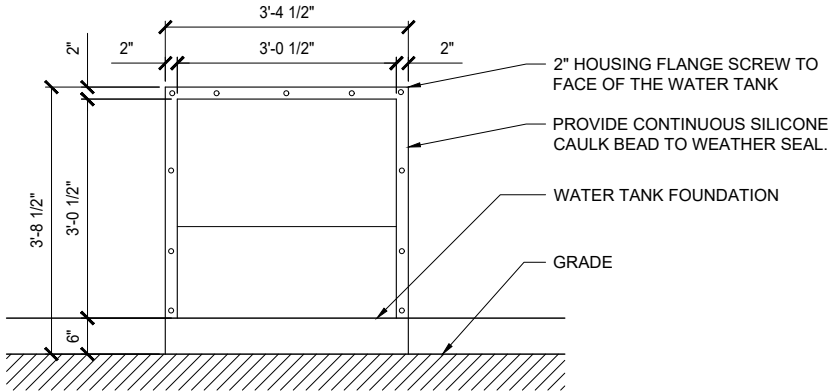
6



FIBER TRENCH

NTS

3

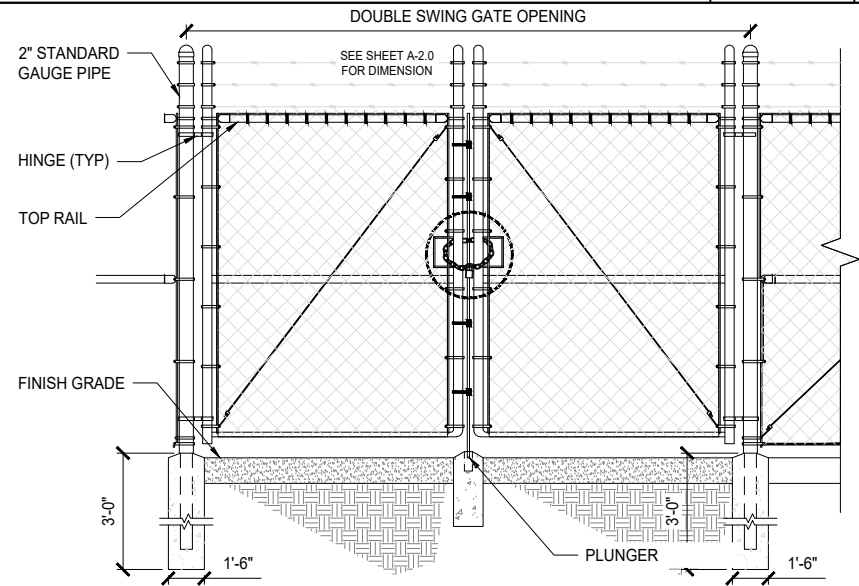


CABLE HOUSING PLAN

CABLE HOUSING DETAIL

NTS

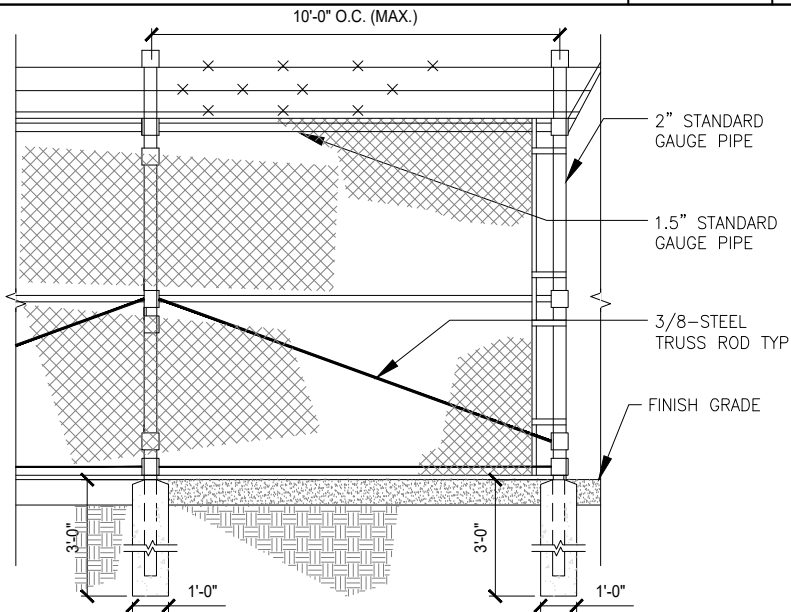
7



GATE DETAIL

NTS

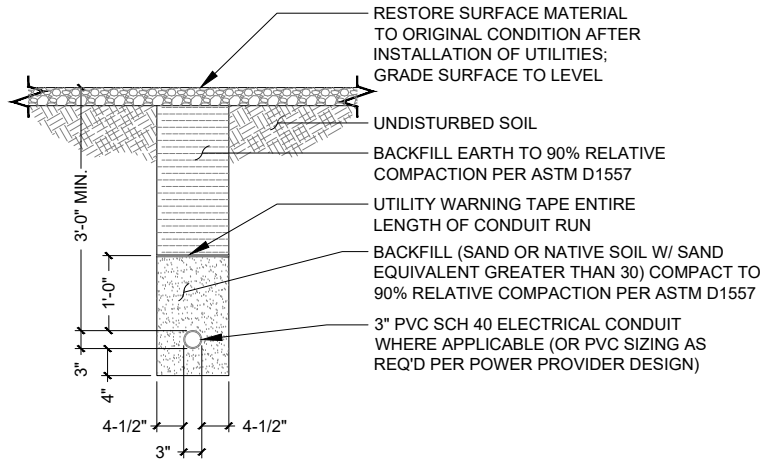
5



FENCE DETAILS

NTS

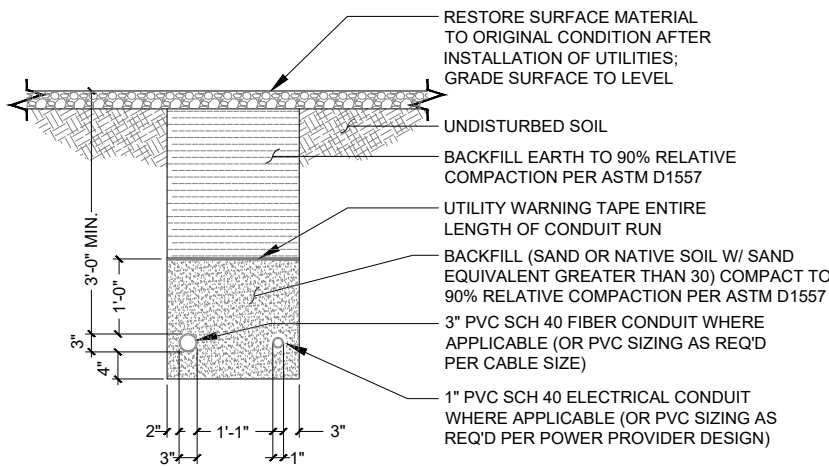
4



POWER TRENCH

NTS

2



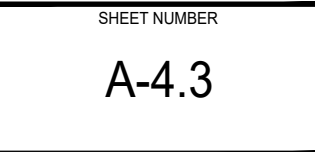
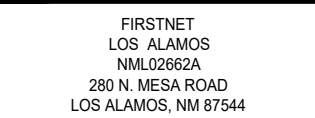
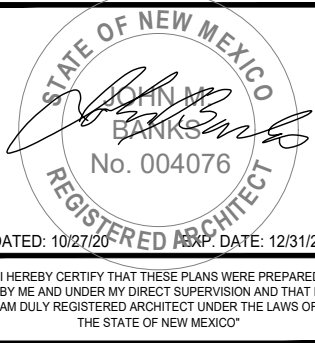
DUAL UTILITY TRENCH

NTS

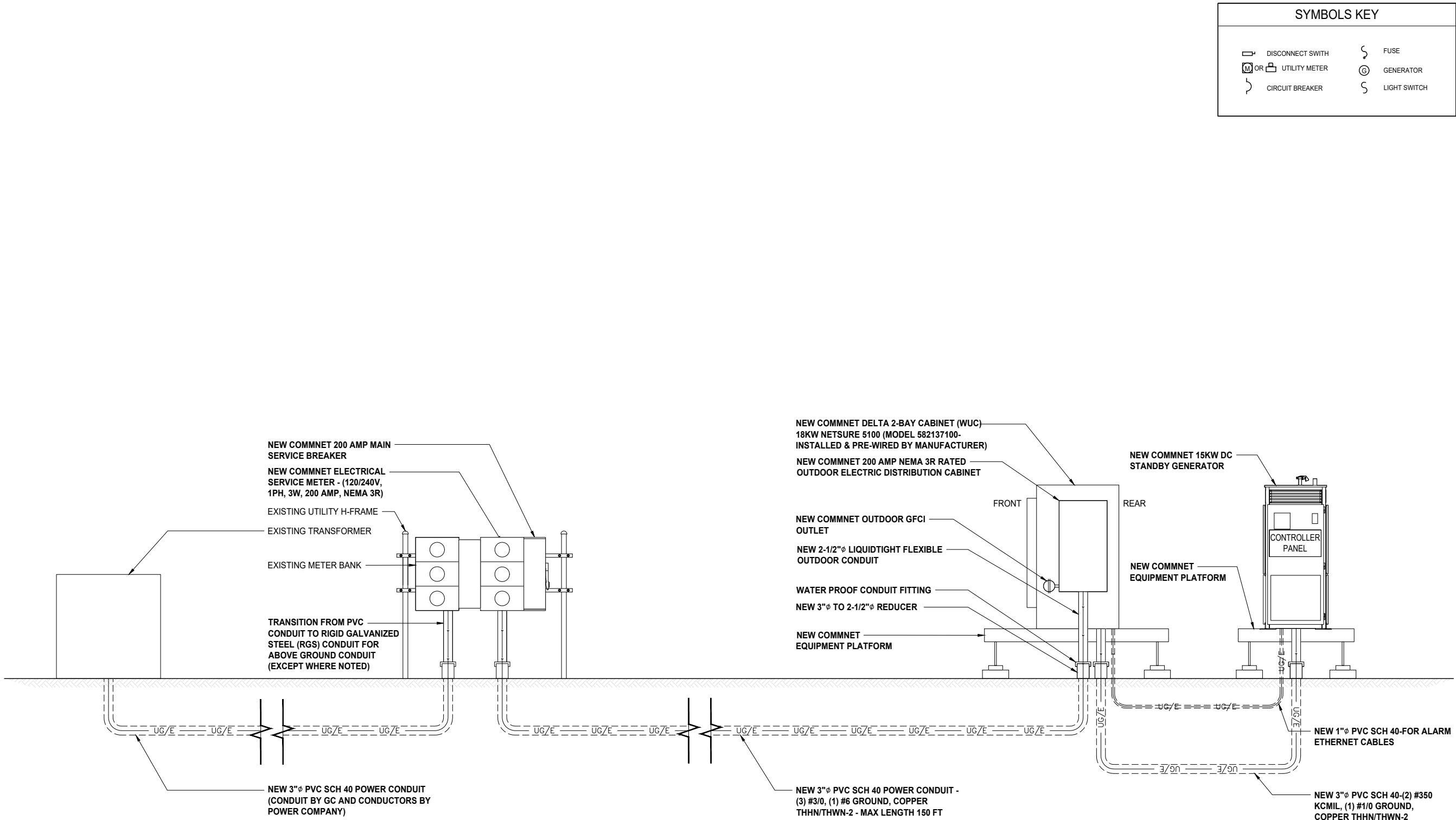
1



REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA



THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



SYMBOLS KEY			
	DISCONNECT SWITCH		FUSE
	UTILITY METER		GENERATOR
	CIRCUIT BREAKER		LIGHT SWITCH

Commnet
Connecting Rural America

SAC
A Nokia company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com

WESTCHESTER SERVICES LLC
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847.277.0080
ae@westchesterservices.com

