



November 2, 2023

San Juan County
Attn: Mack McDonald
117 South Main
Monticello, UT 84535

Re: Proposed Telecommunications Tower – UT109 Spanish Valley

Dear Mr. McDonald:

Infra Towers, LLC (“Infra”) develops, owns, and operates wireless infrastructure facilities. Verizon Wireless (“Verizon”) is a wireless service provider working to improve coverage in and around Spanish Valley. These improvements target areas with significant gaps in service. Infra and Verizon are working together to build wireless facilities that will provide coverage solutions to currently underserved areas.

Due to growing reliance on wireless communications and increased data demand, wireless infrastructure has become essential to providing reliable service. As part of Infra’s efforts to facilitate coverage solutions in Spanish Valley for Verizon and other wireless service providers, construction of a 125-foot monopole (125-foot monopole with 5-foot lightning rod) on parcel 26S22E354204, is proposed. The proposed telecommunications tower and facility will fill a significant existing gap in service.

Pursuant to your request, this letter addresses questions posed by the County for the Conditional Use Permit required for the proposed tower and facility. Infra’s responses are detailed below and supporting documents are enclosed.

1. *Provide the lease agreement between the tower owner/operator and the landowner.*

Enclosed.

2. *San Juan County has adopted the International Building Code and related construction standards. Will the construction of the tower comply with the National Electrical Code and International Building Code, including Section 3108? That ICB section refers to the Telecommunications Industry Association 222 (Standards for Tower and Antenna Supporting Structures). Does the applicant intend to comply with TIA 222?*

As noted on T-1 of the submitted construction drawings, under the section Code Compliance, Infra Towers, LLC will perform work in accordance with all current editions of relevant codes for local, state, and federal authorities. These include the latest editions of the International Building Code, National Electric Code, and ANSI/TIA/EIA-222.

3. *Provide San Juan County your analysis of the gap in coverage which will be addressed by the proposed telecommunications tower.*



Enclosed. The propagation analysis provided by TeleMtn Engineering indicates the gap in service in the vicinity of the proposed site. The analysis also details that none of the existing towers within 7 miles of the proposed site can resolve the existing gap in service to any significant degree. Therefore, the proposed tower is necessary to provide the needed service.

4. *Explain how the project will enhance commercial development in San Juan County, and benefit health care and education. If known, how might County fire and law enforcement services be enhanced? How might disaster response be benefited?*

More than 71.7% of American homes no longer use traditional landline telephone service and instead choose to be wireless only.¹ In Utah, 72.8% of homes choose to be wireless-only households.²

For residents, enhanced indoor coverage will allow for greater capabilities for remote work, connection to digital educational platforms for students and teachers, streaming entertainment, accessibility to telehealth providers and emergency responders, etc.

For healthcare providers, reliable wireless service allows them to offer telehealth services and provides clinicians with access to continuous, real-time information and analysis. This improves their ability to optimize decision-making, improves patient outcomes, and reduces costs.

In terms of economic development, digital connectivity has been shown to increase productivity and innovation in firms and workers, allowing them access to internet-based technologies and allowing buyers/sellers to drive e-commerce by creating access to more consumers.

Finally, all wireless service providers give E-911 calls priority over any public demand calls, and a fast, reliable connection reduces emergency response time and allows for better caller location accuracy. This is imperative as the number of wireless only households continues to grow.

5. *Federal law requires consultation in cases where proposed towers may impact endangered species, migratory birds, national historic sites, or impact Native American/Tribal lands. Does this project affect or involve any of these interests? If so, what actions have been taken (or will be taken) to comply with federal law or regulation? Provide all analysis – you have prepared - to determine which federal regulations may apply to the proposed tower and any regulation which the applicant determined requires notification or compliance. Which federal regulations does the applicant anticipate will be applicable to the proposed tower? Explain how the applicant will comply with the applicable federal regulations.*

¹ "Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July – December 2022," U.S. DHIS, CDC National Center for Health Statistics.

² CDC Wireless Substitution: State-Level Estimates from the National Health Interview Survey (Released December 2022)



Infra Towers, LLC will comply with all local, state, and federal laws governing wireless communication facilities. An airspace analysis was conducted and provided that concludes no additional consultation is necessary with the FAA or FCC for the proposed tower.

In addition, all new wireless communication facilities are required to go through the National Environmental Policy Act screening, prior to construction, to determine whether the proposed action (construction) will have a significant environmental effect. The screening reviews impacts to wilderness areas, wildlife preserves, endangered species or designated critical habitats, historic places, Indian religious sites, floodplains, and wetlands.

The screening process takes, on average, 120 days. While we have initiated screening through our environmental consultants, the report is not yet complete. Infra Towers, LLC will not start construction of the proposed tower without a completed NEPA report indicating the facility will not result in a significant environmental effect.

- 6. If available, provide engineering or other studies/analysis which support the requested height and location of the proposed tower.*

Enclosed. Please refer to the cover letter and report completed by TeleMtn Engineering.

- 7. Describe the anticipated maintenance needs for the facility, including frequency of service, personnel, equipment needs, and traffic noise or safety impacts of maintenance activity.*

Preventative Maintenance – Traffic will consist of wireless technician maintenance personnel visiting the site approximately twice per month. This work is performed on the ground and technicians typically drive a truck or SUV to carry their maintenance measuring equipment.

Antenna/Feedline Repairs – If ground measurements indicate an antenna or feedline coaxial cable fault, which happens infrequently, a boom truck may be required to facilitate technician access to the antennas or cables.

The ground space will be maintained by Infra Towers, LLC, as frequently as needed, to keep it clear of weeds and easily accessible by maintenance technicians. There will be no distinguishable impact to existing traffic patterns or infrastructure, noise levels, or safety impacts created by the periodic maintenance anticipated for the proposed tower and facility.

- 8. Provide copies of all licenses and permits required by other agencies with jurisdiction over the design, construction, location, and operation of the antenna.*

The antenna manufacturers are required to provide the wireless carriers with certification of FCC compliance related to radio frequency emissions. Typically, this is in the form of a written statement by the manufacturer. Verizon Wireless has not finalized their equipment configuration for this site, but once complete, they can provide certification from the relevant manufacturers and FCC licenses for the frequencies deployed.



Excluding the federal regulatory processes as outlined in question #5, relevant permits approving design and construction will be issued by San Juan County.

9. *Does the applicant understand and accept that no commercial, advertising, or signage will be allowed on the tower – unless separately approved by San Juan County?*

Yes, though we do intend to install site identification and safety signage. Sheet C-11 of the provided construction drawings details the signage proposed and I've enclosed representation of standard signage placement.

10. *Explain how climbing pegs or access ladders will be removed from the lower portions of the tower.*

We specify to the tower manufacturer the height at which we want the climbing pegs to start.

11. *Is it anticipated the tower will encroach upon or block vehicular access?*

No; the proposed tower is in the rear of the parent parcel. Infra Towers, LLC has a non-exclusive 20' wide access/utility easement which will accommodate ingress/egress to the proposed tower and facility.

12. *Explain how the antennas will be mounted with such standards they and the tower can easily withstand the high wind forces common in Spanish Valley.*

Tower and antenna mount design are governed by the EIA/TIA-222 structural standards for steel antenna towers and antenna supporting structures. The site location determines the required design wind speeds, structure class, exposure, and topographical categories.

Designs for both the tower and mounts are certified by structural engineers to meet structural standards specific to the region.

13. *Will there be accessory buildings?*

In this region, wireless carriers typically install their equipment on concrete pads, within our lease area. Please see sheet C-6B in the construction drawings for Verizon equipment detail.

14. *Will the antenna and support structures be grounded in accordance with the National Electrical Code?*

Yes, our statement of compliance is noted on page T-1 of the construction drawings and the proposed grounding detail is shown on pages G-1 to G-5.



15. *Will there be federal or state funding to support this project?*

No.

16. *Provide any needs assessment, planning documents, or preliminary analysis associated with the project.*

At this time, the relevant documents have been provided or are enclosed. As development progresses, additional documents will be produced that will be pertinent to construction and the building permit (geotechnical report, structural drawings for the tower and foundation, etc.).

Infra Towers, LLC will affirmatively protect public health, safety, and welfare by providing wireless services to a currently underserved area, positively impacting area residents, businesses, first responders, and anyone seeking to access this technology from roadways or public spaces in the area.

Sincerely,

Tierney Rowe

Tierney Rowe

Vice President Tower Development

Enclosures

REDACTED

SITE NO.: UT109
SITE NAME: Spanish Valley
LESSOR: Kolleen Conger

OPTION AND GROUND LEASE AGREEMENT

THIS OPTION AND GROUND LEASE AGREEMENT (“Agreement”) is made and entered into as of this fourteenth (14th) day of April, 2023 (the “Effective Date”) by and between **KOLLEEN CONGER**, an individual (“LESSOR”) and **INFRA TOWERS, LLC**, a Delaware limited liability company, (“LESSEE”). LESSOR and LESSEE are individually referred to herein as a “Party” and collectively as the “Parties.”

Recitals

- A. WHEREAS, LESSOR is the owner of certain real property located at 4326 Sunny Acres Lane, Moab, San Juan County, State of Utah bearing Tax Parcel ID 26S22E354204, a legal description of which is set forth in **Exhibit “A”** hereto (the “Property”); and
- B. WHEREAS, LESSEE desires to lease certain ground space on the Property for the placement of LESSEE’s equipment, building(s) and tower(s) for the purpose of constructing, establishing, and maintaining a radio transmission tower facility for LESSEE’s use and that of its subtenants, licensees and customers (collectively, “Customers”), which facility includes tower(s), building(s), radio transmitting and receiving antennas, communications equipment, and related cables, wires, conduits, air conditioning equipment and other appurtenances (the “Telecommunications Facilities”); and
- C. WHEREAS, LESSOR understands and accepts that LESSEE’s primary business is the leasing, subleasing, and licensing portions of the Telecommunications Facilities to its Customers.

Agreement

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants and promises contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, LESSOR and LESSEE agree as follows.

1. Option to Lease. (a) In consideration of the payment of [REDACTED] (the “Option Fee”) by LESSEE to LESSOR, LESSOR hereby grants to LESSEE an option to lease the Leased Premises (as defined in Section 2 below), on the terms and conditions set forth herein (the “Option”). The Option shall be for a term of twelve (12) months, commencing upon the date of mutual execution of this Agreement and ending twelve (12) months from such date (the “Initial Option Period”). LESSEE shall have the right to extend the Option for two (2) additional twelve (12) month periods (each, an “Extension Period”) by giving written notice to LESSOR prior to the end of the then-current Option Period, which notice shall be accompanied by an additional option fee payment of [REDACTED] (the “Additional Option Fee”). As used herein, “Option Period” means the Initial Option Period and any applicable Extension Period(s).

(b) During the Option Period and any applicable extension thereof, LESSEE may exercise the Option by so notifying LESSOR in writing.

(c) The provisions of Sections 3(b) and 3(c) of this Agreement shall apply with equal force during the Option Period and, to the extent that LESSEE exercises the Option, the Term of this Agreement.

2. Premises. Subject to the following terms and conditions, LESSOR leases to LESSEE and LESSEE leases from LESSOR certain ground space located on the Property sufficient for the construction, operation and maintenance of LESSEE’s Telecommunications Facilities, together with all necessary easements for access, egress and utilities, as generally described in this Agreement (the “Leased Premises”) and depicted on the site plan/drawing attached hereto and incorporated herein as **Exhibit “B”** (the “Site Plan”). The Leased Premises is comprised of approximately Two Thousand Five Hundred (2,500) square feet of ground space. If, as a result of the conditions placed upon the issuance of the Governmental Approvals (as defined in Section 3(b) below) required for the construction and/or operation of the Telecommunications Facilities, it is necessary to modify the dimension and/or location of the Leased Premises and/or the configuration of the Site Plan (the “Leased Premises/Site Plan Changes”), LESSEE shall promptly so notify LESSOR in writing and the Parties will promptly execute an amendment to this Agreement to reflect the Leased Premises/Site Plan Changes.

3. Permitted Use. (a) The Leased Premises may be used by LESSEE for, among other things, the construction, operation, maintenance, repair and/or replacement of related facilities, towers, buildings, antennas, equipment, and related activities for the transmission and reception of radio communication signals by LESSEE and its Customers (the "Permitted Use").

(b) LESSEE shall, at its expense, obtain any and all certifications, licenses, variances, permits, conditional use permits or authorizations required for LESSEE's use of the Leased Premises from all applicable federal, state, local government and/or regulatory entities (the "Governmental Approvals"). LESSOR agrees to cooperate with LESSEE, at LESSEE's expense, in obtaining Governmental Approvals by: (i) allowing LESSEE to obtain Governmental Approvals and file such applications, letters and/or documents for zoning and/or building permits as are deemed necessary or appropriate by LESSEE in connection with its use of the Leased Premises; (ii) promptly executing any documents or applications as requested by LESSEE to apply for permits for the use of the Property and Leased Premises; (iii) appointing LESSEE as its agent for all conditional use permit and variance applications, including executing any documents or applications reasonably necessary thereto; (iv) authorizing LESSEE as its agent with respect to signing any zoning or building permit applications for LESSEE's use of the Property; and (v) undertaking any other steps reasonably necessary to obtain any Governmental Approval(s) deemed necessary or appropriate by LESSEE. LESSOR shall take no action during the Option Period or, in the event that the Option is exercised, during the Term of this Agreement (as defined in Section 4 below) that would adversely affect the status of the Leased Premises with respect to the proposed use thereof by LESSEE, including, without limitation, initiating, imposing, or consenting to (A) any change in the zoning of the Property, or (B) the placement of any restriction(s) or limitation(s) on the Property that would restrict, limit, or prevent LESSEE's ability to use the Property in the manner set forth in this Section 3.


(c) LESSEE shall perform, at LESSEE's expense, title reports, RF engineering studies, surveys, soil tests, engineering procedures, environmental investigations and such other tests and reports as deemed necessary by LESSEE to determine that LESSEE's use of the Leased Premises will be compatible with LESSEE's engineering specifications, permitted use, system design, operations and Government Approvals (the "Investigations"). LESSOR agrees to cooperate with LESSEE, at LESSEE's expense for reasonable out-of-pocket costs actually incurred by LESSOR, with respect to the Investigations by: (i) granting LESSEE a license to enter the Property and conduct the Investigations on, under and over the Property; (ii) allowing LESSEE to perform the Investigations; and (iii) undertaking any other steps as are reasonably necessary in support of such Investigations; including, but not limited to, the execution and delivery of an owner's affidavit of title and related documents reasonably satisfactory to LESSEE's title insurer.

(d) In addition to the provisions of Section 10 below, prior to LESSEE's construction of the Telecommunications Facilities, LESSEE shall have the right to immediately terminate this Agreement upon written notice to LESSOR if LESSEE deems the results of any of the studies, reports, and/or Governmental Approvals referenced in this Section 3 to be unacceptable to LESSEE in its sole discretion.

4. Term. (a) The initial term of this Agreement ("Initial Term") shall be ten (10) years, commencing on the date of LESSEE's exercise of the Option (the "Commencement Date"). LESSEE shall have the right to extend this Agreement (including all terms and conditions set forth herein) for nine (9) additional five (5) year renewal terms (each, a "Renewal Term" and collectively, the "Renewal Terms"). Each such renewal shall occur automatically unless LESSEE sends written notice to LESSOR of its intent not to renew this Agreement at least thirty (30) days prior to the expiration of the Initial Term or then-applicable Renewal Term, as the case may be. As used herein, "Term" means the Initial Term and any applicable Renewal Term(s).

(b) In the event that LESSEE exercises all of the Renewal Terms set forth in the preceding paragraph, LESSEE shall have the exclusive right for the period commencing on the last day of the final Renewal Term through the date which is six (6) months thereafter, to negotiate with LESSOR for a new lease at then-current fair market rental rates ("LESSEE's Limited First Right To Negotiate"). If, at the end of such six (6) month period, the parties have not reached agreement as to all of the material terms of such new lease (including, without limitation, the rent payable thereunder), then LESSEE's Limited First Right To Negotiate shall be of no further force or effect.

5. Rent



6. Interference. Subject to LESSEE's rights under this Agreement including, without limitation, non-interference, LESSEE shall not use the Leased Premises in any way which interferes with the use of the Property by LESSOR or its lessees or licensees with rights in the Property prior in time to LESSEE's initial use thereof as a telecommunications facility. LESSOR shall not use, nor shall LESSOR permit its tenants, licensees, employees, invitees or agents to use, any portion of the Property in any way that interferes with the operations of LESSEE. Any interference prohibited by this paragraph shall be deemed to constitute a material breach of this Agreement, and the offending party shall, upon written notice from the other, promptly cause such interference to be terminated. In the event that any such interference is not so terminated, the injured party shall have the right, in addition to any other rights that it may have at law or in equity, to bring a court action to enjoin such interference or to terminate this Agreement immediately upon written notice to the other party.

7. Construction of Improvements. (a) From time to time during the Term hereof, LESSEE shall have the right, in its sole judgment and at its sole cost and expense, to construct, install, operate, maintain, replace, remove, modify, add to, upgrade, rebuild, and/or relocate any or all of the Telecommunications Facilities. Notwithstanding the fact that certain such equipment and appurtenances that are a part of the Telecommunications Facilities may be classified as fixtures under applicable law, the parties agree and acknowledge that all such equipment and appurtenances are, and shall at all times remain, the sole property of LESSEE or its Customers, as the case may be, and that LESSEE shall have the right, but not the obligation, to remove any or all of the same during the Term of this Agreement and/or at the expiration or earlier termination hereof.

(b) The Telecommunication Facilities shall be initially configured as generally set forth in the Site Plan. LESSEE shall have the right to modify, replace, add to, upgrade, rebuild, and/or relocate the Telecommunication Facilities at any time during the Term.

(c) LESSEE shall be solely responsible for the operation, maintenance, repair of, and the insurance for, the Telecommunications Facilities.

8. Access. (a) As partial consideration for the Rent paid by LESSEE pursuant to this Agreement, LESSEE shall have, throughout the Term hereof, the right to access the Leased Premises over and across the Property twenty-four (24) hours per day, seven (7) days a week for the purpose of ingress, egress, operation, maintenance, replacement, and repair of the Telecommunications Facilities (the "Access Rights"). The Access Rights granted herein (i) include the nonexclusive right to enter the Property from the nearest public street and driveway, parking rights, and (ii) extend to LESSEE, its Customers, their contractors, subcontractors, equipment and service providers, governmental agencies of appropriate jurisdiction, and the duly-authorized employees, inspectors, representatives, and agents of each of them.

(b) In addition to the Access Rights set forth in the preceding paragraph, during the period that the Telecommunications Facilities are being constructed, LESSOR grants to LESSEE and its Customers the right to use such portions of the Property and the Adjacent Property as are reasonably required for the construction and installation of the Telecommunications Facilities, including, but not necessarily limited to, (i) the right of ingress to and egress from the Property and, to the extent reasonably required, the Adjacent

Property for construction machinery and related equipment, and (ii) the right to use such portions of the Property and/or Adjacent Property as are reasonably necessary for the storage of construction materials and equipment. As used herein, “Adjacent Property” means other real property owned by LESSOR that is contiguous to, surrounds, or in the immediate vicinity of the Property.

9. Utilities. (a) LESSOR hereby grants to LESSEE, at LESSEE’s sole cost and expense, the right to install, and, to the extent applicable, improve, upgrade, and modify utilities at the Leased Premises (including, without limitation, telephone service, telecommunications lines (including, fiber) and electricity). LESSEE shall, to the extent reasonably practicable, install separate meters or sub-meters, as the case may be, for utilities used in the operation of the Telecommunications Facilities on the Leased Premises.

(b) As partial consideration for the Rent paid by LESSEE under this Agreement, LESSOR hereby grants to LESSEE and the servicing utility companies a nonexclusive right of way over and across the Property as necessary for the construction, installation, running, servicing and maintenance of electrical power and other utilities necessary to serve the Telecommunication Facilities. Upon LESSEE’s request, LESSOR agrees to promptly execute any and all documents necessary to evidence the rights granted to LESSEE pursuant to this paragraph including, without limitation, right-of-way and easement documents, and further grants to LESSEE an irrevocable power of attorney to execute, on LESSOR’s behalf, any and all such documents.

10. Default and Termination. (a) In addition to other events or circumstances permitting the termination of this Agreement, this Agreement may be terminated, without any penalty or further liability, as follows: (i) by either party, upon a breach or default of any covenant or term hereof by the other party, which breach or default is not cured within thirty (30) days of the breaching party’s receipt of written notice thereof from the non-breaching party; *provided, however*, that if efforts to cure such breach are commenced within such thirty (30) day period and are thereafter diligently prosecuted to completion, such period shall be extended for a period of time not to exceed six (6) months, and further provided that the cure period for any monetary default shall be thirty (30) days from the defaulting party’s receipt of the other party’s written notice of payment delinquency; (ii) by LESSEE, upon thirty (30) days prior written notice to LESSOR, in the event that the Leased Premises become technologically unsuitable, in LESSEE’s opinion, for LESSEE’s Telecommunications Facilities for reasons including, but not limited to, unacceptable radio signal interference and any addition, alteration, or new construction on, adjacent to, or in the vicinity of the Leased Premises and/or the Property that blocks, either partially or totally, transmission or receiving paths; (iii) by LESSEE, upon thirty (30) days prior written notice to LESSOR, in the event that any Governmental Approval that LESSEE considers to be necessary or convenient for the construction, operation, maintenance, reconstruction, modification, addition to, or removal of the Telecommunications Facilities is not, in LESSEE’s sole discretion, reasonably obtainable or maintainable in the future; (iv) by LESSEE, upon thirty (30) days prior written notice to LESSOR, in the event that the Leased Premises cease to be economically viable as a telecommunications site (as determined by LESSEE in its sole business judgment); and (v) by LESSEE, upon thirty (30) days prior written notice to LESSOR, if any Hazardous Substance (as defined in Section 13 below) is or becomes present on the Property in violation of any Environmental Laws (as also defined in Section 13 below) to the extent that such is not caused by LESSEE.

(b) Except as expressly limited by this Agreement, a party’s termination hereof as the result of a breach thereof by the other party that is not cured within the applicable period set forth in Section 10(a) shall be in addition to, and not in lieu of, any and all remedies available to the terminating party, whether at law or in equity.

11. Condemnation. If all or any part of the Leased Premises, or if all or any part of the Property underlying the Telecommunication Facilities or providing access to the Premises is taken by eminent domain or other action by governmental authority(s) of appropriate jurisdiction (each, an “Act of Condemnation”), and if, in LESSEE’s sole discretion, such an Act(s) of Condemnation renders the Premises unusable for the Permitted Use set forth in Section 3 hereof, then LESSEE shall have the right to immediately terminate this Agreement upon written notice to Lessor, and all Rent obligations (except those that accrued prior to the effective date of termination) shall cease. If LESSEE elects not to terminate this Agreement following an Act of Condemnation, then this Agreement shall continue unaffected, except that the Rent shall be reduced or abated in proportion to the actual reduction or abatement of LESSEE’s use of the Leased Premises as a result of such Act of Condemnation. In the event of an Act of Condemnation (whether in whole or in part), LESSEE shall be entitled to pursue and receive the award related to the Telecommunication Facilities and any equipment and/or infrastructure owned or constructed by LESSEE that is related thereto. The terms set forth in this Section 11 shall survive the expiration or earlier termination of this Agreement.

12. Indemnification. Subject to the provisions of Section 14 below, LESSEE shall defend (with counsel reasonably acceptable to LESSOR), indemnify, and hold LESSOR harmless from and against any claims (including reasonable attorneys’ fees, costs and expenses incurred in defending against such claims), losses, damages, and liabilities (collectively, “Claims”) resulting from the negligence or willful misconduct of LESSEE and LESSEE’s agents, licensees, invitees, and contractors, and the shareholders, directors, officers, and employees of each of them (the “LESSEE Parties”) occurring in or about the Premises or the Property. LESSOR shall defend (with counsel reasonably

acceptable to LESSEE), indemnify, and hold LESSEE harmless from all Claims arising from the negligence or willful misconduct of LESSOR and LESSOR's agents, lessees, licensees, invitees, and contractors, and the shareholders, directors, officers, and employees of each of them (the "LESSOR Parties") occurring in or about the Premises or the Property. The terms set forth in this Section 12 shall survive the expiration or earlier termination of this Agreement.

13. Hazardous Substances. LESSOR represents and warrants to LESSEE that LESSOR (a) is not presently, nor at any time in the past did LESSOR engage in or permit, and (b) has no knowledge of any other person or entity's engaging (whether past or present) or permitting (whether past or present) any operations or activities upon, or any use or occupancy of any portion of the Property (including, without limitation, the Leased Premises), for the purpose of or in any way involving the handling, manufacturing, treatment, storage, use, transportation, spillage, leakage, dumping, discharge or disposal (whether legal or illegal), accidental or intentional, of any hazardous substances, materials or wastes (individually, a "Hazardous Substance" and collectively, "Hazardous Substances") regulated under any federal, state, or local law, rule, or regulation pertaining to the environment, public health or safety, or the handling, manufacturing, treatment storage, use, transportation, spillage, leakage, dumping, discharge or disposal of Hazardous Substances (collectively, "Environmental Laws"). LESSOR and LESSEE each agree that they will not use, generate, store, or dispose of any Hazardous Material on, under, about or within the Property or the Leased Premises in violation of any Environmental Law(s). LESSOR shall indemnify, defend, and hold harmless LESSEE and the LESSEE Parties (as defined in Section 12 above), and LESSEE shall indemnify, defend, and hold harmless LESSOR and the LESSOR Parties (as defined in Section 12 above), from and against any and all Claims (as also defined in Section 12) arising from the indemnifying party's breach of any obligation, representation, or warranty contained in this paragraph, except for Claims arising in whole or in any part out of the indemnified party's use or occupancy of the Property or the Leased Premises. The indemnification provisions set forth in this Section 13 shall survive the expiration or earlier termination of this Agreement.

14. Insurance. a) During the Term of this Agreement, LESSEE shall, at its sole cost and expense, procure and maintain the following insurance with customary exceptions and exclusions: (i) Bodily Injury: \$1,000,000.00 for injury to any one (1) person, \$2,000,000.00 for injury(s) sustained by more than one (1) person in any one (1) occurrence, and \$2,000,000.00 in the aggregate; and (ii) Property Damage: replacement cost for all of LESSEE's equipment located at the Leased Premises (collectively, the "LESSEE Policies"). LESSEE covenants and agrees that LESSOR shall be named as an additional insured under the LESSEE Policies. In the event of LESSOR's written request therefore, LESSEE shall provide LESSOR with a certificate of insurance evidencing the coverage required hereby not later than thirty (30) days following its receipt of LESSOR's request.

(b) Notwithstanding the foregoing insurance requirements, the insolvency, bankruptcy, or failure of any insurance company carrying or writing any of the policies referenced in this Section 14 shall not be construed as a waiver of any of the provisions of this Agreement, nor shall any such insolvency, bankruptcy, or failure relieve either party from its obligations hereunder. The terms set forth in this Section 14(b) shall survive the expiration or earlier termination of this Agreement.

15. Taxes. LESSOR shall be responsible for all real and personal property taxes, assessments, and similar charges assessed against the Property and LESSOR's property thereon, and LESSEE shall be responsible, to the extent applicable, for any and all personal property taxes, assessments, and similar charges attributable to LESSEE's equipment and other property owned by LESSEE located at the Leased Premises.

16. Quiet Enjoyment, Title and Authority. (a) During the Term of this Agreement, LESSEE may, provided that it is not in default hereunder beyond any applicable notice and cure period, peaceably and quietly hold and enjoy the Premises, free from disturbance from any person claiming by, through, or under LESSOR.

(b) LESSOR covenants and warrants to LESSEE that: (i) LESSOR has full right, power, and authority to execute this Agreement; (ii) LESSOR has good and unencumbered title to the Property, free and clear of any liens or mortgages, except those disclosed to LESSEE and of record as of the date of this Agreement; (iii) there are no pending or threatened actions including, without limitation, bankruptcy or insolvency proceedings (whether voluntary or involuntary) under state or federal law, suits, claims or causes of action against LESSOR or which may otherwise adversely affect the Property or the Leased Premises, (iv) LESSOR has obtained any and all consents from third parties or governmental authorities necessary for the execution of this Agreement and (v) LESSOR's execution and performance of this Agreement will not violate the covenants, provisions, representations, or warranties of any mortgage, deed of trust, lease, or other agreement to which LESSOR is a party or by which LESSOR is otherwise bound.