JOHN M. BANKS ARCHITECT
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA

DATED: 10/27/2020
EXP. DATE: 12/31/21

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

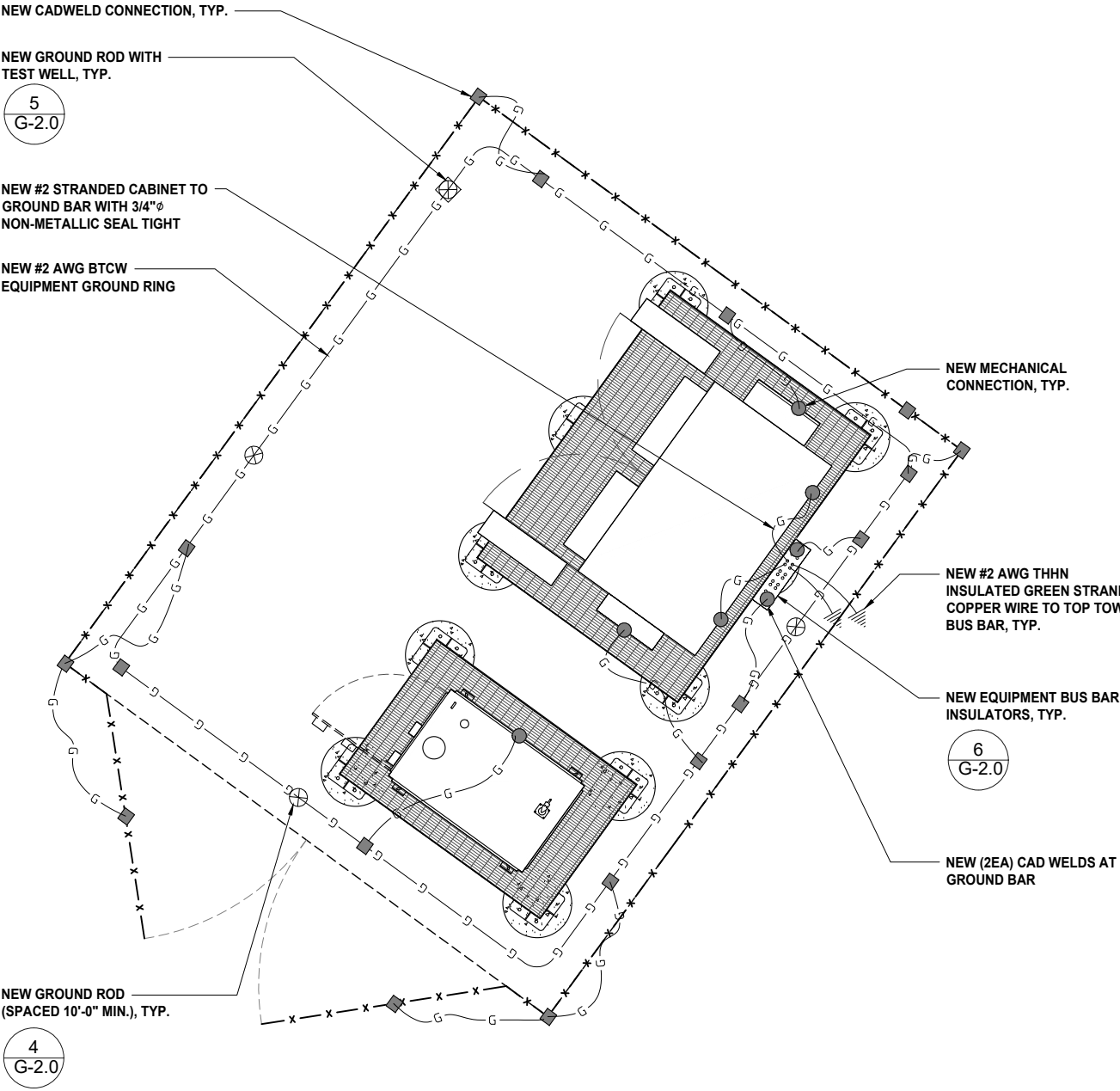
SHEET TITLE

1-LINE DIAGRAM & SYMBOLS KEY

SHEET NUMBER

E-1.0

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

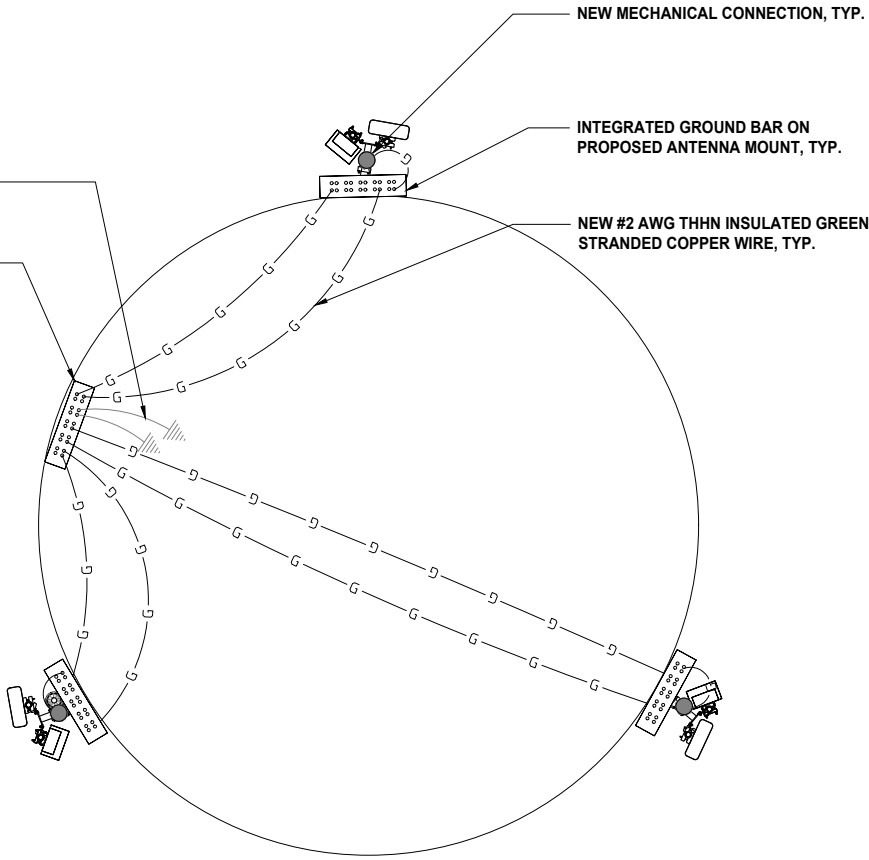


PROPOSED EQUIPMENT GROUNDING PLAN

SCALE
N.T.S.

2

PROPOSED ANTENNA GROUNDING PLAN



SCALE
N.T.S.

1


Commnet
Connecting Rural America


A NOKIA company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com


604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com

**JOHN M. BANKS
ARCHITECT**
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA


DATED: 10/27/2020 EXP. DATE: 12/31/21
"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NM 02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

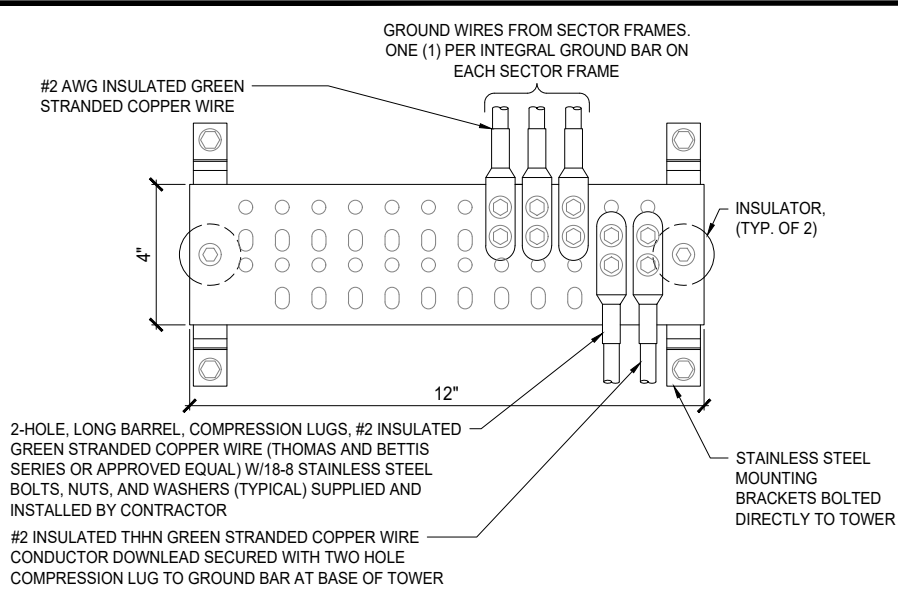
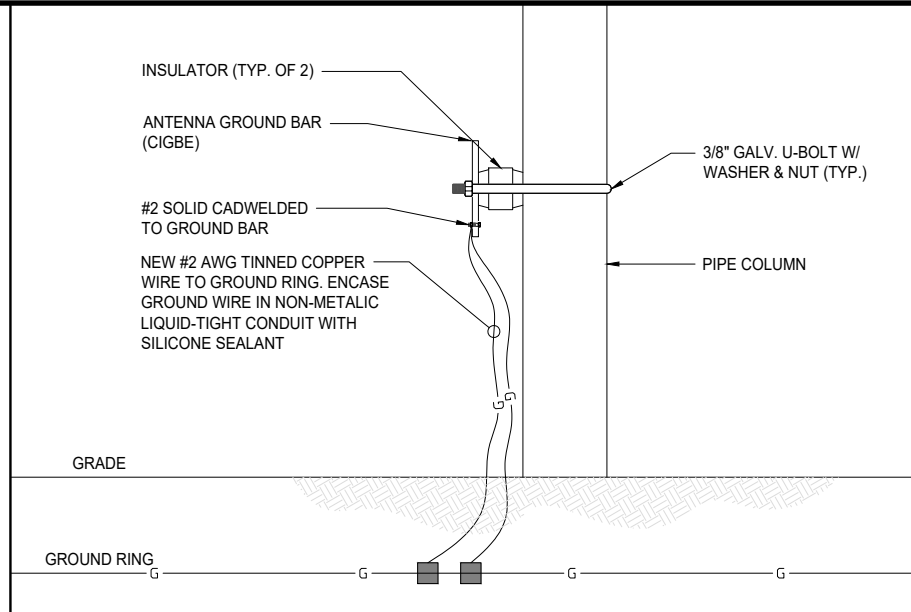
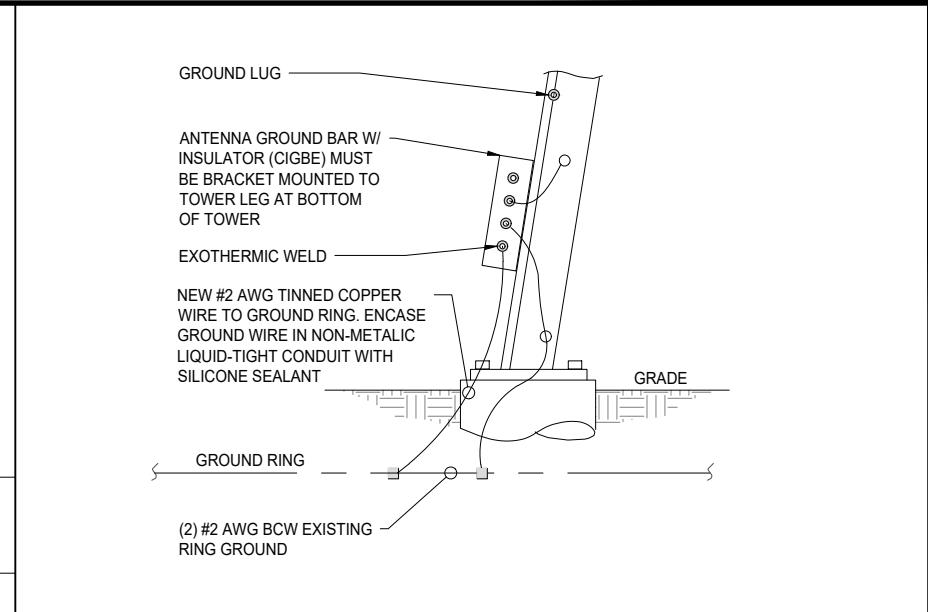
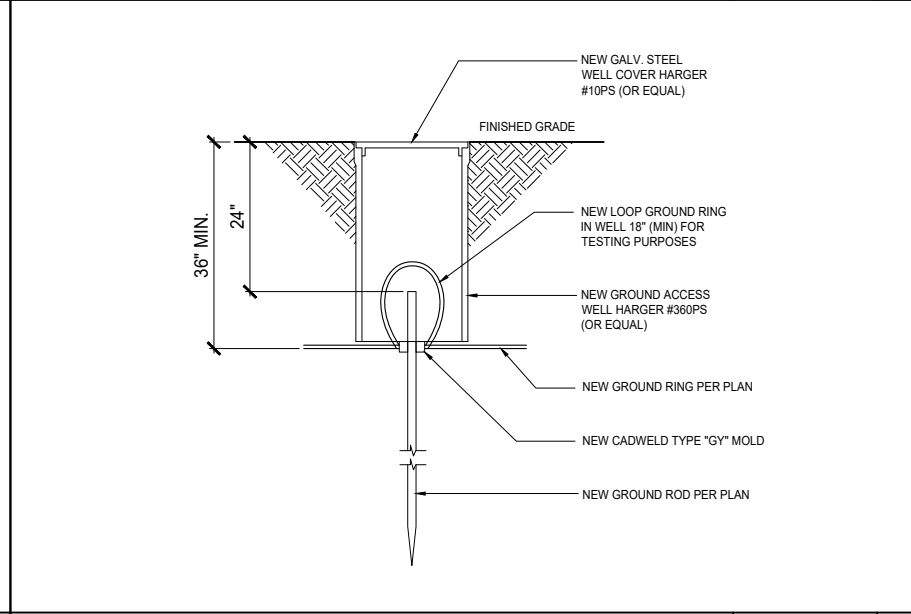
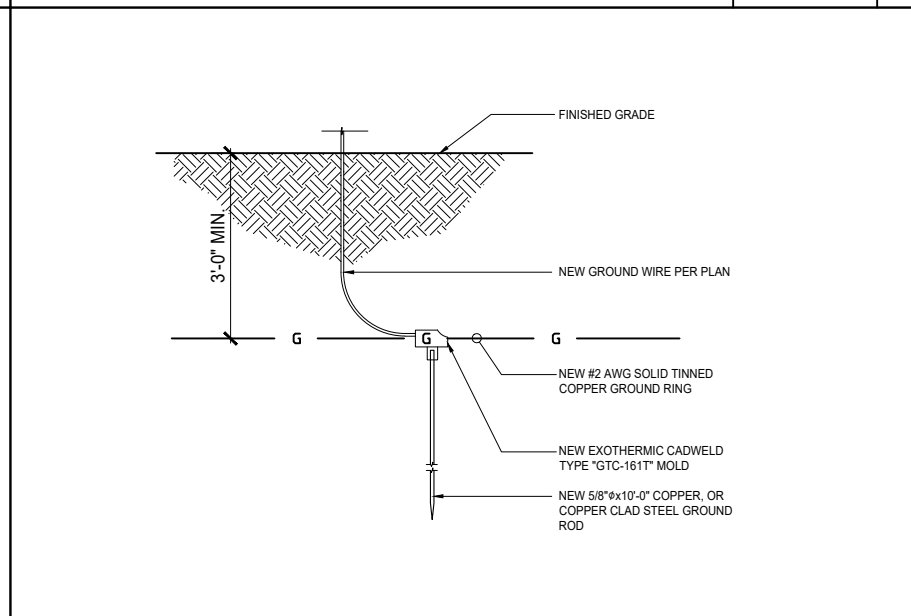
SHEET TITLE