(c) LESSOR agrees that, during the Term of this Agreement, LESSEE will have the exclusive right to use the Property or any portion thereof for use as telecommunications facilities providing transmission and/or receiving facilities for wireless providers and/or users, and that LESSOR shall not itself operate wireless telecommunications facilities on the Property, or any portion thereof, nor will

LESSOR grant a lease, sublease, license, or other right to use the Property, any portion thereof, or any property that is adjacent thereto that may be owned by LESSOR, to any other person or entity for the operation of antenna and/or telecommunications facilities.

17. Notices. All notices, demands, requests, or other communications which are required to be given, served, or sent by one party to the other pursuant to this Agreement shall be in writing and shall be mailed, postage prepaid, by registered or certified mail, or forwarded by a reliable overnight courier service with delivery verification, to the following addresses for LESSOR and LESSEE, or to such address as may be designated in writing by either party pursuant to this Section 17:

If to LESSEE, to:
Infra Towers, LLC
ATTN: COO
1800 Diagonal Road, Suite 600
Alexandria, VA 22314
(571) 366-1720

With a copy to:
Infra Holdings, LLC
ATTN: Roni D. Jackson, Esq.
27242 Paseo Peregrino
San Juan Capistrano, CA 92675
(714) 396-1360

If to LESSOR, to:
Kolleen Conger
4326 Sunny Acres Lane
Moab, UT 84532
Telephone: _____

With a copy to:

Attn: _____
Telephone: _____

Notice given by certified or registered mail or by reliable overnight courier shall be deemed to have been delivered on the date of receipt (or on the date receipt is refused, as the case may be) as shown on the certification of receipt or on the records or manifest of the U.S. Postal Service or courier service.

18. Estoppel, Non-Disturbance and Attornment. (a) From time to time during the Term of this Agreement, LESSOR agrees, upon not less than ten (10) days prior written notice from LESSEE, to execute, acknowledge and deliver to LESSEE a written estoppel certificate (the "Lessor Estoppel") certifying that as of the date of the certification: (i) the Agreement is a valid and enforceable Agreement and is in full force and effect; (ii) that LESSEE is not in default under any of the terms, conditions, or covenants of the Agreement beyond or any applicable cure period or, if applicable, truthfully specifying any default by LESSEE hereunder and the cure period applicable thereto; (iii) the commencement and expiration dates of the then-current term hereof together with any remaining Renewal Term(s); (iv) the amount of the then-current rent payable under the Agreement; and (v) a true and correct copy of the Agreement and all amendments thereto shall be attached to the Lessor Estoppel.

(b) LESSOR shall use good faith efforts to obtain for LESSEE from the holder of any mortgage and/or deed of trust now or hereafter encumbering the Property a non-disturbance and attornment agreement in a form reasonably satisfactory to LESSEE, which agreement shall provide that as long as LESSEE is not in default of any of its material obligations under this Agreement beyond any applicable cure period, its rights as LESSEE hereunder shall not be terminated and its access to and possession of the Leased Premises shall not be disturbed by the mortgagee or trustee, as the case may be, or by any proceedings on the debt which any such mortgage or deed of trust secures, and that any sale at foreclosure shall be subject to this Agreement.

(c) For purposes of allowing LESSEE to satisfy its lender's continuing rights with respect to LESSEE'S property on the Leased Premises, and with respect to LESSEE's rights and interests under this Agreement, LESSOR agrees as follows:

(i) LESSOR shall recognize the subleases and/or licenses of all Customers of LESSEE on the Leased Premises, and, notwithstanding any default hereunder by LESSEE, will permit such Customers to remain in occupancy thereof so long as such Customer is not in default of any material obligation under its sublease/license with LESSEE beyond any applicable notice and cure period;

(ii) LESSOR consents to the granting by LESSEE of a lien and security interest in and/or mortgaging of LESSEE's interest in this Agreement and all of LESSEE's personal property and fixtures located on or attached to the Property, and furthermore consents to the exercise by LESSEE's mortgagee of its rights of foreclosure with respect to such mortgagee's lien and/or security interest. LESSOR agrees to recognize LESSEE's mortgagee as LESSEE hereunder upon any such exercise by

LESSEE's mortgagee of its rights of foreclosure. LESSOR further agrees (A) to subordinate any lien or security interest which it may have which arises by law or pursuant to this Agreement to the lien and security interest of LESSEE's mortgagee in the collateral securing all indebtedness at any time owed by LESSEE to its mortgagee (collectively the "Collateral"), and (B) that, upon an event of default by LESSEE under this Agreement or under any applicable mortgage, security agreement, or other loan document executed in favor of LESSEE's mortgagee, LESSEE's mortgagee shall have the full right, title, and authority to exercise its rights against the Collateral prior to the exercise by the LESSOR of any rights which it may have or claim to have therein, including, but not limited to, the right to enter upon the Leased Premises and remove the Collateral free and clear of any applicable lien or security interest of LESSOR;

(iii) Within a reasonable time after the occurrence thereof, LESSOR shall give LESSEE's lender written notice of any breach or default of the terms of this Agreement that is not cured by LESSEE within any applicable notice and cure period(s) (an "Uncured LESSEE Default"). In this regard, LESSEE agrees to notify LESSOR in writing from time to time during the Term of the names and notice addresses of LESSEE's lenders. LESSOR further agrees that no default shall be deemed to have occurred under this Agreement unless LESSOR gives the notice required to lender that is required by this paragraph, and that in the event of any Uncured LESSEE Default, lender shall have the right, to the same extent and with the same effect as LESSEE, for the period set forth in this Agreement, to cure or correct any such Uncured LESSEE Default, whether the same shall consist of the failure to pay rent or the failure to perform, and LESSOR agrees to accept such payment or performance on the part of lender as though the same had been made or performed by the LESSEE; and

(iv) LESSOR acknowledges and agrees that nothing contained in this Agreement shall construed as obligating LESSEE's mortgagee to take any action hereunder, or to perform or discharge any obligation, duty, or liability of LESSEE under this Agreement.

19. Assignment and Subletting LESSEE shall have the right to assign its interest in this this Agreement, whether in whole or in part, without LESSOR's consent. Upon notification to LESSOR of such assignment, LESSEE shall be relieved of all future performance, liabilities and obligations under this Agreement. In addition, LESSEE shall have the right to license or sublet the Leased Premises, in whole or in part, without LESSOR's consent, for the Permitted Use set forth in Section 3.

20. Right of First Refusal. If, during the Option Period or the Lease Term, LESSOR receives a bona fide offer ("Bona Fide Offer") from a third party to lease or purchase (a) an interest in all or a portion of the Property whether in fee, by grant of easement, or otherwise, (b) LESSOR's interest under this Agreement including, but not limited to, LESSOR's rights to receive rents hereunder, and/or (c) the right to enter into an option, lease, or easement after the term of this Agreement that LESSOR is willing to accept (individually and collectively, the "Property Interest"), LESSEE shall have the right of first refusal ("Right of First Refusal") to so acquire the Property Interest that is the subject of the Bona Fide Offer. LESSOR shall provide LESSEE with a written copy of the Bona Fide Offer, and LESSEE shall have thirty (30) days following its receipt thereof to notify LESSOR in writing as to whether it wishes to exercise its Right of First Refusal with respect to the Property Interest that is the subject thereof. If LESSEE exercises its right to purchase the subject Property Interest, such purchase shall be made pursuant to all of the terms and conditions set forth under the Bona Fide Offer. If LESSEE fails to exercise its Right of First Refusal, this Agreement shall remain in full force and effect, and such Right of First Refusal shall lapse with respect to the Bona Fide Offer, but not with respect to any subsequent Bona Fide Offer(s)), unless LESSOR fails to convey the subject Property Interest to the third party in strict accordance with the terms of the Bona Fide Offer within one hundred eighty (180) days of the date of LESSEE's waiver of such Right of First Refusal.

21. Miscellaneous. (a) This Agreement, including Exhibits A-D hereto which are hereby incorporated herein by this reference, constitutes the entire Agreement and understanding of the parties with respect to the subject matter hereof, and supersedes all prior offers, negotiations, and agreements with respect thereto. There are no representations or understandings of any kind not set forth herein. Any amendments to this Agreement must be in writing and be executed by a duly authorized representative of each party.

(b) LESSOR shall, not later than thirty (30) days following the Effective Date hereof, provide LESSEE with a copy of LESSOR's organizational documents which may include, by way of example, (i) LESSOR's Articles of Incorporation, By-Laws, Partnership Agreement, Operating Agreement and the like, which documents shall evidence LESSOR's authority, right, and ability to enter into this Agreement, (ii) current certificates of good standing and incumbency, (iii) a duly-executed and authorized resolution authorizing the transactions contemplated hereby, and (iv) a document evidencing, to LESSEE's commercially-reasonable satisfaction, the signature authority of the LESSOR representative who executed this Agreement on LESSOR's behalf.

(c) Concurrently with the execution of this Agreement, the parties shall execute the Memorandum of Lease attached hereto and incorporated herein as **Exhibit "C"** (the "Memorandum"). LESSEE shall cause the Memorandum to be recorded, at LESSEE's sole

cost and expense, in the official records of the county and state in which the Leased Premises are located. Upon determination of the legal description of the Leased Premises by LESSEE (the "Leased Premises Legal Description"), LESSOR and LESSEE shall amend this Agreement and record an amendment to the Memorandum to incorporate the Leased Premises Legal Description.

(d) Any sale or conveyance of all or any portion of the Premises shall be subject to this Agreement and LESSEE's rights hereunder.

(e) This Agreement shall be construed in accordance with the laws of the state in which the Premises are located, without regard to the choice of law rules thereof.

(f) If any term of this Agreement is found to be void or invalid, such invalidity shall not affect the remaining terms of this Agreement, which shall continue in full force and effect.

(g) This Agreement may be executed in any number of counterparts (including by facsimile or by electronic copy or transmission), each of which shall be the binding agreement of the executing party, and which, when taken together, shall constitute but one and the same instrument.

(h) This Agreement shall extend to and be binding upon the heirs, successors or assignees of the parties hereto.

(i) The headings, captions and numbers in this Agreement are solely for convenience and shall not be considered in construing or interpreting any provision herein.

(j) Neither party to this Agreement shall be liable for any real estate brokers' or leasing agents' commissions in the absence of a written agreement, which expressly provides therefore and is signed by the party to be charged or obligated with payment thereof. LESSOR and LESSEE shall each indemnify and defend and hold harmless each other from and against any liability arising from such claims for commissions as a result of its acts.

(k) No failure or delay by either party to the exercise of its rights under this Agreement or to insist upon the strict compliance with any obligation imposed by this Agreement, and no course of dealing, custom or practice of either party contrary to the terms of this Agreement, shall constitute a waiver or a modification of the terms hereof or the right to demand strict compliance with the terms of this Agreement.

(l) The provisions of this Section 21 shall survive the expiration or earlier termination of this Agreement.

[SIGNATURE PAGE FOLLOWS.]

(k) No failure or delay by either party to the exercise of its rights under this Agreement or to insist upon the strict compliance with any obligation imposed by this Agreement, and no course of dealing, custom or practice of either party contrary to the terms of this Agreement, shall constitute a waiver or a modification of the terms hereof or the right to demand strict compliance with the terms of this Agreement.

(l) The provisions of this Section 21 shall survive the expiration or earlier termination of this Agreement.

[SIGNATURE PAGE FOLLOWS.] □

IN WITNESS WHEREOF, the parties have caused this Option and Ground Lease Agreement to be executed by their duly-authorized representatives as of the Effective Date set forth above.

KOLLEEN CONGER

an individual

("LESSOR")

By:  _____

INFRA TOWERS, LLC.

a Delaware limited liability company

("LESSEE")

By: _____

Name: _____

Title: _____

□

EXHIBIT "A" TO OPTION AND GROUND LEASE AGREEMENT

LEGAL DESCRIPTION OF PROPERTY

Address:
4326 Sunny Acres Lane
Moab, UT 84532
San Juan County

Parcel ID:

IN WITNESS WHEREOF, the parties have caused this Option and Ground Lease Agreement to be executed by their duly-authorized representatives as of the Effective Date set forth above.

KOLLEEN CONGER
an individual
("LESSOR")

By: _____

INFRA TOWERS, LLC.
a Delaware limited liability company
("LESSEE")

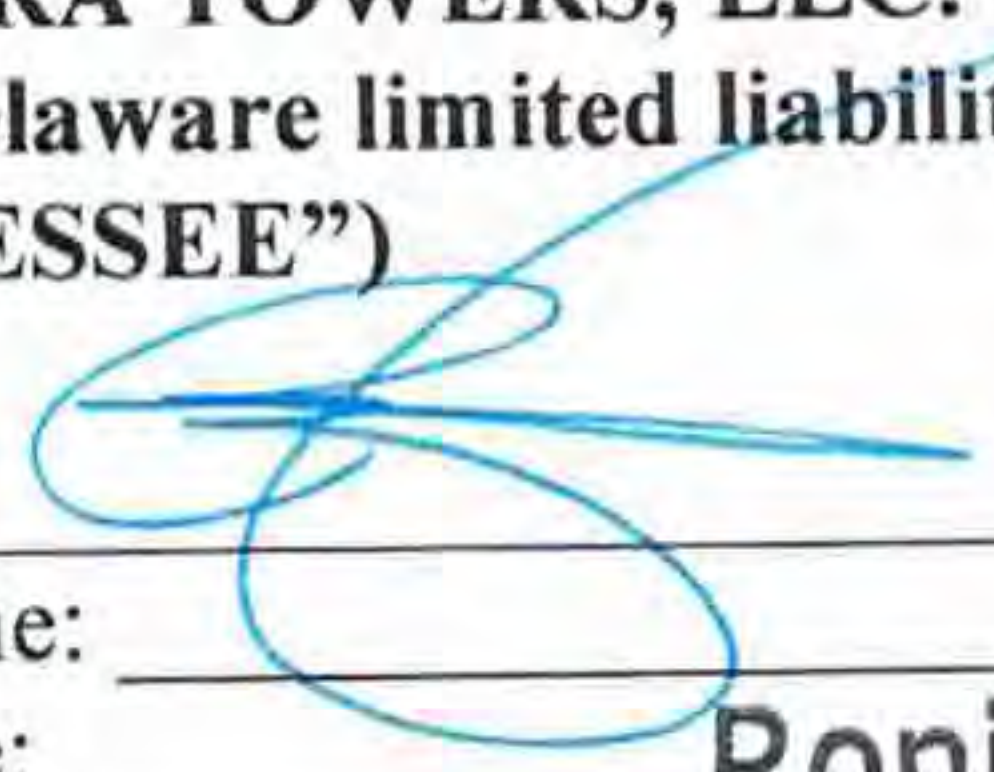
By:  _____
Name: _____
Title: **Roni D. Jackson** _____
General Counsel

EXHIBIT "A" TO OPTION AND GROUND LEASE AGREEMENT

LEGAL DESCRIPTION OF PROPERTY

Address:
4326 Sunny Acres Lane
Moab, UT 84532
San Juan County

Parcel ID:
26S22E354204

Legal Description:

A PARCEL OF LAND IN THE NW1/4 OF SECTION 35, T26S, R22E, SLM, SAN JUAN COUNTY, UTAH, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A CORNER WHICH BEARS EAST 1804.5 FT. FROM THE WEST ¼ CORNER OF SECTION 35, T26S, R22E, SLM AND PROCEEDING THENCE NORTH 95.3 FT. TO A CORNER, THENCE EAST 60.0 FT. TO A CORNER, THENCE NORTH 119.6 FT TO A CORNER, THENCE S 89 DEG. 39' E 108.4 FT. TO A CORNER, THENCE N 03 DEG. 53' W 101.0 FT. TO A CORNER, THENCE EAST 25.1 FT. TO A CORNER, THENCE S 03 DEG. 53' E 315.7 FT TO A CORNER, THENCE WEST 208.0 FT. TO THE POINT OF BEGINNING.

LESS:

COMMENCING AT THE 1/4 CORNER BETWEEN SECTIONS 35 AND 34, T26S, R22E, SLM. A FOUND 1912 GLO BRASS MONUMENT; THENCE N 81 DEG 11'31" E 1990.17 FT. TO THE TRUE POINT OF BEGINNING; THENCE N 3 DEG 53' W 10.3 FT.; THENCE E 25.1 FT; THENCE S 3 DEG 53' E 10.0 FEET; THENCE S 89 DEG 12' W 25.1 FT TO THE POINT OF BEGINNING. BASIS OF BEARING IS N 0 DEG 02' E BETWEEN THE W1/4 CORNER AND THE NW CORNER OF SECTION 35. EVIDENCED BY A RECORD OF SURVEY #822 FILED IN THE OFFICE OF THE SAN JUAN COUNTY SURVEYOR.

EXCEPTING therefrom any oil, gas and minerals that have been reserved, conveyed or transferred in prior documents.

EXHIBIT “B” TO OPTION AND GROUND LEASE AGREEMENT
DEPICTION/DESCRIPTION/SITE PLAN OF LEASED PREMISES¹

The Leased Premises includes ground space.



- Approximate Parcel Line
- - - 20'-Wide Non-Exclusive Access/Utility Easement
- 50' X 50' Lease Area (Not to Scale)

¹ LESSEE reserves the right to replace this Exhibit during the Term of this Agreement with a legal description of the Leased Premises (the “Leased Premises Legal Description”) and an as-built site plan (the “As-Built Site Plan”). Effective on the date of LESSEE’s delivery of the Leased Premises Legal Description/As-Built Site Plan to LESSOR, such Legal Description/As-Built Site Plan shall replace the text of this Exhibit.

**EXHIBIT "C" TO OPTION AND GROUND LEASE AGREEMENT
MEMORANDUM OF LEASE**

[SEE ATTACHED.]

SITE NAME: UT-109 SPANISH VALLEY

PROJECT DESCRIPTION: PROPOSED TELECOMMUNICATIONS FACILITY

TOWER TYPE: 125' MONOPOLE TOWER

SITE ADDRESS: 4326 E SUNNY ACRES LN
SPANISH VALLEY, UT 84532

AREA OF CONSTRUCTION: 2,500± SQ. FT. (LEASE AREA)

LEGAL DESCRIPTION: LOCATED WITHIN SECTION 35, TOWNSHIP 26 SOUTH, RANGE 22 EAST, SALT LAKE BASE AND MERIDIAN

PARCEL #: 26S22E354204

JURISDICTION: SAN JUAN COUNTY



SITE NAME:
UT-109 SPANISH VALLEY

4326 E SUNNY ACRES LN
SPANISH VALLEY, UT 84532
(SAN JUAN COUNTY)

PROPOSED 125' MONOPOLE TOWER

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
4700 DAHLIA STREET
DENVER, CO 80216
OFFICE: (303) 566-9914
www.tepgroup.net

PROJECT INFORMATION

LATITUDE N 38° 29'53.02" (NAD '83) *
LONGITUDE W 109° 28' 17.51" (NAD '83) *

GROUND ELEVATION = 4739' (NAVD '88) *

*INFORMATION PROVIDED BY CIS PROFESSIONAL LAND SURVEYING IN THE FORM OF A 1-A CERTIFICATION DATED MAY 30, 2023.

1A CERTIFICATION



LOCATION MAP

FROM THE CANYONLANDS FIELD AIRPORT: HEAD EAST ON W AVIATION WAY TOWARD US-191 N, TURN RIGHT ONTO US-191 S, TURN LEFT ONTO E SUNNY ACRES LN.

DRIVING DIRECTIONS

CALL FOR UNDERGROUND UTILITIES PRIOR TO DIGGING:
(800) 662-4111
EMERGENCY:
CALL 911



Know what's below.
Call before you dig.

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

1. INTERNATIONAL BUILDING CODE (2018 EDITION)	4. NATIONAL ELECTRIC CODE (2020 EDITION)
2. INTERNATIONAL CODE COUNCIL	5. LOCAL BUILDING CODE
3. ANSI/TIA/EIA-222-G	6. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

CONSTRUCTION OF A TELECOMMUNICATION FACILITY, CONSISTING OF ANTENNAS & ASSOCIATED APPURTENANCES ON A PROPOSED MONOPOLE TOWER, FENCED COMPOUND & SERVICE EQUIPMENT FOR FUTURE CARRIERS. NO WATER OR SEWER IS REQUIRED.

- FACILITY DESIGNED IN ACCORDANCE WITH SAN JUAN COUNTY REGULATIONS.
- THIS IS AN UNMANNED FACILITY WHICH WILL NOT REQUIRE ANY WATER OR SEWER FACILITIES.
- TRAFFIC WILL CONSIST ONLY OF MAINTENANCE PERSONNEL, VISITING THE SITE APPROXIMATELY TWICE A MONTH.

PROJECT DESCRIPTION & NOTES

REV	DATE	ISSUED FOR:
I	10-10-23	PRELIMINARY
O	09-21-23	PRELIMINARY

DRAWN BY: MKB CHECKED BY: KES

SITE APPLICANT:
NAME: INFRA TOWERS, LLC
ADDRESS: 1800 DIAGONAL ROAD
CITY, STATE, ZIP: ALEXANDRIA, VA 22314
CONTACT: TIERNEY ROWE
PHONE: (801) 597-4516

POWER PROVIDER:
NAME: ROCKY MOUNTAIN POWER
ADDRESS:
CITY, STATE, ZIP:
CONTACT:
PHONE: (888) 221-7070

CIVIL ENGINEER:
NAME: TOWER ENGINEERING PROFESSIONALS
ADDRESS: 4700 DAHLIA STREET
CITY, STATE, ZIP: DENVER, CO 80216
CONTACT: NICHOLAS M. CONSTATINE, P.E.
PHONE: (303) 566-9914

ELECTRICAL ENGINEER:
NAME: TOWER ENGINEERING PROFESSIONALS
ADDRESS: 4700 DAHLIA STREET
CITY, STATE, ZIP: DENVER, CO 80216
CONTACT: NICHOLAS M. CONSTATINE, P.E.
PHONE: (303) 566-9914

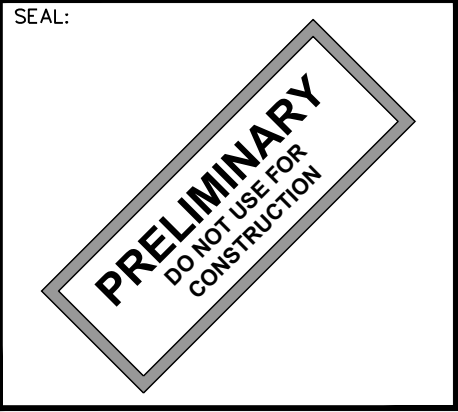
PROPERTY OWNER:
NAME: KOLLEEN CONGER
ADDRESS: 4326 E SUNNY ACRES LN
CITY, STATE, ZIP: SPANISH VALLEY, UT 84532-9701

ORIGINAL SURVEYOR:
NAME: CIS PROFESSIONAL LAND SURVEYING
ADDRESS: 1025 NORTH 300 WEST ST
CITY, STATE, ZIP: NEPHI, UT 84648
CONTACT: CORY IVAN SQUIRE, P.L.S.
PHONE: (435) 660-0816

CONTACT INFORMATION

SHEET	DESCRIPTION	REV
T1	TITLE SHEET	1
SU1	SURVEY NOTES & REFERENCE, SITE PLAN OVERVIEW	1
SU2	ENLARGED LEASE AREA SITE PLAN	1
N1	GENERAL NOTES	1
C1	AREA PLAN	1
C2	SITE PLAN	1
C3	TOWER ELEVATION	1
C4	COMPOUND DETAIL	1
C5	FENCE DETAILS	1
C6A	VERIZON EQUIPMENT PLATFORM DETAIL I	1
C6B	VERIZON EQUIPMENT PLATFORM DETAIL II	1
C7	VERIZON GENERATOR DETAIL	1
C8	VERIZON ICE BRIDGE DETAILS	1
C9	ANTENNA MOUNTING DETAILS	1
C10	DRIVEWAY DETAILS	1
C11	SIGNAGE DETAILS	1
E1	ELECTRICAL NOTES	1
E2	ONE-LINE ELEVATION & POWER PANEL SCHEDULE	1
E3	POWER/TELCO PLAN & ONE-LINE DIAGRAM	1
E4	SERVICE RACK DETAILS	1
G1	GROUNDING PLAN AND DETAILS	1
G2	GROUNDING DETAILS	1
G3	GROUNDING DETAILS II	1
G4	GROUNDING DETAILS III	1
G5	GROUNDING DETAILS IV	1

INDEX OF SHEETS



SEAL:

SHEET NUMBER: **T-1** REVISION: **1**
TEP#: 333909.883690

GENERAL NOTES:

- ALL REFERENCES TO OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED INFRA TOWERS, LLC OR ITS AFFILIATES OR DESIGNATED REPRESENTATIVE.
- ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF UTAH.
- STRUCTURE IS DESIGNED IN ACCORDANCE WITH ANSI/TIA/EIA-222-H. THIS CONFORMS TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, 2018 EDITION.
- WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2018 EDITION.
- UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
- ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERCEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
- ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.
- ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
- ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH INFRA TOWERS, LLC FOR APPROVAL.
- BILL OF MATERIALS AND PART NUMBERS LISTED ON CONSTRUCTION DRAWINGS ARE INTENDED TO AID CONTRACTOR. CONTRACTOR SHALL VERIFY PARTS AND QUANTITIES WITH MANUFACTURER PRIOR TO BIDDING AND/OR ORDERING MATERIALS.
- ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
- THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN ITS PRESENT STATE. AFTER REWORKING, IF THE MATERIAL REMAINS UNSUITABLE, THE CONTRACTOR SHALL UNDERCUT THIS MATERIAL AND REPLACE WITH APPROVED MATERIAL. ALL SUBGRADES SHALL BE PROOFROLLED WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK PRIOR TO PAVING. ANY SOFTER MATERIAL SHALL BE REWORKED OR REPLACED.
- THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL PIPES, DITCHES, AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION UNTIL WORK IS ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURE IN OPERABLE CONDITION.
- ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.
- ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

STRUCTURAL STEEL NOTES:

- THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, 14TH EDITION.
- UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 - STRUCTURAL STEEL, ASTM DESIGNATION A36 OR A992 GR50.
 - ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.
 - ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
 - ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
- ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, 14TH EDITION.
- HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER.
- HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE.
- REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTE MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL.
- A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.
- ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.
- ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
- ALL ASSEMBLY BOLTS ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN SECTION 8.1 OF THE AISC, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", DATED JUNE 30, 2004.
- FLAT WASHERS ARE TO BE INSTALLED WITH BOLTS OVER SLOTTED HOLES.
- DO NOT OVER TORQUE ASSEMBLY BOLTS. GALVANIZING ON BOLTS, NUTS, AND STEEL PARTS MAY ACT AS A LUBRICANT, THUS OVER TIGHTENING MAY OCCUR AND MAY CAUSE BOLTS TO CRACK AND SNAP OFF.
- PAL NUTS ARE TO BE INSTALLED AFTER NUTS ARE TIGHT AND WITH EDGE LIP OUT. PAL NUTS ARE NOT REQUIRED WHEN SELF-LOCKING NUTS ARE PROVIDED.
- GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
- WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) D1.1-2010 STRUCTURAL WELDING CODE - STEEL.