EQUIPMENT & ANTENNA
GROUNDING PLANS

SHEET NUMBER

G-1.0

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

		NTS	9			NTS	6			NTS	3
GROUND BAR DETAIL		NTS	9	EQUIPMENT GROUND BAR		NTS	6	TOWER GROUND DETAIL		NTS	3
						<div><div><div>⊗</div><div>●</div><div>■</div><div>⚡</div><div>⊗</div><div>⏏</div><div>—G—</div></div><div><div>COPPER GROUND ROD</div><div>MECHANICAL CONNECTION</div><div>CADWELD CONNECTION</div><div>FIELD VERIFY & TIE INTO EXISTING GROUNDING SYSTEM</div><div>TEST WELL</div><div>GROUND BAR</div><div>GROUNDING WIRE</div></div></div> <div><div>GROUNDING LEGEND</div><div><div>SCALE</div><div>N.T.S.</div></div><div>2</div></div> <div><div>1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.</div><div>2. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING GROUND WIRES AND CONNECT TO SURFACE MOUNTED BUS BARS, FOLLOW ANTENNA AND BTS MANUFACTURES PRACTICES FOR GROUNDING REQUIREMENTS. GROUND COAX SHIELDS AT BOTH ENDS AND EXIT FROM TOWER OR POLE USING MFR'S PRACTICES.</div><div>3. ALL GROUND WIRE SHALL BE GREEN INSULATED WIRE ABOVE GROUND.</div><div>4. GROUND TEST MUST PASS LESS THAN 5 OHMS AND SUBMIT IN CLOSEOUT PACKAGE.</div><div>5. CONTRACTOR TO ABIDE BY ALL COMMNET SAFETY STANDARDS DURING SITE CONSTRUCTION.</div><div>6. CONTRACTOR SHALL REFER TO COMMNET STANDARDS FOR GROUNDING CONNECTIONS & INSTALLATION METHODS.</div><div>7. ELECTRICAL CONTRACTOR TO PROVIDE DETAILED DESIGN OF GROUNDING SYSTEM, AND RECEIVE APPROVAL OF DESIGN BY AUTHORIZED COMMNET REPRESENTATIVE, PRIOR TO INSTALLATION OF GROUNDING SYSTEM. PHOTO DOCUMENT ALL CADWELDS AND GROUND RING.</div><div>8. NOTIFY CONSTRUCTION MANAGER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.</div><div>9. GROUNDING ROD NOTES (WHERE APPLICABLE)</div><div>10. ELECTRICAL CONTRACTOR SHALL PERFORM AND PROVIDE THE GROUND RESISTANCE TESTING WITH AN APPROVED EQUIPMENT DEVICE THAT HAS A CURRENT CALIBRATION. TEST RESULTS SHALL NOT EXCEED 5 OHMS.</div><div>11. POINT GROUND TEST OR 3 POINT 62% TESTS WILL NOT BE ACCEPTED AS ALTERNATIVES TO THE AFORE MENTIONED GROUND TESTS. TEST SHALL BE PERFORMED WHILE THE COUNTERPOISE IS ISOLATED. TEST SHALL BE PERFORMED WHILE THE COUNTERPOISE IS ISOLATED FROM THE A/C SYSTEM GRIDS AND EXISTING COMMUNICATIONS FACILITY.</div></div>					
NOT USED		8	TEST WELL	NTS	5						
NOT USED		7	GROUND ROD	NTS	4	GENERAL GROUNDING NOTES		<div><div>SCALE</div><div>N.T.S.</div></div> <div>1</div>			



Commnet
Connecting Rural America



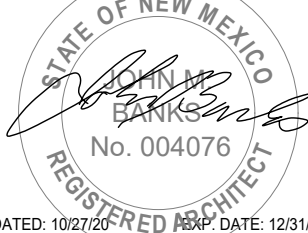
SAC
A Nolia company
5015 SHOREHAM PLACE, SUITE 150
SAN DIEGO, CA 92122
www.sacw.com



WESTCHESTER
SERVICES LLC
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847.277.0070
FAX : 847.277.0080
ae@westchesterservices.com

JOHN M. BANKS
ARCHITECT
604 FOX GLEN
BARRINGTON, IL 60010
TELEPHONE: 847-277-0070
FAX : 847-277-0080
jbanks@westchesterservices.com

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA



DATED: 10/27/2020
EXP. DATE: 12/31/21

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME AND UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF NEW MEXICO"

FIRSTNET
LOS ALAMOS
NML02662A
280 N. MESA ROAD
LOS ALAMOS, NM 87544

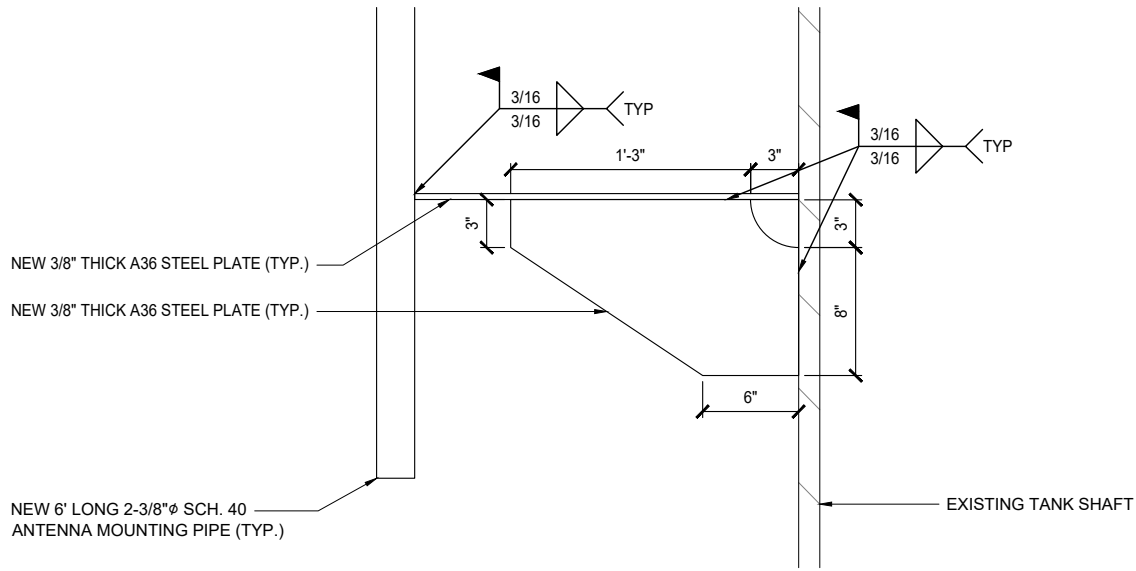
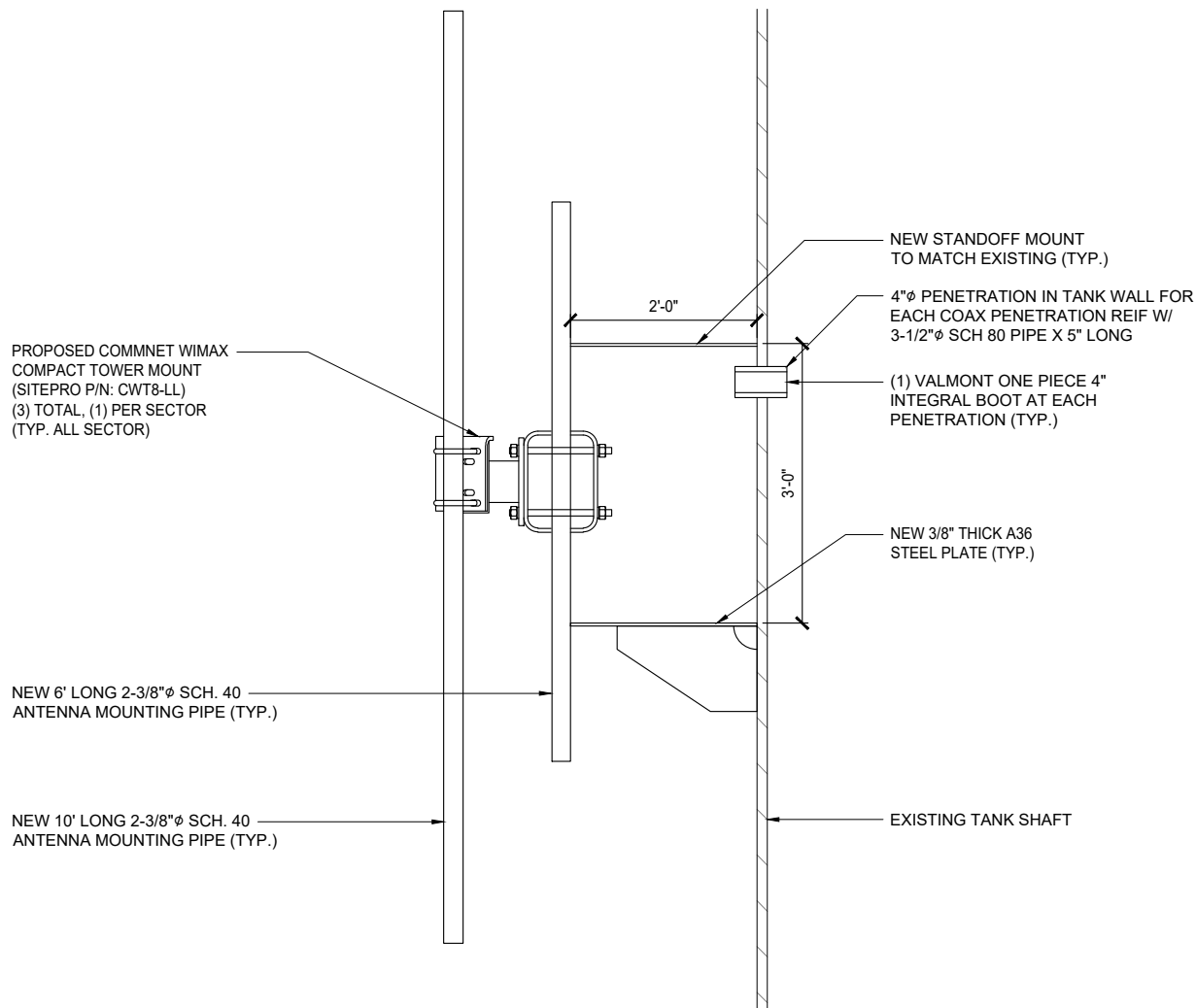
SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