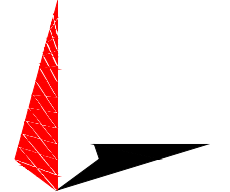
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



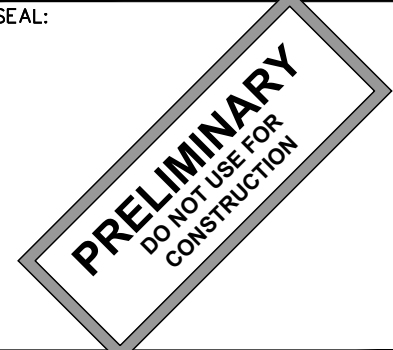
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
 4700 DAHLIA STREET
 DENVER, CO 80216
 OFFICE: (303) 566-9914
 www.tepgroup.net

SEAL:



REV	DATE	ISSUED FOR:
I	10-10-23	PRELIMINARY
O	09-21-23	PRELIMINARY

DRAWN BY: MKB | CHECKED BY: KES

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER: **N-1** | REVISION: **1**
 TEP#:333909.883690

LEGEND

- PARENT PROPERTY LINE
- ADJACENT PROPERTY LINE
- PROPERTY CORNER
- LEASE/EASEMENT CORNER
- SPOT ELEVATION
- EXIST. CONTOUR LINE
- EDGE OF PAVEMENT
- CHAIN LINK FENCE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXIST. UTILITY POLE
- EXIST. ELEC. METER
- EXIST. ELEC. PEDESTAL
- EXIST. TELCO PEDESTAL
- EXIST. TRANSFORMER
- OVERHEAD WIRE
- RIGHT-OF-WAY

1A CERTIFICATION

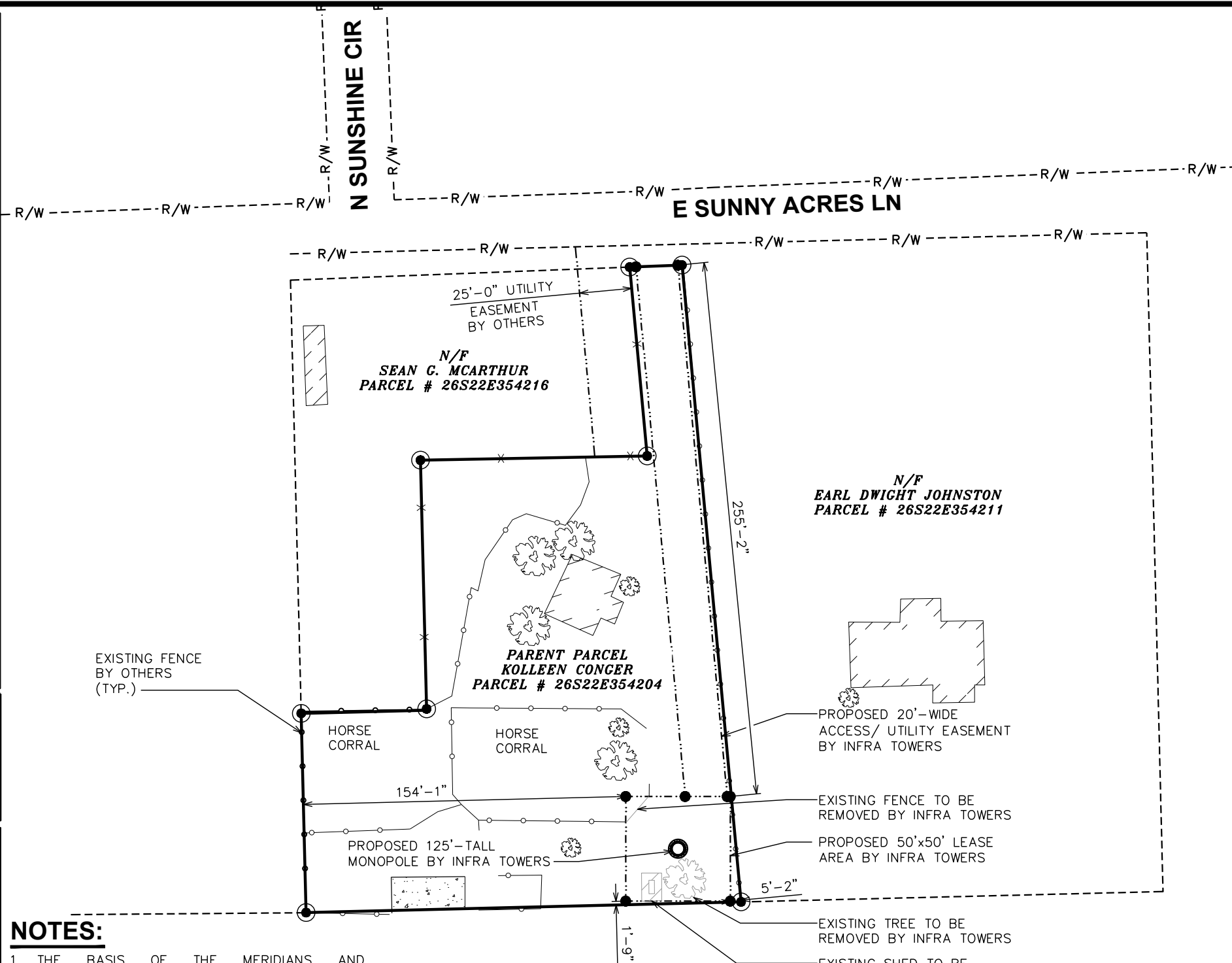
LATITUDE: N 38° 29' 53.02" (NAD '83)
 LONGITUDE: W 109° 28' 17.51" (NAD '83)
 GROUND ELEVATION: 4,739' (NAVD '88)

PROPERTY SETBACKS

	PROPOSED FENCE	PROPOSED TOWER (C)
NORTH	255'-2"±	278'-7"±
SOUTH	1'-9"±	26'-2"±
EAST	5'-2"±	27'-9"±
WEST	154'-1"±	178'-6"±

NOTES:

1. THE BASIS OF THE MERIDIANS AND COORDINATES FOR THIS PLAT IS UTAH COORDINATE SYSTEM (NAD 83) UTAH SOUTH ZONE.
2. VERTICAL INFORMATION SHOWN, BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) IN FEET.
3. ALL DISTANCES ARE GROUND UNLESS OTHERWISE NOTED.
4. THE PROPOSED TOWER IS LOCATED IN AN AREA UNMAPPED BY FEMA TO DETERMINE FLOOD RISK



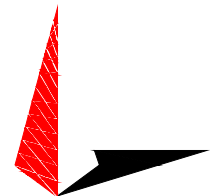
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



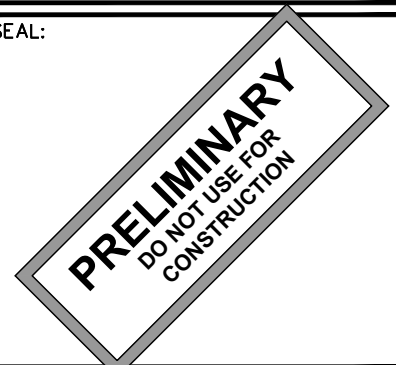
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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 4700 DAHLIA STREET
 DENVER, CO 80216
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DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:

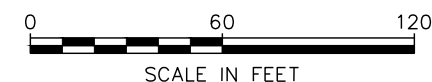
AREA PLAN

SHEET NUMBER:	REVISION:
C-1	1

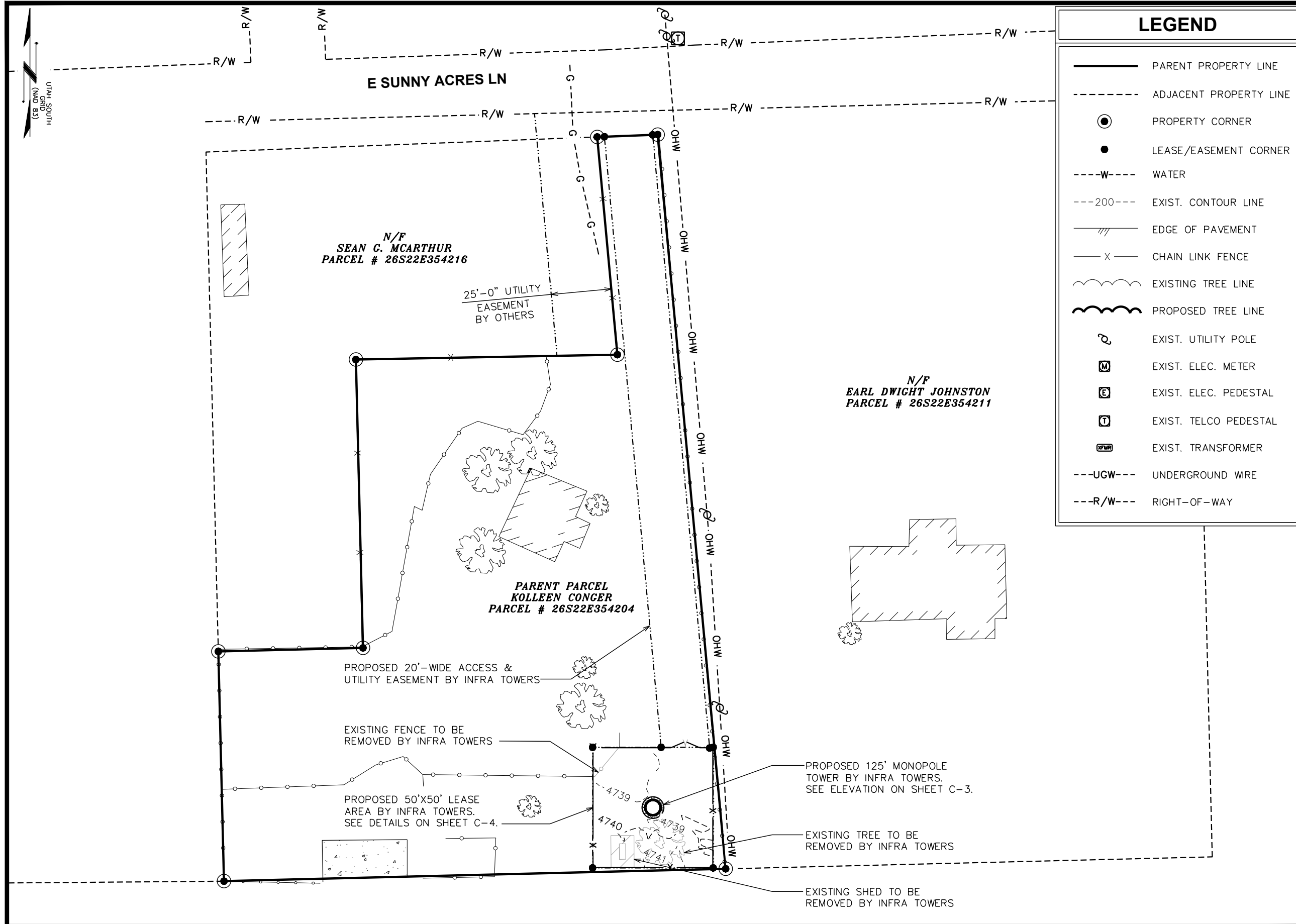
TEP#:333909.883690

SITE PLAN

SCALE: 1" = 60'



SCALE IN FEET



LEGEND	
	PARENT PROPERTY LINE
	ADJACENT PROPERTY LINE
	PROPERTY CORNER
	LEASE/EASEMENT CORNER
	WATER
	EXIST. CONTOUR LINE
	EDGE OF PAVEMENT
	CHAIN LINK FENCE
	EXISTING TREE LINE
	PROPOSED TREE LINE
	EXIST. UTILITY POLE
	EXIST. ELEC. METER
	EXIST. ELEC. PEDESTAL
	EXIST. TELCO PEDESTAL
	EXIST. TRANSFORMER
	UNDERGROUND WIRE
	RIGHT-OF-WAY

PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

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 DENVER, CO 80216
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SEAL:

PRELIMINARY
 DO NOT USE FOR
 CONSTRUCTION

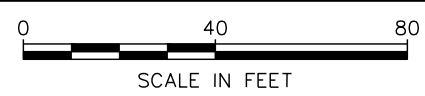
REV	DATE	ISSUED FOR:
1	10-10-23	PRELIMINARY
0	09-21-23	PRELIMINARY

DRAWN BY: MKB | CHECKED BY: KES

SHEET TITLE:
SITE PLAN

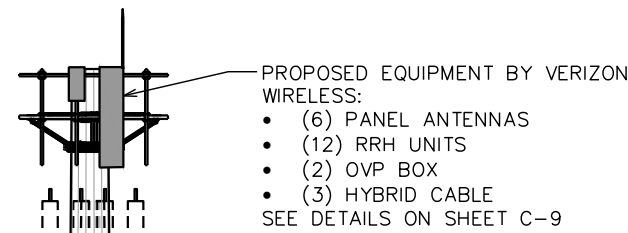
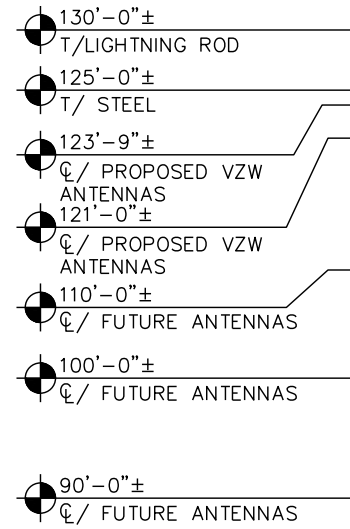
SHEET NUMBER: **C-2** | REVISION: **1**
 TEP#:333909.883690

SITE PLAN
 SCALE: 1" = 40'



NOTES:

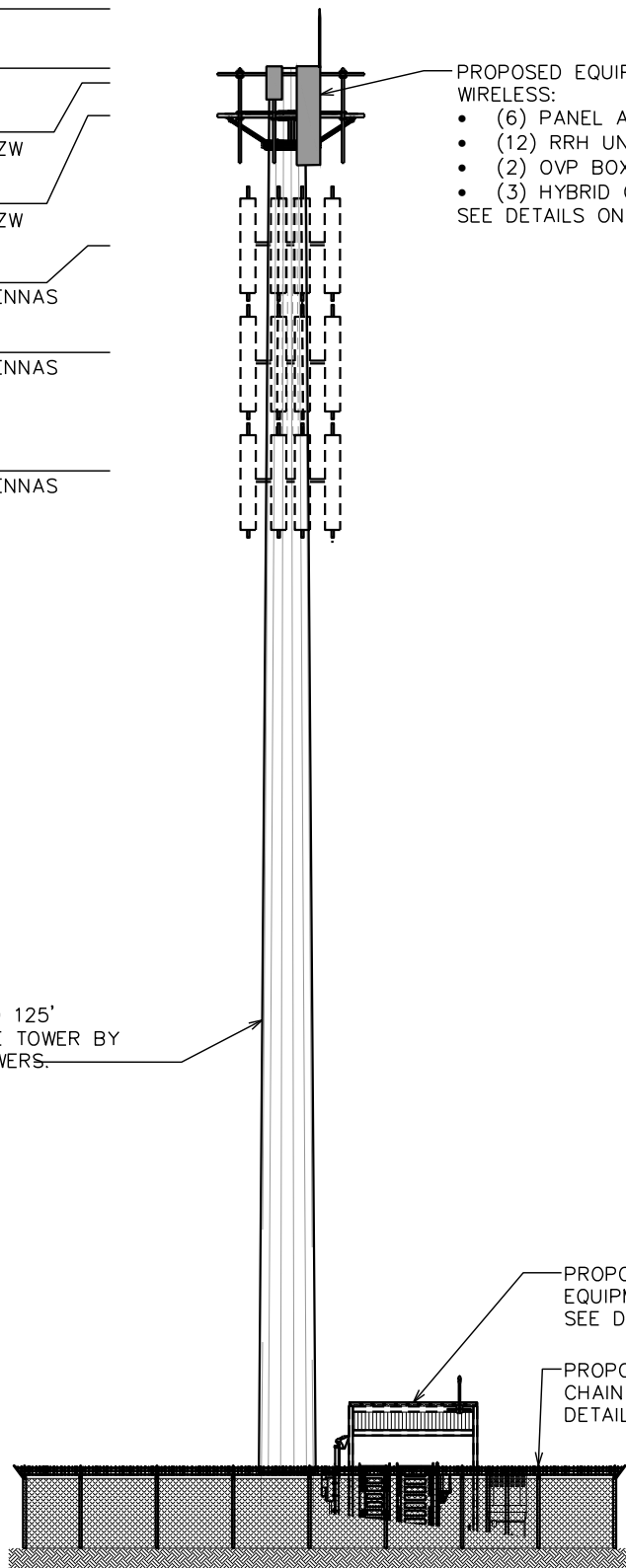
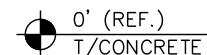
1. TOWER TO BE CORTEN STEEL, OR COMPARABLE, WITH AN OXIDIZED FINISH.
2. COAX AND TRANSMISSION CABLES TO BE ROUTED INSIDE TOWER USING HOISTING GRIPS.
3. ALIGN ENTRY PORTS WITH EQUIPMENT AND ANTENNAS.



PROPOSED 125' MONOPOLE TOWER BY INFRA TOWERS.

PROPOSED VERIZON WIRELESS EQUIPMENT PAD WITH CANOPY. SEE DETAILS ON SHEET C-6.

PROPOSED 7' TALL CHAIN LINK FENCE. SEE DETAILS ON SHEET C-5.



PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
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 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

1800 DIAGONAL ROAD, SUITE 600
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SEAL:

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SHEET TITLE:

TOWER ELEVATION

SHEET NUMBER: **C-3**
 REVISION: **1**
 TEP#:333909.883690

TOWER ELEVATION

SCALE: 1/16" = 1'-0"



PROPERTY LINE SETBACKS

	PROPOSED FENCE	PROPOSED TOWER (C)	PROPOSED VZW PAD
NORTH	255'-2"±	279'-5"±	288'-10"±
SOUTH	1'-9"±	26'-2"±	5'-6"±
EAST	5'-2"±	27'-9"±	30'-1"±
WEST	154'-2"±	178'-6"±	159'-11"±

PROPOSED 20'-WIDE ACCESS & UTILITY EASEMENT BY INFRA TOWERS.

PROPOSED 12'-WIDE ACCESS GATE

PROPOSED 50'X50' LEASE AREA & FENCED COMPOUND BY INFRA TOWERS. SEE DETAILS ON SHEET C-5.

EXISTING FENCE TO BE REMOVED BY INFRA TOWERS

PROPOSED UTILITY RACK BY INFRA TOWERS. SEE DETAILS ON SHEET E-4.

PROPOSED 125' MONOPOLE TOWER BY INFRA TOWERS. SEE ELEVATION ON SHEET C-3.

EXISTING TREE TO BE REMOVED BY INFRA TOWERS

PROPOSED 15'X24' LEASE AREA BY VZW

PROPOSED CABINETS MOUNTED ON PLINTH

PROPOSED DIESEL GENERATOR BY VZW

PROPOSED 11'X18' CONCRETE EQUIPMENT PAD WITH CANOPY BY VZW. SEE DETAILS ON SHEET C-6.

EXISTING SHED TO BE REMOVED BY INFRA TOWERS

NOTES:

CONTRACTOR TO RESTORE ANY EXISTING LANDSCAPING, VEGETATION, CONCRETE OR GRAVEL OUTSIDE OF LEASE AREA THAT IS REMOVED FOR CONSTRUCTION.

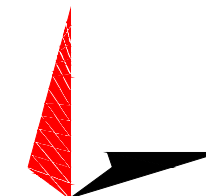
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



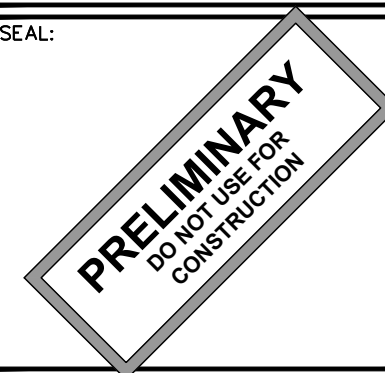
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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SHEET TITLE:

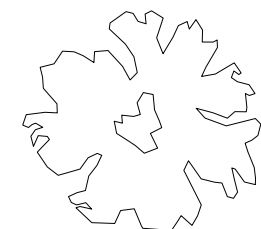
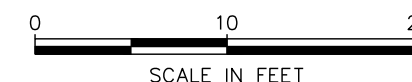
**COMPOUND
 DETAIL**

SHEET NUMBER: **C-4** | REVISION: **1**

TEP#:333909.883690

COMPOUND DETAIL

SCALE: 1" = 10'



35'-1"

3'-11"

6'-8"

50'-0"

25'-0"

3'-0" (TYP)

3'-0" (TYP)

25'-0"

50'-0"

FUTURE 12'X20' LEASE AREA

FUTURE 12'X20' LEASE AREA

FUTURE 12'X20' LEASE AREA

4740

4739

4741

4739

3'-0"

MHO

MHO

MHO

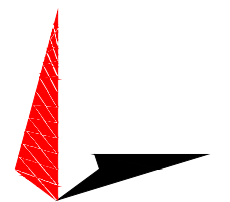
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



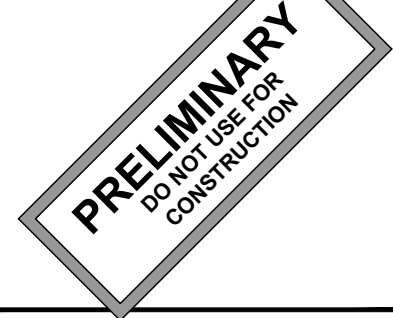
1800 DIAGONAL ROAD, SUITE 600
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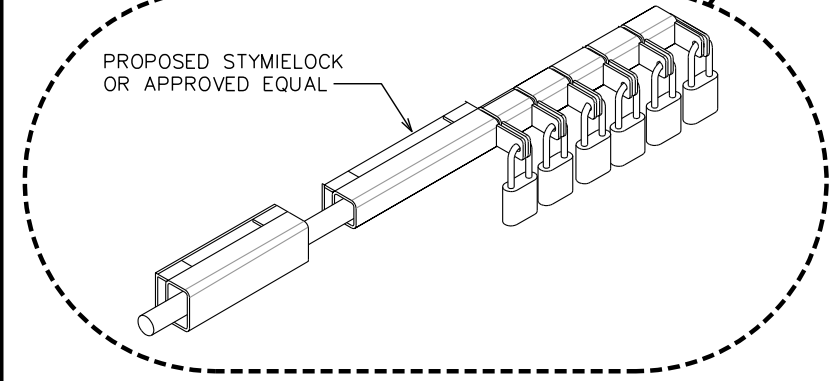
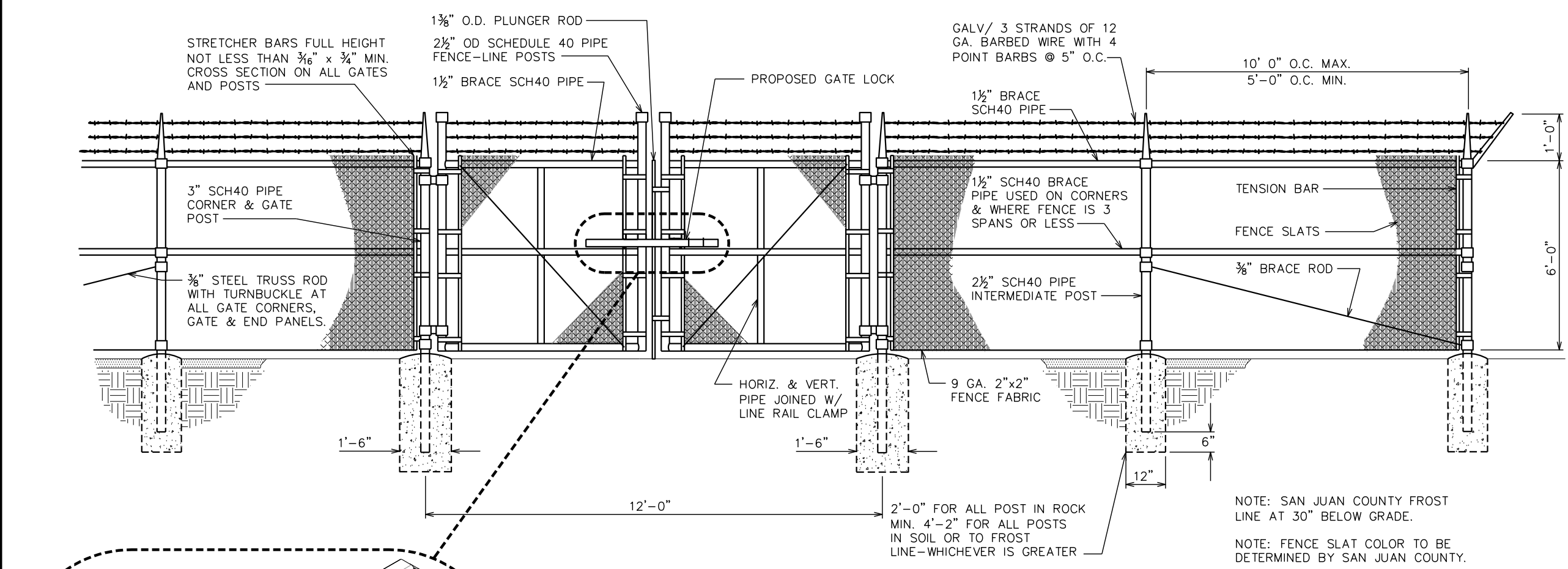
DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:

FENCE DETAILS

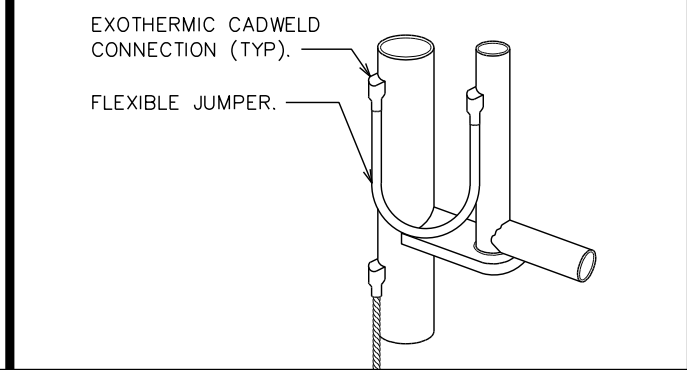
SHEET NUMBER: **C-5** REVISION: **1**

TEP#:333909.883690



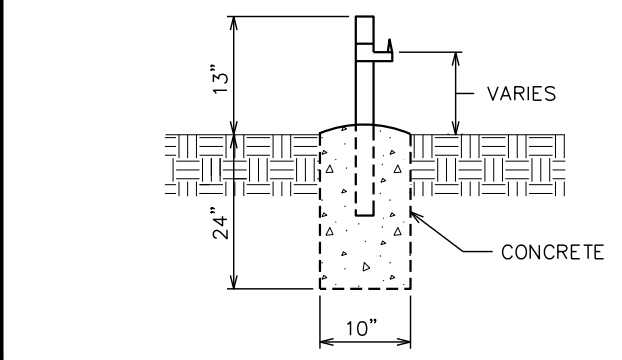
TYPICAL FENCE ELEVATION

SCALE: N.T.S.



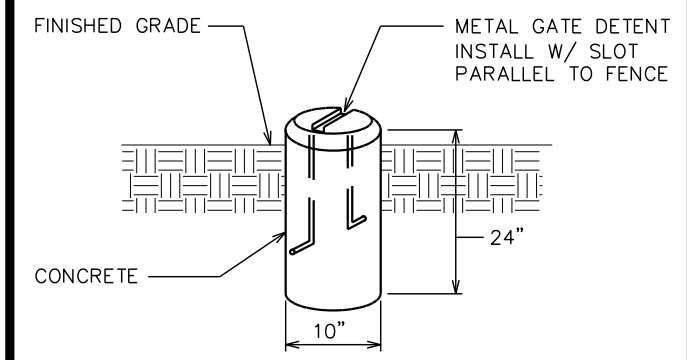
GROUNDING AT GATE POST

SCALE: N.T.S.