G-2.0

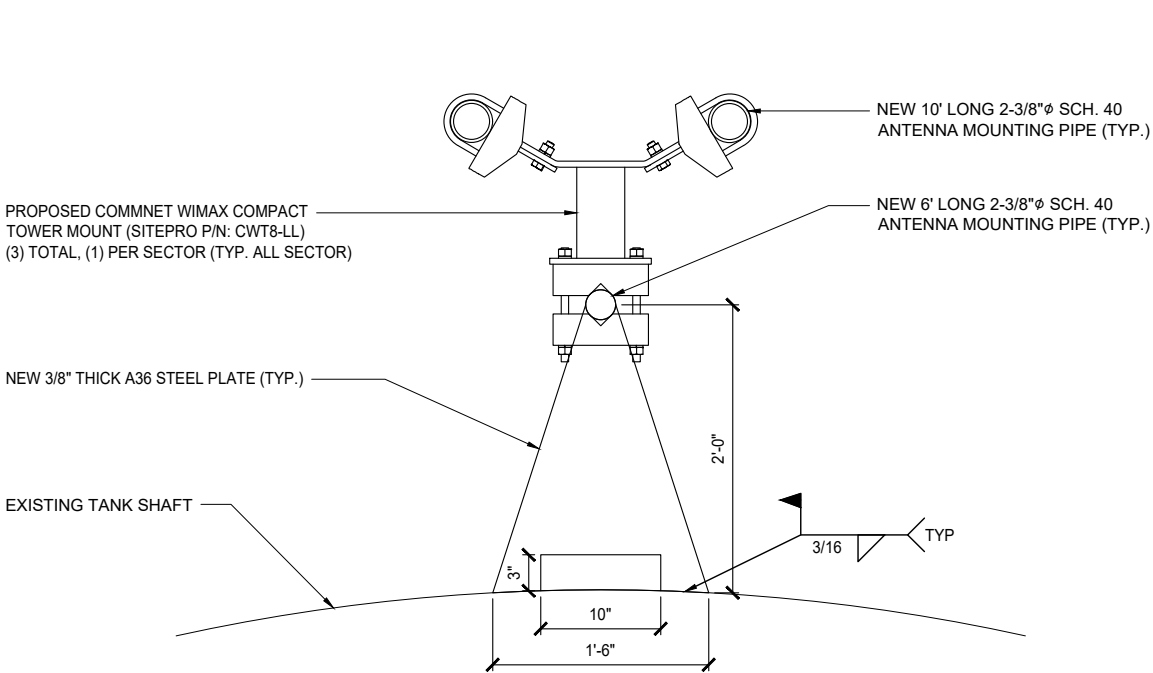
NOTE:
STRUCTURAL DETAILS BASED ON PASSING
STRUCTURAL ANALYSIS COMPLETED BY
PHILIP KOZIOL LIC #25264 DATED 9/3/2020



ANTENNA MOUNTING BRACKET DETAIL

2"=1'-0" (22x34)
1"=1'-0" (11x17)

2



ANTENNA MOUNTING BRACKET DETAIL

1-1/2"=1'-0" (22x34)
3/4"=1'-0" (11x17)

1

ANTENNA MOUNTING BRACKET

1"=1'-0" (22x34)
1/2"=1'-0" (11x17)

3



REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	10/27/2020	PERMIT/CONSTRUCTION	RA

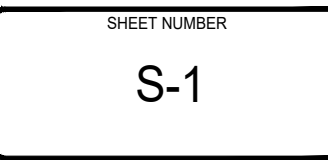
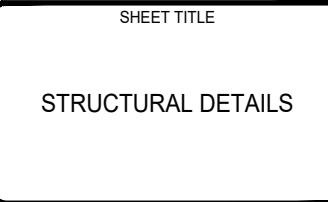
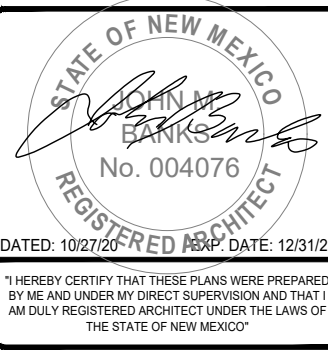


EXHIBIT C. OTHER COMMUNICATION USES

(This exhibit describes the communication uses existing at the Facility as of the Effective Date and other anticipated communications frequencies and uses with which Tenant's Equipment must not interfere.)



CO-LOCATION INTERFERENCE ANALYSIS REPORT

Commnet NML02662A

**FA#15066552
PACE# MRANM031826**

**Los Alamos
280 N. Mesa Road
Los Alamos, NM 87544**

Delivered: August 30, 2020

EBI Project Number: 6220004541



Prepared by:
EBI Consulting
21 B Street
Burlington, MA 01803



Table of Contents

1.0	Executive Summary	1
2.0	Site Description	2
2.1	Communications Systems	3
2.2	Antenna Systems	4
3.0	Transmitter Frequencies	5
4.0	Receiver Frequencies	7
5.0	Transmitter Noise Analysis	9
6.0	Receiver Desensitization Analysis	12
7.0	Intermodulation Interference Analysis	15
7.1	Transmitter Generated Intermodulation Analysis	17
7.2	Receiver Generated Intermodulation Analysis	18
8.0	Transmitter Harmonic Output Interference Analysis	19
9.0	Transmitter Spurious Output Interference Analysis	20
10.0	Summary & Limitations	21

1.0 Executive Summary

This report presents a radio frequency interference (RFI) analysis which was performed on the **Commnet NML02662A_Los Alamos (First Net)** site. The RFI analysis consists of transmitter noise, receiver desensitization, intermodulation, harmonic and transmitter spurious output interference. The report consists of Sections that provide details of the communications site, antenna systems, operational frequencies and each interference analysis mode.

A summary of the interference analysis results is depicted in the following Table.

Interference Analysis Mode	Type Mix	Status	Summary	Worst-Case Margin (dB)
Transmitter Noise	N/A	Passed	No Interference was predicted	7.5
Receiver Desensitization	N/A	Passed	No Interference was predicted	25.6
Transmitter Intermodulation	1 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	2 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	3 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	4 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	5 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	1 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	2 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	3 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	4 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	5 Tx	Passed	No Interference was predicted	N/A
Transmitter Harmonics	N/A	Passed	No Interference was predicted	N/A
Transmitter Spurious Output	N/A	Passed	No Interference was predicted	N/A

The analysis was performed with the setup options depicted in the Table below.

Analysis	Description
Receiver Performance	Receiver Sensitivity Threshold
Receiver Bandwidth	Receiver Dependent
Antenna Patterns Considered	Yes
Measured Antenna Isolation Data	No
Filters/Multicouplers Considered	Yes
Number of Simultaneous Transmitters Mixed	5
Highest Intermodulation Order Tested	7
Condense Intermodulation Hit Quantity	Yes - 10000/Order
TX IM Bandwidth Multiplication	No
Tx/Rx Systems Excluded	None
Site File Name	Commnet NML02662A_Los Alamos First Net.dta
Report File Name	Commnet NML02662A_Los Alamos First Net.docx
WirelessSiteRFI Software Version	10.0.12

2.0 Site Description

The communication systems located at this site are described in this section as well as the configuration of the antenna systems.

The site parameters are:

Site Name: Commnet NML02662A_Los Alamos (First Net)
Owner: Cty of Los Alamos
Site Description: Water Tank
Address: 280 N. Mesa Road, Los Alamos, NM 87544
Latitude: 35.8966389 N
Longitude: -106.295056 W
Elevation: 7357 feet AMSL

Notes: This analysis was performed using radio system data provided by Commnet and data from FCC license queries. A search of the FCC license database was completed for this structure as well as licenses for municipal public safety systems in a 1-mile radius of this facility. Only licenses showing as active in this search radius were utilized. The table below in Section 2.1 lists all Communications analyzed as part of this study. Systems highlighted in blue are systems located on this water tank structure. Systems highlighted in green are off site active municipal public safety licenses from the FCC 1-mile radius search.

2.1 Communications Systems

System	Provider	Technology	Frequency Band
1	Commnet	LTE	700 MHz Band
2	Commnet	LTE	1900 MHz PCS
3	Commnet	LTE	2300 MHz WCS
4	Commnet	LTE	2100 MHz AWS
5	Commnet	LTE / Band 14	700 MHz Band (Band 14)
6	T-Mobile	LTE	600 MHz Band
7	T-Mobile	LTE	700 MHz Band
8	T-Mobile	LTE	1900 MHz PCS Band
9	T-Mobile	LTE	2100 MHz AWS Band
10	Verizon Wireless	LTE	700 MHz Band
11	Verizon Wireless	LTE	850 MHz Cellular
12	Verizon Wireless	LTE	1900 MHz PCS Band
13	Verizon Wireless	LTE	2100 MHz AWS Band
14	Sprint	PCS CDMA	1900 MHz PCS Band
15	Sprint	LTE	800 MHz SMR
16	Sprint	LTE	1900 MHz PCS Band
17	Sprint	LTE	2500 MHz BRS Band
18	RediNet MW (WQZY816)	Microwave	11 GHz Microwave
19	North Central Eco Development MW (WQQG909)	Microwave	11 GHz Microwave
20	Commnet Four Corners MW (WRCE492)	Microwave	11 GHz Microwave
21	Auxiliary Fire Brigade (KNNP401)	FM Land Mobile	150 - 174 MHz - Land Mobile
22	County of Los Alamos (WPLH453)	FM Land Mobile	150 - 174 MHz - Land Mobile
23	County of Los Alamos (WQTZ640)	FM Land Mobile	150 - 174 MHz - Land Mobile
24	County of Los Alamos (WNWX316)	FM Land Mobile	806 - 896 MHz - Land Mobile

2.2 Antenna Systems

Ant #	Mfg	Antenna Model	Gain (dBd)	Hgt (ft)	Orient (deg)	Sect or	Ant Use	Transmission Line Type	Line Loss (/100')	Line Length (ft)
1	Kathrein	80010992K	14.15	76	10	A	Dplx	1/2 in. Foam	0.5	10
2	Kathrein	80010992K	14.15	76	115	B	Dplx	1/2 in. Foam	0.5	10
3	Kathrein	80010992K	14.15	76	260	C	Dplx	1/2 in. Foam	0.5	10
4	RFS	APXVAARR24_43-U-NA20	13.35	97	0	A	Dplx	1/2 in. Foam	0.5	10
5	RFS	APXVAARR24_43-U-NA20	13.35	97	120	B	Dplx	1/2 in. Foam	0.5	10
6	RFS	APXVAARR24_43-U-NA20	13.35	97	240	C	Dplx	1/2 in. Foam	0.5	10
7	Ericsson	AIR21 B2A / B4P	15.85	97	0	A	Dplx	1/2 in. Foam	0.5	10
8	Ericsson	AIR21 B2A / B4P	15.85	97	120	B	Dplx	1/2 in. Foam	0.5	10
9	Ericsson	AIR21 B2A / B4P	15.85	97	240	C	Dplx	1/2 in. Foam	0.5	10
10	Commscope	JAHH-65C-R3B	13.15	107	0	A	Dplx	1/2 in. Foam	0.5	10
11	Commscope	JAHH-65C-R3B	13.15	107	120	B	Dplx	1/2 in. Foam	0.5	10
12	Commscope	JAHH-65C-R3B	13.15	107	240	C	Dplx	1/2 in. Foam	0.5	10
13	Commscope	JAHH-65C-R3B	16.55	107	0	A	Dplx	1/2 in. Foam	0.5	10
14	Commscope	JAHH-65C-R3B	16.55	107	120	B	Dplx	1/2 in. Foam	0.5	10
15	Commscope	JAHH-65C-R3B	16.55	107	240	C	Dplx	1/2 in. Foam	0.5	10
16	RFS	APXVSPP18-C-I20	15.9	117	0	A	Dplx	1/2 in. Foam	0.5	10
17	RFS	APXVSPP18-C-I20	15.9	117	120	B	Dplx	1/2 in. Foam	0.5	10
18	RFS	APXVSPP18-C-I20	15.9	117	240	C	Dplx	1/2 in. Foam	0.5	10
19	RFS	APXVSPP18-C-0-815	13.3	117	0	A	Dplx	1/2 in. Foam	0.5	10
20	RFS	APXVSPP18-C-0-815	13.3	117	120	B	Dplx	1/2 in. Foam	0.5	10
21	RFS	APXVSPP18-C-0-815	13.3	117	240	C	Dplx	1/2 in. Foam	0.5	10
22	Andrew	VHP4-107	38.2	85	0		Dplx	1-5/8 in. Foam	1.3	120
23	Andrew	VHP4-107	38.2	85	120		Dplx	1-5/8 in. Foam	1.3	120
24	Andrew	VHP4-107	38.2	85	240		Dplx	1-5/8 in. Foam	1.3	120
25	Celwave	PD200 (158.0 MHz)	5.6	40	0		Tx/Rx	1-5/8 in. Foam	0.28	70
26	Celwave	PD200 (158.0 MHz)	5.6	40	0		Tx/Rx	1-5/8 in. Foam	0.28	70
28	Celwave	PD200 (158.0 MHz)	5.6	40	0		Tx/Rx	1-5/8 in. Foam	0.28	70
28	Decibel	DB806D	6	40	0		Dplx	1-5/8 in. Foam	0.72	70