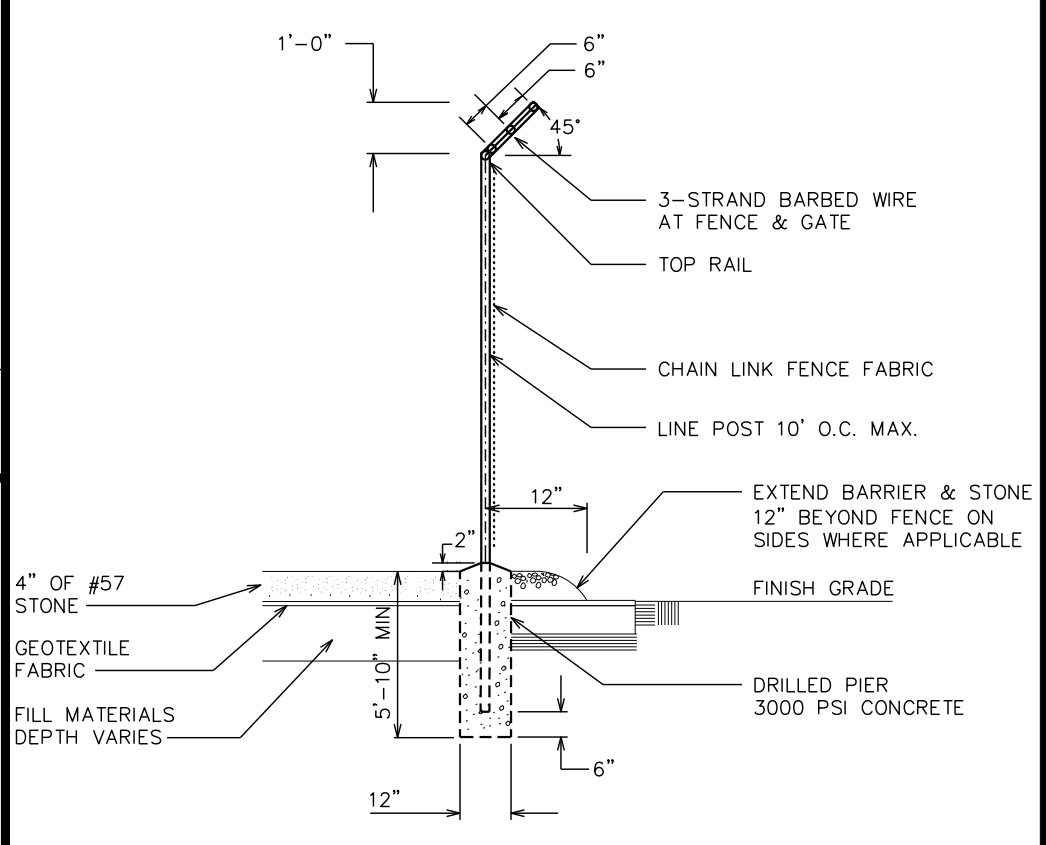
GATE STOP / KEEPER DETAIL

SCALE: N.T.S.



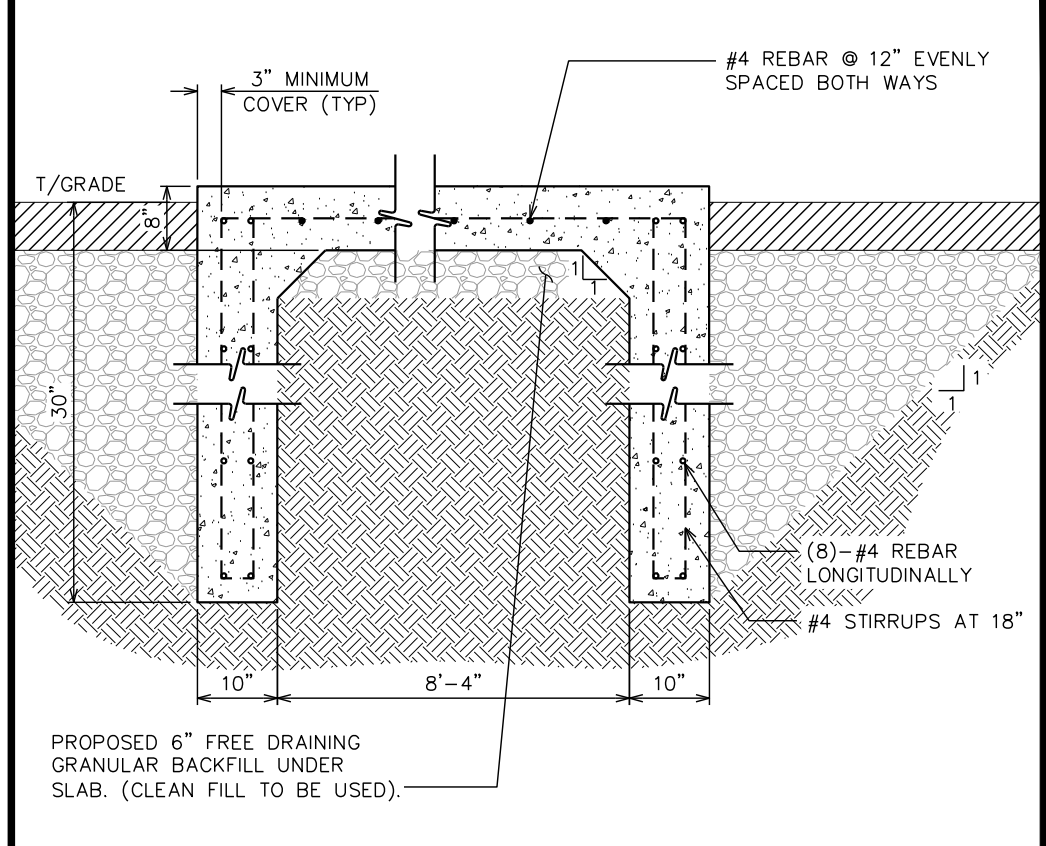
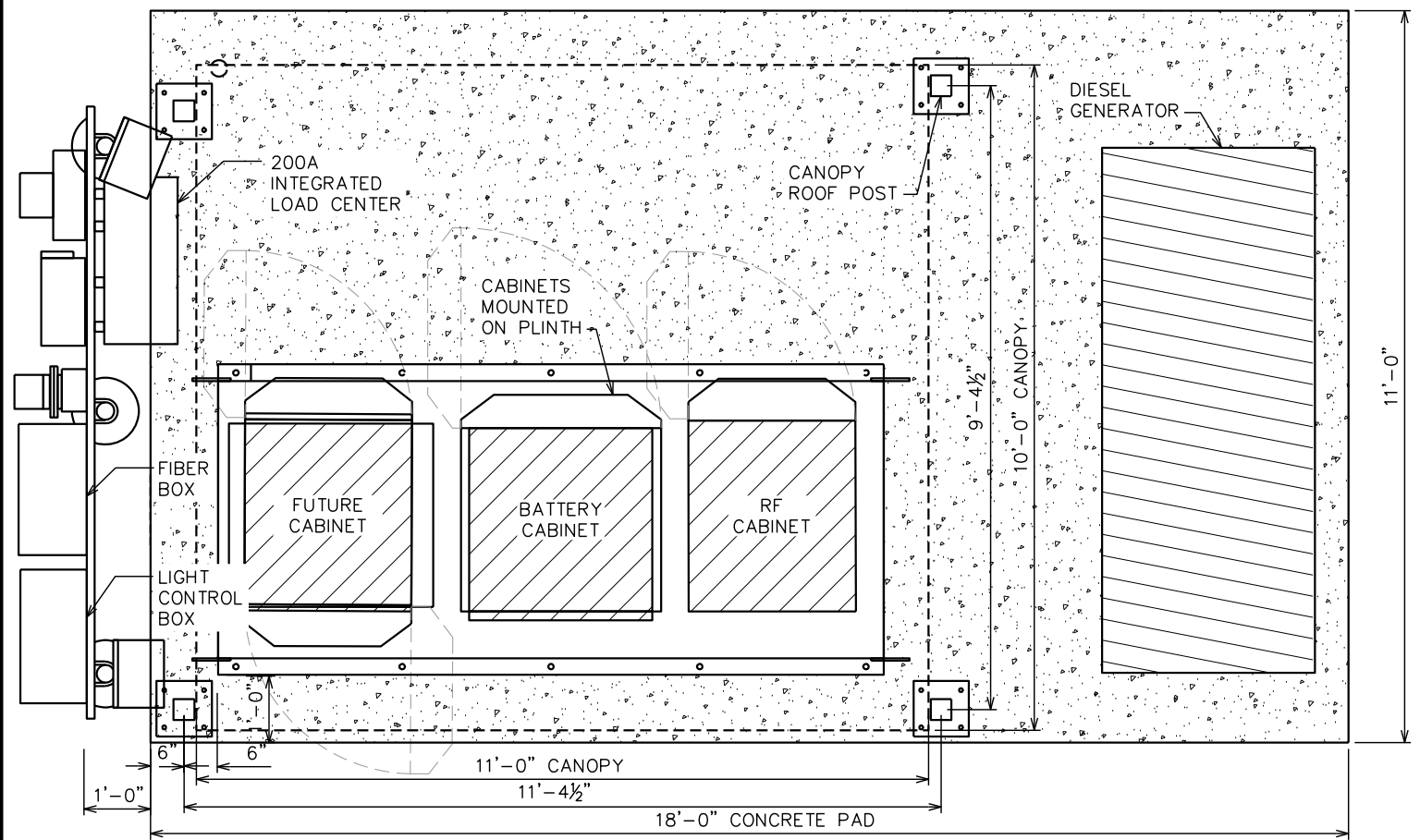
GATE DETENT DETAIL

SCALE: N.T.S.



FENCE / BARBED WIRE ARM DETAIL

SCALE: N.T.S.



PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

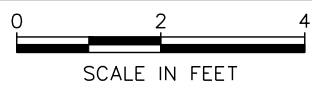
 1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:

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 4700 DAHLIA STREET
 DENVER, CO 80216
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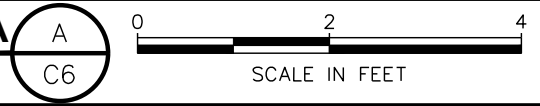
EQUIPMENT PAD DETAIL

SCALE: 3/8" = 1'-0"



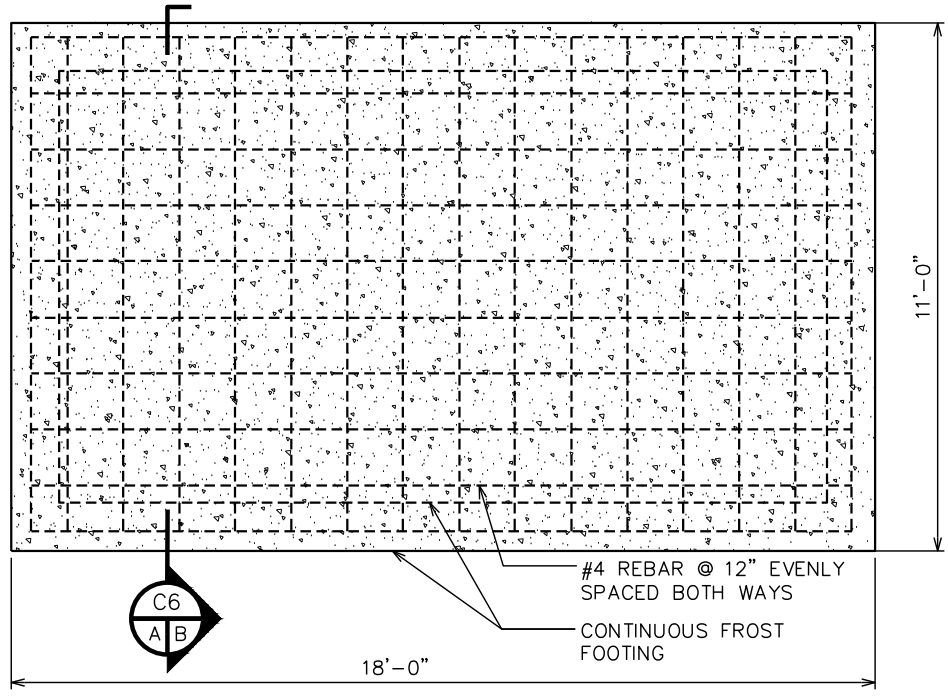
PAD SECTION-OPTION A

SCALE: 1/2" = 1'-0"



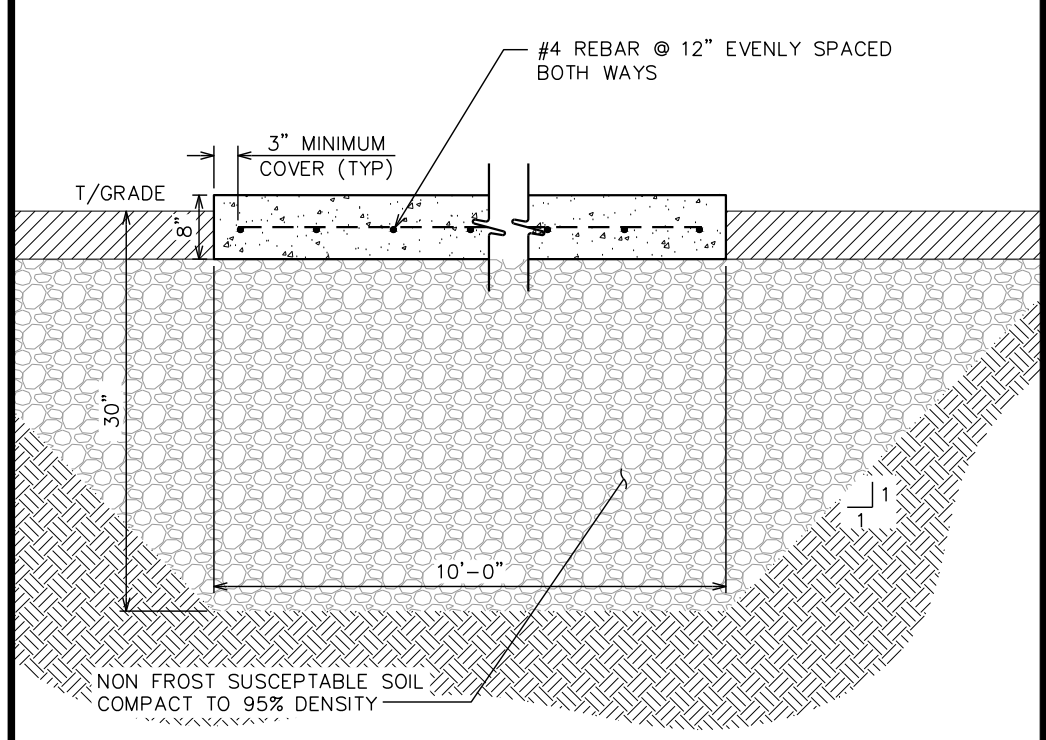
FOUNDATION NOTES:

1. DESIGN SHALL BE PER INTERNATIONAL BUILDING CODE, 2018 EDITION.
2. CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE ACI CODE.
3. CONCRETE SHALL BE 3,000 PSI.
4. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE."
5. REBAR $F_y = 60,000$ PSI.
6. ALL BACKFILL SHALL BE THOROUGHLY COMPACTED
7. NON FROST SUSCEPTIBLE SOIL TO EXTEND TO COUNTY FROST LINE. SAN JUAN COUNTY FROST DEPTH IS 30".