3.0 Transmitter Frequencies

Freq #	Ant #	Provider	Model	Technology	Channel Label	ID	Frequency (MHz)	Power (Watts)	BW (KHz)
1	1	Commnet	Ericsson	LTE	1	A	740.000000	80	10000
2	2	Commnet	Ericsson	LTE	1	B	740.000000	80	10000
3	3	Commnet	Ericsson	LTE	1	C	740.000000	80	10000
4	1	Commnet	Ericsson	LTE	1	D	1977.500000	120	15000
5	2	Commnet	Ericsson	LTE	1	E	1977.500000	120	15000
6	3	Commnet	Ericsson	LTE	1	F	1977.500000	120	15000
7	1	Commnet	Ericsson	LTE	1	G	2355.000000	120	10000
8	2	Commnet	Ericsson	LTE	1	H	2355.000000	120	10000
9	3	Commnet	Ericsson	LTE	1	I	2355.000000	120	10000
10	1	Commnet	Ericsson	LTE	1	J	2140.000000	120	10000
11	2	Commnet	Ericsson	LTE	1	K	2140.000000	120	10000
12	3	Commnet	Ericsson	LTE	1	L	2140.000000	120	10000
13	1	Commnet	Ericsson	LTE	1	M	763.000000	80	10000
14	2	Commnet	Ericsson	LTE	1	N	763.000000	80	10000
15	3	Commnet	Ericsson	LTE	1	O	763.000000	80	10000
16	4	T-Mobile	Ericsson	LTE	1	P	632.000000	80	20000
17	5	T-Mobile	Ericsson	LTE	1	Q	632.000000	80	20000
18	6	T-Mobile	Ericsson	LTE	1	R	632.000000	80	20000
19	4	T-Mobile	Ericsson	LTE	1	S	731.000000	40	5000
20	5	T-Mobile	Ericsson	LTE	1	T	731.000000	40	5000
21	6	T-Mobile	Ericsson	LTE	1	U	731.000000	40	5000
22	7	T-Mobile	Ericsson	LTE	1	V	1937.500000	120	15000
23	8	T-Mobile	Ericsson	LTE	1	W	1937.500000	120	15000
24	9	T-Mobile	Ericsson	LTE	1	X	1937.500000	120	15000
25	7	T-Mobile	Ericsson	LTE	1	Y	2150.000000	120	10000
26	8	T-Mobile	Ericsson	LTE	1	Z	2150.000000	120	10000
27	9	T-Mobile	Ericsson	LTE	1	AA	2150.000000	120	10000
28	10	Verizon Wireless	Ericsson	LTE	1	AB	781.500000	60	10000
29	11	Verizon Wireless	Ericsson	LTE	1	AC	781.500000	60	10000
30	12	Verizon Wireless	Ericsson	LTE	1	AD	781.500000	60	10000
31	10	Verizon Wireless	Ericsson	LTE	1	AE	885.000000	60	10000
32	11	Verizon Wireless	Ericsson	LTE	1	AF	885.000000	60	10000
33	12	Verizon Wireless	Ericsson	LTE	1	AG	885.000000	60	10000
34	13	Verizon Wireless	Ericsson	LTE	1	AH	1967.500000	60	5000
35	14	Verizon Wireless	Ericsson	LTE	1	AI	1967.500000	60	5000
36	15	Verizon Wireless	Ericsson	LTE	1	AJ	1967.500000	60	5000
37	13	Verizon Wireless	Ericsson	LTE	1	AN	2127.500000	160	15000
38	14	Verizon Wireless	Ericsson	LTE	1	AO	2127.500000	160	15000
39	15	Verizon Wireless	Ericsson	LTE	1	AP	2127.500000	160	15000
40	16	Sprint	Alcatel	PCS CDMA	1	AQ	1991.250000	30	1230
41	16	Sprint	Alcatel	PCS CDMA	2	AR	1992.500000	30	1230
42	16	Sprint	Alcatel	PCS CDMA	3	AS	1993.750000	30	1230
43	17	Sprint	Alcatel	PCS CDMA	1	AT	1991.250000	30	1230
44	17	Sprint	Alcatel	PCS CDMA	2	AU	1992.500000	30	1230
45	17	Sprint	Alcatel	PCS CDMA	3	AV	1993.750000	30	1230
46	18	Sprint	Alcatel	PCS CDMA	1	AW	1991.250000	30	1230
47	18	Sprint	Alcatel	PCS CDMA	2	AX	1992.500000	30	1230
48	18	Sprint	Alcatel	PCS CDMA	3	AY	1993.750000	30	1230
49	16	Sprint	Alcatel	LTE	1	AZ	866.300000	60	5000
50	17	Sprint	Alcatel	LTE	1	BA	866.300000	60	5000
51	18	Sprint	Alcatel	LTE	1	BB	866.300000	60	5000
52	16	Sprint	Alcatel	LTE	1	BC	1937.500000	60	15000
53	17	Sprint	Alcatel	LTE	1	BD	1937.500000	60	15000
54	18	Sprint	Alcatel	LTE	1	BE	1937.500000	60	15000
55	19	Sprint	Alcatel	LTE	1	BF	2518.400000	60	20000
56	20	Sprint	Alcatel	LTE	1	BG	2518.400000	60	20000
57	21	Sprint	Alcatel	LTE	1	BH	2518.400000	60	20000
58	19	Sprint	Alcatel	LTE	2	BI	2538.200000	60	20000
59	20	Sprint	Alcatel	LTE	2	BJ	2538.200000	60	20000

Commnet NML02662A_Los Alamos (First Net)

60	21	Sprint	Alcatel	LTE	2	BK	2538.200000	60	20000
61	19	Sprint	Alcatel	LTE	3	BL	2558.000000	60	20000
62	20	Sprint	Alcatel	LTE	3	BM	2558.000000	60	20000
63	21	Sprint	Alcatel	LTE	3	BN	2558.000000	60	20000
64	22	RediNet MW (WQZY816)	Other	Microwave	1	BO	10995.000000	.63	40000
65	23	North Central Eco Development MW (WQQG909)	Other	Microwave	1	BP	10895.000000	.63	40000
66	24	CommnetFour Corners MW (WRCE492)	Other	Microwave	1	BQ	10935.000000	.63	40000
67	25	Auxiliary Fire Brigade (KNNP401)	Motorola	FM Land Mobile	1	BR	154.445000	50	16
68	26	Cpunity of Los Alamos (WPLH453)	Motorola	FM Land Mobile	2	BS	153.900000	50	16
69	27	County of Los Alamos (WQTZ640)	Motorola	FM Land Mobile	3	BT	154.482500	50	16
70	27	County of Los Alamos (WQTZ640)	Motorola	FM Land Mobile	4	BU	160.110000	50	16
71	28	County of Los Alamos (WNWX316)	Motorola	FM Land Mobile	5	BV	855.712500	100	16

4.0 Receiver Frequencies

Freq #	Ant #	Provider	Model	Technology	Channel Label	ID	Frequency (MHz)	Sen (dBm)	BW (KHz)
1	20	Commnet	Ericsson	LTE	1	A	710.000000	-110	10000
2	21	Commnet	Ericsson	LTE	1	B	710.000000	-110	10000
3	19	Commnet	Ericsson	LTE	1	C	710.000000	-110	10000
4	20	Commnet	Ericsson	LTE	1	D	1897.500000	-110	15000
5	21	Commnet	Ericsson	LTE	1	E	1897.500000	-110	15000
6	19	Commnet	Ericsson	LTE	1	F	1897.500000	-110	15000
7	20	Commnet	Ericsson	LTE	1	G	2310.000000	-110	10000
8	21	Commnet	Ericsson	LTE	1	H	2310.000000	-110	10000
9	22	Commnet	Ericsson	LTE	1	I	2310.000000	-110	10000
10	23	Commnet	Ericsson	LTE	1	J	1740.000000	-110	10000
11	24	Commnet	Ericsson	LTE	1	K	1740.000000	-110	10000
12	25	Commnet	Ericsson	LTE	1	L	1740.000000	-110	10000
13	26	Commnet	Ericsson	LTE	1	M	793.000000	-110	10000
14	27	Commnet	Ericsson	LTE	1	N	793.000000	-110	10000
15	27	Commnet	Ericsson	LTE	1	O	793.000000	-110	10000
16	28	T-Mobile	Ericsson	LTE	1	P	678.000000	-110	20000
17	20	T-Mobile	Ericsson	LTE	1	Q	678.000000	-110	20000
18	21	T-Mobile	Ericsson	LTE	1	R	678.000000	-110	20000
19	19	T-Mobile	Ericsson	LTE	1	S	701.000000	-110	5000
20	20	T-Mobile	Ericsson	LTE	1	T	701.000000	-110	5000
21	21	T-Mobile	Ericsson	LTE	1	U	701.000000	-110	5000
22	19	T-Mobile	Ericsson	LTE	1	V	1857.500000	-110	15000
23	20	T-Mobile	Ericsson	LTE	1	W	1857.500000	-110	15000
24	21	T-Mobile	Ericsson	LTE	1	X	1857.500000	-110	15000
25	22	T-Mobile	Ericsson	LTE	1	Y	1750.000000	-110	10000
26	23	T-Mobile	Ericsson	LTE	1	Z	1750.000000	-110	10000
27	24	T-Mobile	Ericsson	LTE	1	AA	1750.000000	-110	10000
28	25	Verizon Wireless	Ericsson	LTE	1	AB	751.500000	-110	10000
29	26	Verizon Wireless	Ericsson	LTE	1	AC	751.500000	-110	10000
30	27	Verizon Wireless	Ericsson	LTE	1	AD	751.500000	-110	10000
31	27	Verizon Wireless	Ericsson	LTE	1	AE	840.000000	-110	10000
32	28	Verizon Wireless	Ericsson	LTE	1	AF	840.000000	-110	10000
33	20	Verizon Wireless	Ericsson	LTE	1	AG	840.000000	-110	10000
34	21	Verizon Wireless	Ericsson	LTE	1	AH	1887.500000	-110	5000
35	19	Verizon Wireless	Ericsson	LTE	2	AI	1887.500000	-110	5000
36	20	Verizon Wireless	Ericsson	LTE	1	AJ	1887.500000	-110	5000
37	21	Verizon Wireless	Ericsson	LTE	1	AN	1727.500000	-110	15000
38	19	Verizon Wireless	Ericsson	LTE	1	AO	1727.500000	-110	15000
39	20	Verizon Wireless	Ericsson	LTE	1	AP	1727.500000	-110	15000
40	21	Sprint	Alcatel	PCS CDMA	1	AQ	1911.250000	-110	1230
41	22	Sprint	Alcatel	PCS CDMA	2	AR	1912.500000	-110	1230
42	23	Sprint	Alcatel	PCS CDMA	3	AS	1913.750000	-110	1230
43	24	Sprint	Alcatel	PCS CDMA	1	AT	1911.250000	-110	1230
44	25	Sprint	Alcatel	PCS CDMA	2	AU	1912.500000	-110	1230
45	26	Sprint	Alcatel	PCS CDMA	3	AV	1913.750000	-110	1230
46	27	Sprint	Alcatel	PCS CDMA	1	AW	1911.250000	-110	1230
47	27	Sprint	Alcatel	PCS CDMA	2	AX	1912.500000	-110	1230
48	28	Sprint	Alcatel	PCS CDMA	3	AY	1913.750000	-110	1230
49	20	Sprint	Alcatel	LTE	1	AZ	821.300000	-110	5000
50	21	Sprint	Alcatel	LTE	1	BA	821.300000	-110	5000
51	19	Sprint	Alcatel	LTE	1	BB	821.300000	-110	5000
52	20	Sprint	Alcatel	LTE	1	BC	1857.500000	-110	15000
53	21	Sprint	Alcatel	LTE	2	BD	1857.500000	-110	15000
54	19	Sprint	Alcatel	LTE	1	BE	1857.500000	-110	15000
55	20	Sprint	Alcatel	LTE	1	BF	2518.400000	-110	20000
56	21	Sprint	Alcatel	LTE	2	BG	2518.400000	-110	20000
57	22	Sprint	Alcatel	LTE	3	BH	2518.400000	-110	20000
58	23	Sprint	Alcatel	LTE	1	BI	2538.200000	-110	20000
59	24	Sprint	Alcatel	LTE	2	BJ	2538.200000	-110	20000
60	25	Sprint	Alcatel	LTE	3	BK	2538.200000	-110	20000

Commnet NML02662A_Los Alamos (First Net)

61	26	Sprint	Alcatel	LTE	1	BL	2558.000000	-110	20000
62	27	Sprint	Alcatel	LTE	2	BM	2558.000000	-110	20000
63	27	Sprint	Alcatel	LTE	3	BN	2558.000000	-110	20000
64	28	RediNet MW (WQZY816)	Other	Microwave	1	BO	10995.000000	-83	5000
65	20	North Central Eco Development MW (WQQG909)	Other	Microwave	1	BP	10705.000000	-83	5000
66	21	CommnetFour Corners MW (WRCE492)	Other	Microwave	1	BQ	10935.000000	-83	5000
67	19	Auxiliary Fire Brigade (KNNP401)	Ericsson	FM Land Mobile	1	BR	154.445000	-116	25
68	20	Cpunity of Los Alamos (WPLH453)	Ericsson	FM Land Mobile	2	BS	153.900000	-116	25
69	21	County of Los Alamos (WQTZ640)	Ericsson	FM Land Mobile	3	BT	154.482500	-116	25
70	19	County of Los Alamos (WQTZ640)	Ericsson	FM Land Mobile	4	BU	160.110000	-116	25
71	20	County of Los Alamos (WNWX316)	Motorola	FM Land Mobile	5	BV	810.712500	-116	25

5.0 Transmitter Noise Analysis

Transmitter noise interference occurs because a transmitter radiates energy on its operating frequency as well as frequencies above and below the assigned frequency. The energy that is radiated above and below the assigned frequency is known as sideband noise energy and extends for several megahertz on either side of the operating frequency. This undesired noise energy can fall within the passband of a nearby receiver even if the receiver's operating frequency is several megahertz away. The transmitter noise appears as "on-channel" noise interference and cannot be filtered out at the receiver. It is on the receiver's operating frequency and competes with the desired signal, which in effect, degrades the operational performance.

The analysis predicts each transmitter's noise signal level present at the input of each receiver. It takes into account the transmitter's noise characteristics, frequency separation, power output, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in both systems. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required, if any, to prevent receiver performance degradation caused by transmitter noise interference. The Table below depicts the results of this analysis. For each receiver, the transmitter that has the worst-case impact is displayed. The Signal Margin represents the margin in dB, before the receiver's performance is degraded. A negative number indicates that the performance is degraded and the value indicates how much additional isolation is required to prevent receiver performance degradation.

Receiver Provider	Receive Channel	Receive Frequency (MHz)	Transmitter Provider	Transmit Channel	Transmit Frequency (MHz)	Attn Required (dB)	Attn Provided (dB)	Signal Margin (dB)
Commnet	1	710.000000	Commnet	1	740.000000	45	79.5	34.5
Commnet	1	710.000000	Commnet	1	740.000000	45	79.5	34.5
Commnet	1	710.000000	Commnet	1	740.000000	45	79.5	34.5
Commnet	1	1897.500000	Commnet	1	1977.500000	53.4	91.6	38.2
Commnet	1	1897.500000	Commnet	1	1977.500000	53.4	91.6	38.2
Commnet	1	1897.500000	Commnet	1	1977.500000	53.4	91.6	38.2
Commnet	1	2310.000000	Commnet	1	2355.000000	53.4	87.4	34
Commnet	1	2310.000000	Commnet	1	2355.000000	53.4	87.4	34
Commnet	1	2310.000000	Commnet	1	2355.000000	53.4	87.4	34
Commnet	1	1740.000000	Commnet	1	2140.000000	53.4	91.6	38.2
Commnet	1	1740.000000	Commnet	1	2140.000000	53.4	91.6	38.2
Commnet	1	1740.000000	Commnet	1	2140.000000	53.4	91.6	38.2
Commnet	1	793.000000	Commnet	1	763.000000	55.3	72.6	17.3
Commnet	1	793.000000	Commnet	1	763.000000	55.3	72.6	17.3
Commnet	1	793.000000	Commnet	1	763.000000	55.3	72.6	17.3
T-Mobile	1	678.000000	T-Mobile	1	632.000000	45	73.6	28.6
T-Mobile	1	678.000000	T-Mobile	1	632.000000	45	73.6	28.6
T-Mobile	1	678.000000	T-Mobile	1	632.000000	45	73.6	28.6
T-Mobile	1	701.000000	T-Mobile	1	731.000000	42	79.5	37.5
T-Mobile	1	701.000000	T-Mobile	1	731.000000	42	79.5	37.5
T-Mobile	1	701.000000	T-Mobile	1	731.000000	42	79.5	37.5
T-Mobile	1	1857.500000	T-Mobile	1	1937.500000	53.4	91.6	38.2
T-Mobile	1	1857.500000	T-Mobile	1	1937.500000	53.4	91.6	38.2

Commnet NML02662A_Los Alamos (First Net)

T-Mobile	1	1857.500000	T-Mobile	1	1937.500000	53.4	91.6	38.2
T-Mobile	1	1750.000000	T-Mobile	1	2150.000000	53.4	91.6	38.2
T-Mobile	1	1750.000000	T-Mobile	1	2150.000000	53.4	91.6	38.2
T-Mobile	1	1750.000000	T-Mobile	1	2150.000000	53.4	91.6	38.2
Verizon Wireless	1	751.500000	Verizon Wireless	1	781.500000	54	79.5	25.5
Verizon Wireless	1	751.500000	Verizon Wireless	1	781.500000	54	79.5	25.5
Verizon Wireless	1	751.500000	Verizon Wireless	1	781.500000	54	79.5	25.5
Verizon Wireless	1	840.000000	Verizon Wireless	1	885.000000	47.4	79.5	32.1
Verizon Wireless	1	840.000000	Verizon Wireless	1	885.000000	47.4	79.5	32.1
Verizon Wireless	1	840.000000	Verizon Wireless	1	885.000000	47.4	79.5	32.1
Verizon Wireless	1	1887.500000	Verizon Wireless	1	1967.500000	50.4	97	46.6
Verizon Wireless	2	1887.500000	Verizon Wireless	1	781.500000	50.4	93.6	43.2
Verizon Wireless	1	1887.500000	Verizon Wireless	1	781.500000	50.4	93.6	43.2
Verizon Wireless	1	1727.500000	Verizon Wireless	1	2127.500000	54.6	91.6	36.9
Verizon Wireless	1	1727.500000	Verizon Wireless	1	2127.500000	54.6	89.2	34.6
Verizon Wireless	1	1727.500000	Verizon Wireless	1	2127.500000	54.6	91.6	36.9
Sprint	1	1911.250000	Sprint	1	1991.250000	47.4	70.5	23.1
Sprint	2	1912.500000	Sprint	1	1991.250000	47.4	69.4	22
Sprint	3	1913.750000	Sprint	1	1991.250000	47.4	68.3	20.9
Sprint	1	1911.250000	Sprint	1	1991.250000	47.4	70.5	23.1
Sprint	2	1912.500000	Sprint	1	1991.250000	47.4	69.4	22
Sprint	3	1913.750000	Sprint	1	1991.250000	47.4	68.3	20.9
Sprint	1	1911.250000	Sprint	1	1991.250000	47.4	70.5	23.1
Sprint	2	1912.500000	Sprint	1	1991.250000	47.4	69.4	22
Sprint	3	1913.750000	Sprint	1	1991.250000	47.4	68.3	20.9
Sprint	1	821.300000	Sprint	1	866.300000	47.4	79	31.6
Sprint	1	821.300000	Sprint	1	866.300000	47.4	79	31.6
Sprint	1	821.300000	Sprint	1	866.300000	47.4	79	31.6
Sprint	1	1857.500000	Sprint	1	1937.500000	50.4	97	46.6
Sprint	2	1857.500000	Sprint	1	1937.500000	50.4	97	46.6
Sprint	1	1857.500000	Sprint	1	1937.500000	50.4	97	46.6
Sprint	1	2518.400000	Sprint	1	866.300000	50.4	104.8	54.4
Sprint	1	2518.400000	Sprint	1	2518.400000	61.4	96.2	34.8
Sprint	1	2518.400000	Sprint	2	2538.200000	59.3	72.1	12.8
Sprint	2	2518.400000	Sprint	1	2518.400000	61.4	96.2	34.8
Sprint	2	2518.400000	Sprint	1	2518.400000	61.4	96.2	34.8
Sprint	2	2518.400000	Sprint	2	2538.200000	59.3	72.1	12.8
Sprint	3	2518.400000	Sprint	1	2518.400000	61.4	87.6	26.2
Sprint	3	2518.400000	Sprint	1	2518.400000	61.4	96.2	34.8
Sprint	3	2518.400000	Sprint	2	2538.200000	59.3	72.1	12.8
Sprint	1	2538.200000	Sprint	1	2518.400000	59.3	70.5	11.2
Sprint	1	2538.200000	Sprint	2	2538.200000	61.4	96.2	34.8
Sprint	2	2538.200000	Sprint	1	2518.400000	59.3	70.5	11.2
Sprint	2	2538.200000	Sprint	2	2538.200000	61.4	96.2	34.8
Sprint	3	2538.200000	Sprint	1	2518.400000	59.3	70.5	11.2
Sprint	3	2538.200000	Sprint	2	2538.200000	61.4	96.2	34.8
Sprint	1	2558.000000	Sprint	2	2538.200000	59.3	70.5	11.2
Sprint	1	2558.000000	Sprint	3	2558.000000	61.4	96.2	34.8
Sprint	2	2558.000000	Sprint	2	2538.200000	59.3	70.5	11.2
Sprint	2	2558.000000	Sprint	3	2558.000000	61.4	96.2	34.8
Sprint	3	2558.000000	Sprint	2	2538.200000	59.3	70.5	11.2
Sprint	3	2558.000000	Sprint	3	2558.000000	61.4	96.2	34.8
RediNet MW (WQZY816)	1	10995.000000	Commnet	1	740.000000	24.6	128	103.3
RediNet MW (WQZY816)	1	10995.000000	RediNet MW (WQZY816)	1	10995.000000	14.6	27.6	13
North Central Eco Development MW (WQQG909)	1	10705.000000	North Central Eco Development MW (WQQG909)	1	10895.000000	3.6	100.8	97.2
CommnetFour Corners MW (WRCE492)	1	10935.000000	Commnet	1	740.000000	24.6	127.1	102.5
CommnetFour Corners MW (WRCE492)	1	10935.000000	CommnetFour Corners MW (WRCE492)	1	10935.000000	14.6	27.6	13

Commnet NML02662A_Los Alamos (First Net)

Auxiliary Fire Brigade (KNNP401)	1	154.445000	Commnet	1	740.000000	41.5	172.4	130.9
Auxiliary Fire Brigade (KNNP401)	1	154.445000	Auxiliary Fire Brigade (KNNP401)	1	154.445000	84.5	96.3	11.8
Auxiliary Fire Brigade (KNNP401)	1	154.445000	County of Los Alamos (WQTZ640)	3	154.482500	84	94.2	10.2
Cpunity of Los Alamos (WPLH453)	2	153.900000	Auxiliary Fire Brigade (KNNP401)	1	154.445000	77.5	112.6	35.1
Cpunity of Los Alamos (WPLH453)	2	153.900000	Cpunity of Los Alamos (WPLH453)	2	153.900000	84.5	96.3	11.8
County of Los Alamos (WQTZ640)	3	154.482500	Auxiliary Fire Brigade (KNNP401)	1	154.445000	84	91.5	7.5
County of Los Alamos (WQTZ640)	3	154.482500	County of Los Alamos (WQTZ640)	3	154.482500	84.5	98.6	14.1
County of Los Alamos (WQTZ640)	4	160.110000	County of Los Alamos (WQTZ640)	3	154.482500	43.3	132.4	89.1
County of Los Alamos (WQTZ640)	4	160.110000	County of Los Alamos (WQTZ640)	4	160.110000	84.5	98.6	14.1
County of Los Alamos (WNWX316)	5	810.712500	County of Los Alamos (WNWX316)	5	855.712500	55.6	99.1	43.5

Analysis Results: No transmitter noise interference problems were predicted that were determined to be system performance limiting to any operators analyzed in this report. All calculations yielded results that determined, based upon the listed configurations, that there was adequate isolation between all analyzed transmitters and receivers either through physical separation, antenna broadcast pattern gain roll off or filtering and isolation devices considered to be part of the standard transmitter / receiver configuration deployed by the equipment manufacturers listed as part of this analysis.

6.0 Receiver Desensitization Analysis

Receiver desensitization interference occurs when an undesired signal from a nearby "off-frequency" transmitter is sufficiently close to a receiver's operating frequency. The signal may get through the RF selectivity of the receiver. If this undesired signal is of sufficient amplitude, the receiver's critical voltage and current levels are altered and the performance of the receiver is degraded at its operating frequency. The gain of the receiver is reduced, thereby reducing the performance of the receiver.

A transmitter can be operating several megahertz away from the receiver frequency and/or its antenna can be located several thousand feet from the receiver's antenna and still cause interference.

The analysis predicts each transmitter's signal level present at the input of each receiver. It takes into account the transmitter's power output, frequency separation, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in both systems. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required, if any, to prevent receiver performance degradation caused by receiver desensitization interference. The Table below depicts the results of this analysis. For each receiver, the transmitter that has the worst-case impact is displayed. The Signal Margin represents the margin in dB, before the receiver's performance is degraded. A negative number indicates that the performance is degraded and the value indicates how much additional isolation is required to prevent receiver performance degradation.

Receiver Provider	Receive Channel	Receive Frequency (MHz)	Transmitter Provider	Transmit Channel	Transmit Frequency (MHz)	Attn Required (dB)	Attn Provided (dB)	Signal Margin (dB)
Commnet	1	710.000000	Commnet	1	740.000000	13	72.6	59.6
Commnet	1	710.000000	Commnet	1	740.000000	13	72.6	59.6
Commnet	1	710.000000	Commnet	1	740.000000	13	72.6	59.6
Commnet	1	1897.500000	Commnet	1	1977.500000	17.8	89.2	71.4
Commnet	1	1897.500000	Commnet	1	1977.500000	17.8	89.2	71.4
Commnet	1	1897.500000	Commnet	1	1977.500000	17.8	89.2	71.4
Commnet	1	2310.000000	Commnet	1	2355.000000	17.8	85.2	67.4
Commnet	1	2310.000000	Commnet	1	2355.000000	17.8	85.2	67.4
Commnet	1	2310.000000	Commnet	1	2355.000000	17.8	85.2	67.4
Commnet	1	1740.000000	Commnet	1	2140.000000	17.8	89.2	71.4
Commnet	1	1740.000000	Commnet	1	2140.000000	17.8	89.2	71.4
Commnet	1	1740.000000	Commnet	1	2140.000000	17.8	89.2	71.4
Commnet	1	793.000000	Commnet	1	763.000000	19.3	79.5	60.2
Commnet	1	793.000000	Commnet	1	763.000000	19.3	79.5	60.2
Commnet	1	793.000000	Commnet	1	763.000000	19.3	79.5	60.2
Commnet	1	793.000000	Commnet	1	763.000000	19.3	79.5	60.2
T-Mobile	1	678.000000	T-Mobile	1	632.000000	13	80.5	67.5
T-Mobile	1	678.000000	T-Mobile	1	632.000000	13	80.5	67.5
T-Mobile	1	678.000000	T-Mobile	1	632.000000	13	80.5	67.5
T-Mobile	1	701.000000	T-Mobile	1	731.000000	10	72.6	62.6
T-Mobile	1	701.000000	T-Mobile	1	731.000000	10	72.6	62.6
T-Mobile	1	701.000000	T-Mobile	1	731.000000	10	72.6	62.6
T-Mobile	1	1857.500000	T-Mobile	1	1937.500000	17.8	89.2	71.4
T-Mobile	1	1857.500000	T-Mobile	1	1937.500000	17.8	89.2	71.4

Commnet NML02662A_Los Alamos (First Net)

T-Mobile	1	1857.500000	T-Mobile	1	1937.500000	17.8	89.2	71.4
T-Mobile	1	1750.000000	T-Mobile	1	2150.000000	17.8	89.2	71.4
T-Mobile	1	1750.000000	T-Mobile	1	2150.000000	17.8	89.2	71.4
T-Mobile	1	1750.000000	T-Mobile	1	2150.000000	17.8	89.2	71.4
Verizon Wireless	1	751.500000	Verizon Wireless	1	781.500000	18	72.6	54.6
Verizon Wireless	1	751.500000	Verizon Wireless	1	781.500000	18	72.6	54.6
Verizon Wireless	1	751.500000	Verizon Wireless	1	781.500000	18	72.6	54.6
Verizon Wireless	1	840.000000	Verizon Wireless	1	885.000000	19.4	72.6	53.2
Verizon Wireless	1	840.000000	Verizon Wireless	1	885.000000	19.4	72.6	53.2
Verizon Wireless	1	840.000000	Verizon Wireless	1	885.000000	19.4	72.6	53.2
Verizon Wireless	1	1887.500000	Verizon Wireless	1	1967.500000	14.8	182.2	167.4
Verizon Wireless	2	1887.500000	Verizon Wireless	1	1967.500000	14.8	182.2	167.4
Verizon Wireless	1	1887.500000	Verizon Wireless	1	1967.500000	14.8	182.2	167.4
Verizon Wireless	1	1727.500000	Verizon Wireless	1	2127.500000	19	89.2	70.2
Verizon Wireless	1	1727.500000	Verizon Wireless	1	2127.500000	19	91.6	72.5
Verizon Wireless	1	1727.500000	Verizon Wireless	1	2127.500000	19	89.2	70.2
Sprint	1	1911.250000	Sprint	1	1937.500000	20.3	143.2	122.9
Sprint	2	1912.500000	Sprint	1	1937.500000	21	140.7	119.7
Sprint	3	1913.750000	Sprint	1	1937.500000	21.5	137.5	116
Sprint	1	1911.250000	Sprint	1	1937.500000	20.3	146.4	126.1
Sprint	2	1912.500000	Sprint	1	1937.500000	21	143.9	122.9
Sprint	3	1913.750000	Sprint	1	1937.500000	21.5	140.7	119.2
Sprint	1	1911.250000	Sprint	1	1937.500000	20.3	143.2	122.9
Sprint	2	1912.500000	Sprint	1	1937.500000	21	140.7	119.7
Sprint	3	1913.750000	Sprint	1	1937.500000	21.5	137.5	116
Sprint	1	821.300000	Sprint	1	866.300000	19.4	72.1	52.7
Sprint	1	821.300000	Sprint	1	866.300000	19.4	72.1	52.7
Sprint	1	821.300000	Sprint	1	866.300000	19.4	72.1	52.7
Sprint	1	1857.500000	Sprint	1	1937.500000	14.8	182.2	167.4
Sprint	2	1857.500000	Sprint	1	1937.500000	14.8	182.2	167.4
Sprint	1	1857.500000	Sprint	1	1937.500000	14.8	182.2	167.4
Sprint	1	2518.400000	Sprint	1	1937.500000	14.8	120.1	105.3
Sprint	1	2518.400000	Sprint	1	2518.400000	28.8	96.2	67.4
Sprint	1	2518.400000	Sprint	2	2538.200000	24	70.5	46.5
Sprint	2	2518.400000	Sprint	1	2518.400000	28.8	96.2	67.4
Sprint	2	2518.400000	Sprint	1	2518.400000	28.8	96.2	67.4
Sprint	2	2518.400000	Sprint	2	2538.200000	24	70.5	46.5
Sprint	3	2518.400000	Sprint	1	2518.400000	28.8	87.6	58.8
Sprint	3	2518.400000	Sprint	1	2518.400000	28.8	96.2	67.4
Sprint	3	2518.400000	Sprint	2	2538.200000	24	70.5	46.5
Sprint	1	2538.200000	Sprint	1	2518.400000	24	72.1	48.1
Sprint	1	2538.200000	Sprint	2	2538.200000	28.8	96.2	67.4
Sprint	1	2538.200000	Sprint	3	2558.000000	24	70.5	46.5
Sprint	2	2538.200000	Sprint	1	2518.400000	24	72.1	48.1
Sprint	2	2538.200000	Sprint	2	2538.200000	28.8	96.2	67.4
Sprint	2	2538.200000	Sprint	3	2558.000000	24	70.5	46.5
Sprint	3	2538.200000	Sprint	1	2518.400000	24	72.1	48.1
Sprint	3	2538.200000	Sprint	2	2538.200000	28.8	96.2	67.4
Sprint	3	2538.200000	Sprint	3	2558.000000	24	70.5	46.5
Sprint	1	2558.000000	Sprint	2	2538.200000	24	72.1	48.1
Sprint	1	2558.000000	Sprint	3	2558.000000	28.8	96.2	67.4
Sprint	2	2558.000000	Sprint	2	2538.200000	24	72.1	48.1
Sprint	2	2558.000000	Sprint	3	2558.000000	28.8	96.2	67.4
Sprint	3	2558.000000	Sprint	2	2538.200000	24	72.1	48.1
Sprint	3	2558.000000	Sprint	3	2558.000000	28.8	96.2	67.4
RediNet MW (WQZY816)	1	10995.000000	Commnet RediNet MW (WQZY816)	1	740.000000	11	157.3	146.4
RediNet MW (WQZY816)	1	10995.000000	Commnet RediNet MW (WQZY816)	1	10995.000000	18	98.7	80.7
RediNet MW (WQZY816)	1	10995.000000	CommnetFour Corners MW (WRCE492)	1	10935.000000	32	157.3	125.3
North Central Eco Development MW (WQQG909)	1	10705.000000	North Central Eco Development MW (WQQG909)	1	10895.000000	32	100.8	68.8

Commnet NML02662A_Los Alamos (First Net)

CommnetFour Corners MW (WRCE492)	1	10935.000000	North Central Eco Development MW (WQQG909)	1	10895.00000 0	31.6	144.1	112.6
CommnetFour Corners MW (WRCE492)	1	10935.000000	CommnetFour Corners MW (WRCE492)	1	10935.00000 0	18	98.7	80.7
Auxiliary Fire Brigade (KNNP401)	1	154.445000	Commnet	1	740.000000	9.5	162.7	153.2
Auxiliary Fire Brigade (KNNP401)	1	154.445000	Auxiliary Fire Brigade (KNNP401)	1	154.445000	67.5	99.4	31.9
Auxiliary Fire Brigade (KNNP401)	1	154.445000	County of Los Alamos (WQTZ640)	3	154.482500	67.5	93.5	26.1
Cpunity of Los Alamos (WPLH453)	2	153.900000	Auxiliary Fire Brigade (KNNP401)	1	154.445000	64.4	112.6	48.2
Cpunity of Los Alamos (WPLH453)	2	153.900000	Cpunity of Los Alamos (WPLH453)	2	153.900000	67.5	99.4	31.9
County of Los Alamos (WQTZ640)	3	154.482500	Auxiliary Fire Brigade (KNNP401)	1	154.445000	67.5	93	25.6
County of Los Alamos (WQTZ640)	3	154.482500	County of Los Alamos (WQTZ640)	3	154.482500	67.5	100.7	33.2
County of Los Alamos (WQTZ640)	4	160.110000	County of Los Alamos (WQTZ640)	3	154.482500	11.9	160.4	148.5
County of Los Alamos (WQTZ640)	4	160.110000	County of Los Alamos (WQTZ640)	4	160.110000	67.5	100.7	33.2
County of Los Alamos (WNWX316)	5	810.712500	County of Los Alamos (WNWX316)	5	855.712500	27.6	92.4	64.8

Analysis Results: No receiver desensitization interference problems were predicted that were determined to be system performance limiting to any operators analyzed in this report. All calculations yielded results that determined, based upon the listed configurations, that there was adequate isolation between all analyzed transmitters and receivers either through physical separation, antenna broadcast pattern gain roll off or filtering and isolation devices considered to be part of the standard transmitter / receiver configuration deployed by the equipment manufacturers listed as part of this analysis.

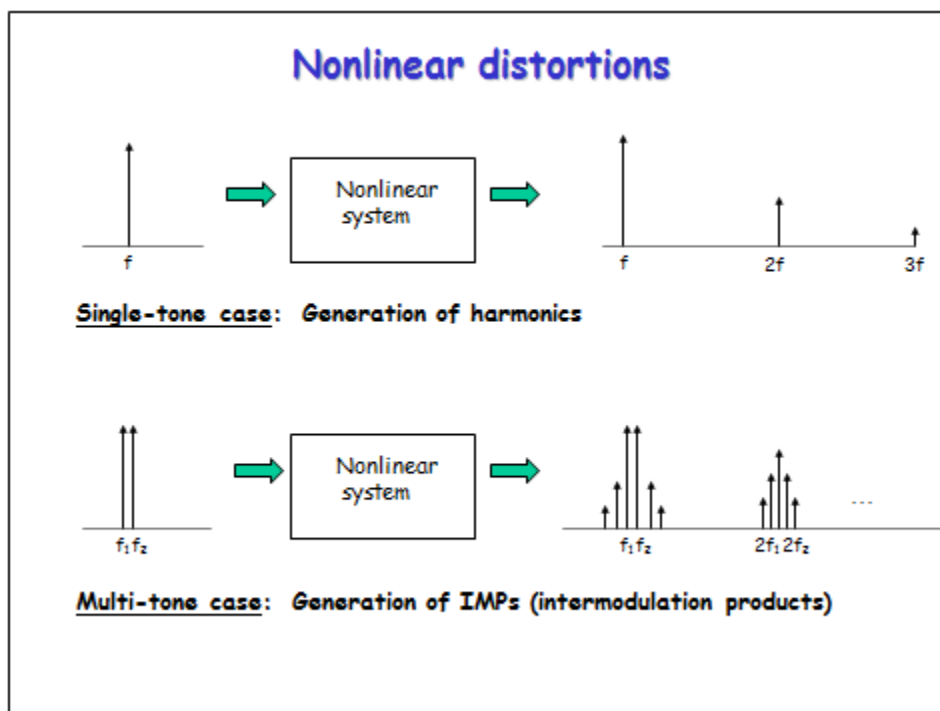
7.0 Intermodulation Interference Analysis

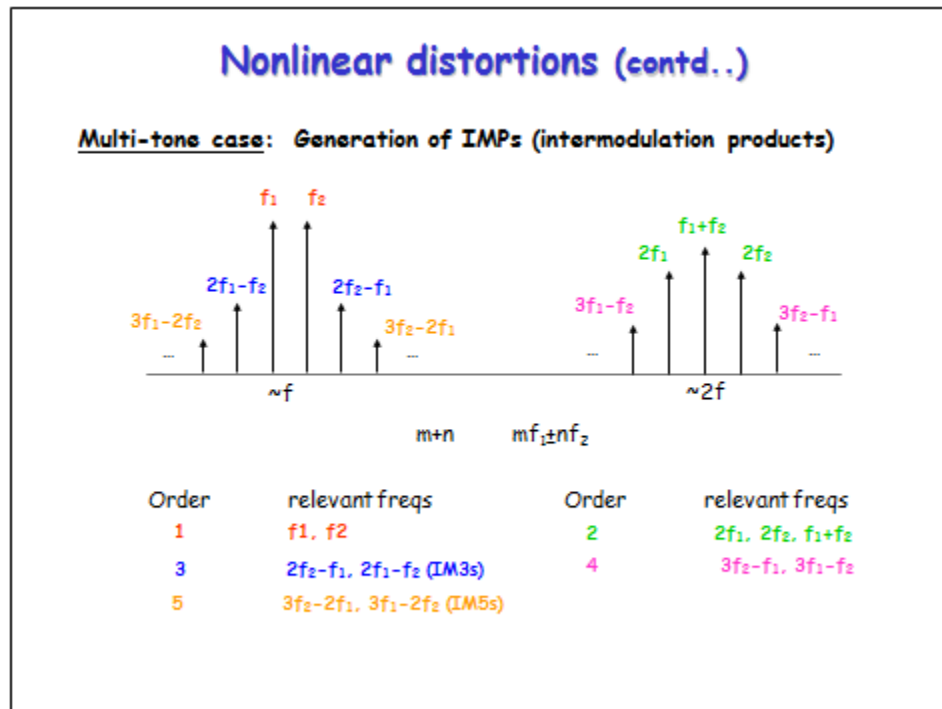
There are three basic categories of Intermodulation (IM) interference. They are receiver produced, transmitter produced, and "other" radiated IM. Transmitter produced IM is the result of one or more transmitters impressing a signal in the non-linear final output stage circuitry of another transmitter, usually via antenna coupling. The IM product frequency is then re-radiated from the transmitter's antenna. Receiver produced IM is the result of two or more transmitter signals mixing in a receiver RF amplifier or mixer stage when operating in a non-linear range.

"Other" radiated IM is the result of transmitter signals mixing in other non-linear junctions. These junctions are usually metallic, such as rusty bolts on a tower, dissimilar metallic junctions, or other non-linear metallic junctions in the area. IM products can also be caused by non-linearity in the transmission system such as antenna, transmission line, or connectors.

Communication sites with co-located transmitters, usually have RF coupling between each transmitter and antenna system. This results in the signals of each transmitter entering the nonlinear final output (PA) circuitry of the other transmitters. When intermodulation (IM) products are created in the output circuitry and they fall within the passband of the final amplifier, the IM products are re-radiated and may interfere with receivers at the same site or at other nearby sites. Additionally, these strong transmitter signals may directly enter a receiver and drive the RF amplifier into a nonlinear operation, or if not filtered effectively by the receiver input circuitry, these signals could mix in the nonlinear circuitry of the receiver front-end or mixer, creating IM products directly in the receiver.

The frequencies of IM mixing are known as nonlinear distortions. The images below depict how these IM products are derived when passing through a nonlinear junction/system.





Below are the mathematical formulae for common IM products. IM products are classified by their "order" (2nd, 3rd, 4th, ...Nth). Some of the more common forms of mixing are illustrated in the following examples. Note that the "A", "B", and "C" designations are the mixing frequencies. The numerical number assigned to the letter designation indicates the harmonic relationship of the frequency. Thus, 2A means the 2nd harmonic of frequency A.

Order	Mixing Formulae
First	$A=B, A=C$, etc.
Second	$A \pm B, A \pm C$, etc.
Third	$A + B - C, A \pm 2B, 2A \pm B$, etc.
Fourth	$A \pm 3B, 2A \pm 2B, 3A \pm B$, etc.
Fifth	$A \pm 4B, 2A \pm 3B, 3A \pm 2B, 4A \pm B$, etc.
Sixth	$A \pm 3B \pm 2C, 2A \pm 2B \pm 2C, 3A \pm 2B \pm C$, etc.
Seventh	$A \pm 6B, 2A \pm 5B, 3A \pm 4B, 4A \pm 3B, 5A \pm 2B$, etc.
Eighth	$A \pm 7B, 2A \pm 6B, 3A \pm 5B, 4A \pm 4B, 5A \pm 3B, 6A \pm 2B$, etc.
Ninth	$A \pm 8B, 2A \pm 7B, 3A \pm 6B, 4A \pm 5B, 5A \pm 4B, 6A \pm 3B$, etc.

The above IM product formulae are just a few of the many possible combinations. When there are four frequencies involved at one time, the mixing possibilities increase tremendously. Not all of the mixing possibilities are significant in creating interference signals. Some fall "out-of-band" of the receiver and the higher order IM products are usually weaker in signal strength.

7.1 Transmitter Generated Intermodulation Analysis

Intermodulation in transmitters occurs when a signal from another transmitter is impressed on the nonlinear final output stage circuitry, usually via antenna coupling. The power level of the IM product is determined by the power level of the incoming extraneous signal from another transmitter and by a conversion loss factor. The conversion loss factor takes into account the mixing efficiency of the transmitter's final output stage. Conversion loss differs with transmitter design, adjustment, frequency separation of the source signals, and with the order of the IM product.

The analysis calculates all possible IM product frequencies that could potentially interfere with receivers at the communications site based on each receiver's individual bandwidth. It then predicts each IM signal level present at the input of each affected receiver. For each IM frequency, the analysis considers all possible sources of IM generation in the transmitters. For example, if there are four transmitters involved, the analysis will calculate the IM signal level that would be generated in each transmitter. For this example, that would be four possible mixing conditions.

The analysis takes into account the transmitter's power output, modulation bandwidth, conversion losses, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for each IM interference signal that occurs. Receivers experiencing transmitter generated intermodulation interference are depicted in the following Table.

Tx 1 Source Mix Tx		Tx 2 Source		TX 3 Source		Tx 4 Source		Tx 5 Source		Intermod Hit		Affected Receiver		Attn Need (dB)
ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	Freq (MHz)	Ord	ID	Freq (MHz)	
None														

Analysis Results: The above table lists any transmitter generated IM product that is determined to have potential to noticeably degrade the system performance to any receive systems analyzed as part of this study. Based upon the listed configurations for transmitters, receivers, antenna models, antenna patterns and equipment filtering and isolation specifications it has been determined that no transmitter generated intermodulation interference problems were predicted that have the potential to be system performance limiting to any receivers analyzed in this report. While there are thousands of potential IM product combinations based upon the large number of transmitters located at this facility, all potential products produced yielded values that were below the limit where any noticeable degradation to system performance would be experienced.

7.2 Receiver Generated Intermodulation Analysis

Within a receiver, when two or more strong off-channel signals enter and mix in the receiver and one of the IM product frequencies created coincides with the receiver operating frequency, potential interference results. This internal IM mixing process takes place in the receiver's RF amplifier when it operates in a nonlinear range and/or in the first mixer, which, of course, has been designed to operate as a nonlinear device.

Receivers have a similar conversion loss type factor and receiver performance is commonly described in terms of conversion loss with respect to the 2A - B type products. Here, conversion loss is the ratio of a specified level of A and B to the level of the resulting IM product, when the product is viewed as an equivalent on-channel signal. Receiver conversion loss varies with input levels, AGC action, and product order.

The analysis calculates all possible IM product frequencies that could potentially interfere with receivers at the communications site based on each receiver's individual bandwidth. It then predicts each IM signal level present at the input of each affected receiver. For each IM frequency, the analysis considers that the IM signal is generated directly in the receiver.

The analysis takes into account the transmitter's power output, modulation bandwidth, conversion losses, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for each IM interference signal that occurs. Receivers experiencing receiver generated intermodulation interference are depicted in the following Table.

Tx 1 Source		Tx 2 Source		Tx 3 Source		Tx 4 Source		Tx 5 Source		Intermod Hit		Affected Receiver		Attn Need (dB)
ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	ID	Freq (MHz)	Freq (MHz)	Ord	ID	Freq (MHz)	
None														

Analysis Results: The above table lists any receiver generated IM product that is determined to have potential to noticeably degrade the system performance to any receive systems analyzed as part of this study. Based upon the listed configurations for transmitters, receivers, antenna models, antenna patterns and equipment filtering and isolation specifications it has been determined that no receiver generated intermodulation interference problems were predicted that have the potential to be system performance limiting to any operators analyzed in this report.

8.0 Transmitter Harmonic Output Interference Analysis

Transmitter harmonic interference is due to non-linear characteristics in a transmitter. The harmonics are typically created due to frequency multipliers and the non-linear design of the final output stage of the transmitter. If the harmonic signal falls within the passband of a nearby receiver and the signal level is of sufficient amplitude, it can degrade the performance of the receiver.

The analysis takes into account the transmitter's harmonic characteristics, output level, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for any harmonics that fall within a receiver's passband. Receivers experiencing transmitter harmonic interference are depicted in the following Table.

Transmitter		Harmonic		Affected Receiver		Attn Needed (dB)
ID	Frequency (MHz)	Frequency (MHz)	Order	ID	Frequency (MHz)	
None						

Analysis Results: No transmitter generated harmonic interference problems were predicted that have the potential to be system performance limiting to any operators analyzed in this report. The calculations to determine harmful out of band harmonics assumed that proper bandpass filtering was utilized to severely reduce these harmonics to levels below those that could be system performance limiting to any receivers analyzed as part of this analysis.

9.0 Transmitter Spurious Output Interference Analysis

Transmitter spurious output interference can be attributed to many different factors in a transmitter. The generation of spurious frequencies could be due to non-linear characteristics in a transmitter or possibly the physical placement of components and unwanted coupling. If a spurious signal falls within the passband of a nearby receiver and the signal level is of sufficient amplitude, it can degrade the performance of the receiver.

The analysis takes into account a transmitter's spurious output specification, output levels, transmission line losses, filters, duplexers, combiners, isolators, multi-couplers and other RF devices that are present in each system. Additionally, the analysis considers the antenna separation space loss, horizontal and vertical gain components of the antennas as well as how they are mounted on the structure. The gain components are derived from antenna pattern data published by each manufacturer.

The analysis determines how much isolation is required to prevent receiver performance degradation for any transmitter spurious signals that fall within a receiver's passband. Receivers experiencing transmitter spurious output interference are depicted in the following Table.

Transmitter		Affected Receiver		Attn Needed (dB)
ID	Frequency (MHz)	ID	Frequency (MHz)	
None				

Analysis Results: No transmitter generated spurious emission interference problems were predicted that have the potential to be system performance limiting to any operators analyzed in this report. The calculations to determine harmful off channel emissions assumed that proper bandpass filtering was utilized to severely reduce these products to levels below those that could be system performance limiting to any receivers analyzed as part of this analysis.

10.0 Summary & Limitations

Based upon the data received regarding the proposed radio equipment to be utilized by Commnet and the existing radio systems utilized by T-Mobile, Sprint, Verizon Wireless, RediNet, North Central Eco Development, Commnet Four Corners and surrounding municipal public safety locations, there should not be any negative impact to the performance of any radio systems proposed or existing on this water tank facility from the proposed Commnet installation based upon calculations performed utilizing the radio configurations described in this report.

This analysis was performed using radio system data provided by Commnet and data from FCC license queries. A search of the FCC license database was completed for this structure as well as licenses for municipal public safety systems in a 1-mile radius of this facility. Only licenses showing as active in this search radius were utilized. In certain instances, where assumptions were required, industry standard values were utilized for variables such as transmission power levels, filter response curves, combining schemes and other configuration variables if not provided by the parties listed above. The scope of this study was limited to radio systems present on this water tank structure exclusively. It does not take into account emissions from surrounding radio sources.

As identified in the various sections of this report, the potential is present for certain forms of interference to exist. However, based upon the supplied and assumed radio system configurations, the isolation provided by physical separation, Antenna pattern gain roll off, filtering variables and isolation devices appears adequate to allow these radio systems to co-exist as outlined in the drawings and configuration documents provided by Commnet.

This analysis was also performed assuming that all radio equipment including lines and antennas are performing to manufacturers specifications. Each system was analyzed assuming proper filtering was used to maintain compliance with all FCC licenses and reduce out of band emissions.