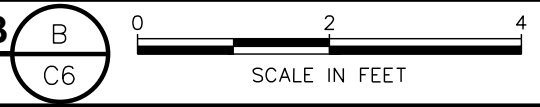
CONCRETE SLAB DETAIL

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



PAD SECTION-OPTION B

SCALE: 1/2" = 1'-0"



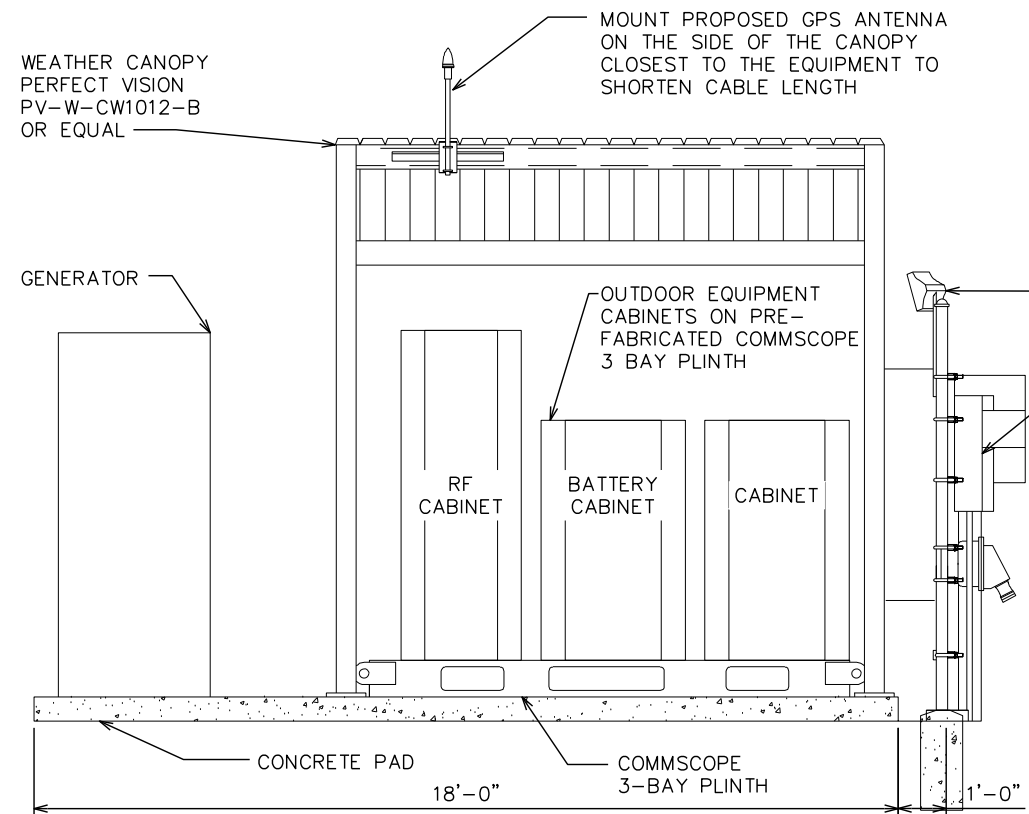
SEAL:

REV	DATE	ISSUED FOR:
I	10-10-23	PRELIMINARY
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DRAWN BY: MKB | CHECKED BY: KES

SHEET TITLE:
VERIZON EQUIPMENT PAD DETAILS I

SHEET NUMBER: **C-6A** | REVISION: **1**
 TEP#:333909.883690



12'± AGL
TOP OF CANOPY

10'-6"± AGL
TOP OF CANOPY

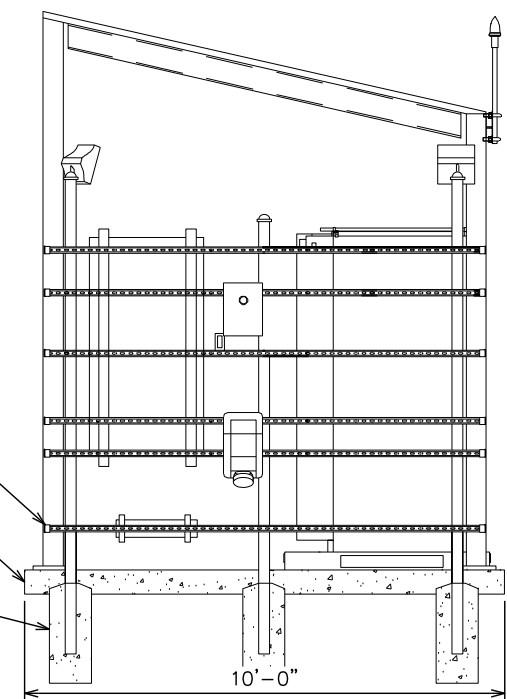
NEW SERVICE LIGHT
MOUNTED AT 8' A.F.G TO
H-FRAME (TYP OF 2)

UTILITY METER & DISC.
SWITCH ATTACHED TO
H-FRAME

ELECTRICAL H-FRAME

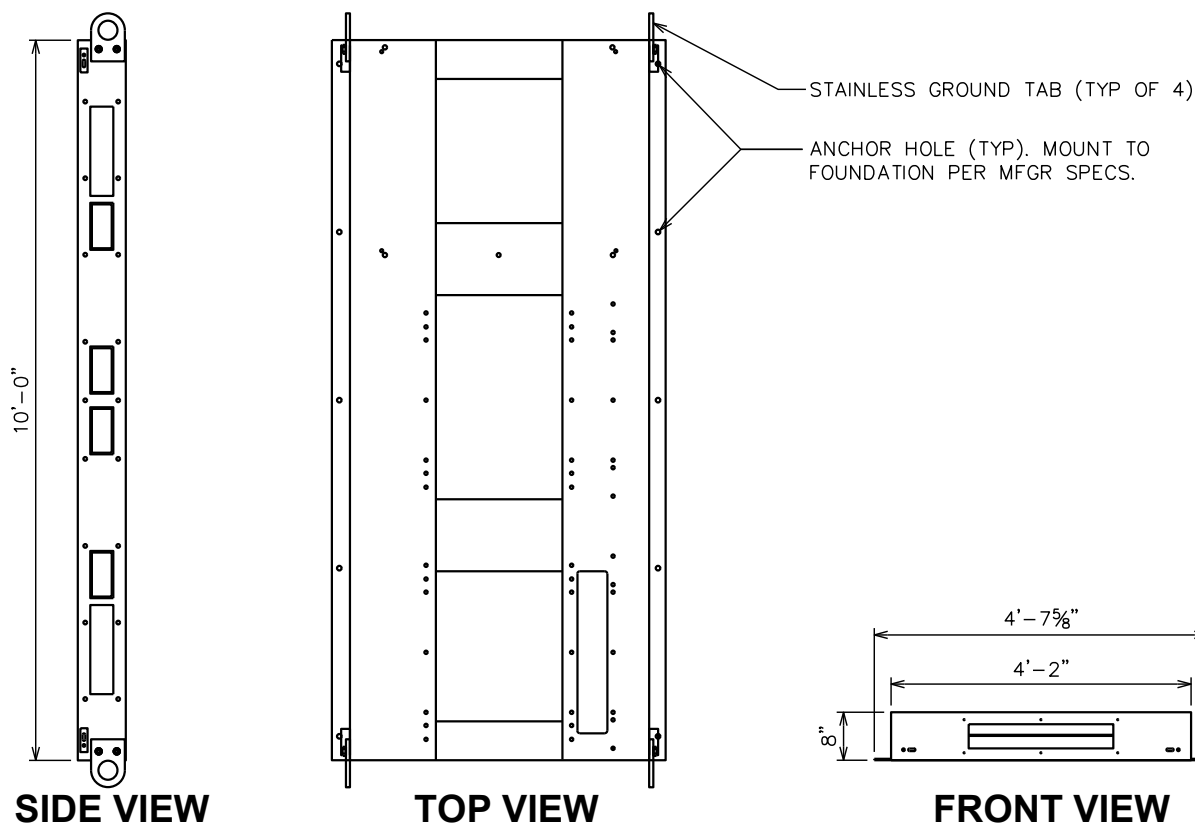
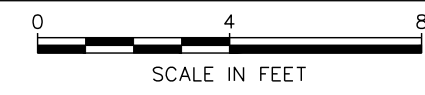
CONCRETE PAD

MINIMUM 30"x12"Ø PIER 4K
PSI CONCRETE. ADJUST
PIER DIAMETER & DEPTH
AS NECESSARY FOR
LOCAL CONDITIONS



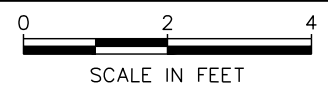
EQUIPMENT PAD ELEVATIONS

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



CABINET PLINTH DETAILS

SCALE: 3/8" = 1'-0"



NOT USED

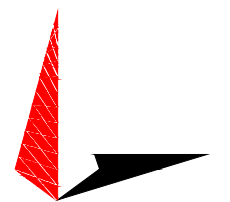
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
4326 E SUNNY ACRES LN
SPANISH VALLEY, UT 84532
(SAN JUAN COUNTY)

PLANS PREPARED FOR:



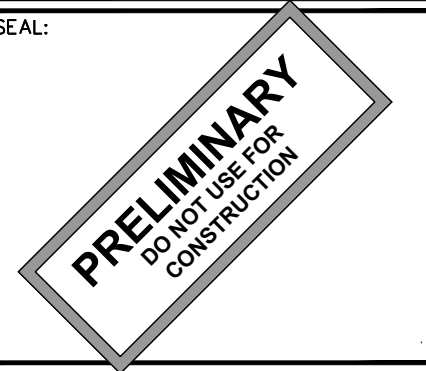
1800 DIAGONAL ROAD, SUITE 600
ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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4700 DAHLIA STREET
DENVER, CO 80216
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DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:
**VERIZON EQUIPMENT
PAD DETAILS II**

SHEET NUMBER: **C-6B** REVISION: **1**
TEP#:333909.883690

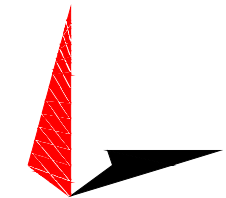
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
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 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



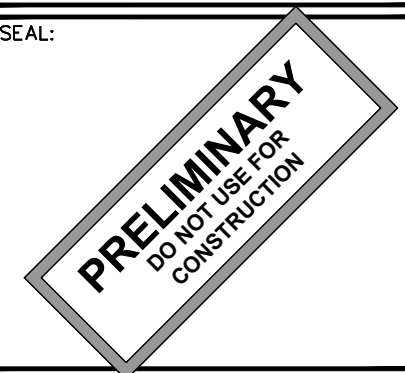
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

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DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:
**VERIZON
 GENERATOR
 DETAILS**

SHEET NUMBER: **C-7** REVISION: **1**
 TEP#:333909.883690

SH	1/2	REV	B	WINDCHILL VERSION	B.3
----	-----	-----	---	-------------------	-----

SERVICE ITEM	Z-4L
OIL FILL CAP	LEFT SIDE
OIL DIP STICK	RIGHT SIDE
OIL FILTER	RIGHT SIDE
OIL DRAIN HOSE	RIGHT SIDE
RADIATOR DRAIN HOSE	LEFT SIDE
AIR CLEANER ELEMENT	LEFT SIDE
MUFFLER	FRONT
FAN BELT	EITHER SIDE
BATTERY	LEFT SIDE

WEIGHT DATA WITH EMPTY BASE TANK (SEE NOTE 5)	GENERATOR AS SHOWN (STEEL ENCL.)	WITH WOODEN SHIPPING SKID
	860 (1995)	905 (1995)

REFERENCE OWNERS MANUAL FOR PERIODIC REPLACEMENT PART LISTINGS.

INTERNAL DIVIDER PANEL SEPARATES FUEL TANK VENTILATION DUCT FROM THE ENGINE, ALTERNATOR AND EXHAUST SYSTEM

RADIATOR/EXHAUST DISCHARGE AIR (BOTH SIDES)

1021 (40.2) CENTER OF GRAVITY (SEE NOTE 5)

AIR INTAKE (BOTH SIDES)

REMOVE PANEL TO ALLOW TANK VENTS TO TERMINATE OUTSIDE OF THE GENERATOR ENCLOSURE (CHECK LOCAL AND STATE CODE FOR APPLICABILITY)

REMOVE COVER FOR ACCESS TO RADIATOR FILL CAP BATTERY 12 VOLT NEGATIVE GROUND

171 (6.7)

618 (24.3)

FRONT VIEW

RADIATOR/EXHAUST DISCHARGE AIR

758 (29.8) DOOR TYP

REAR ENCLOSURE COVER PANEL SEE NOTE 4

CIRCUIT BREAKER SEE NOTE 3

CUSTOMER ACCESS ASSEMBLY, CONTROL PANEL ACCESS, BATTERY CHARGER LOCATED WITHIN SEE NOTE 4

REAR TANK COVER SEE NOTE 4

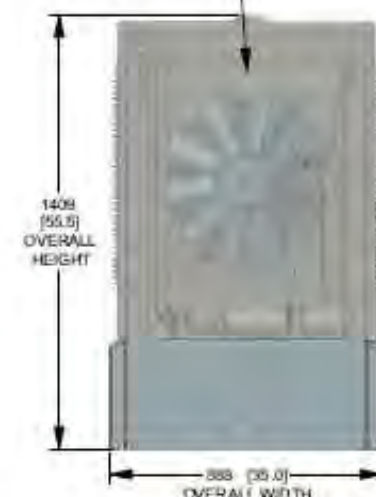
FUEL TANK VENTILATION DUCT

OPEN PUNCHED LOUVERS TYPICAL ON BOTH SIDES OF FUEL TANK VENTILATION DUCT TO PROVIDE ADEQUATE CROSS-FLOW OF AIR VENTILATION

EXHAUST MUFFLER ENCLOSED WITHIN GENERATOR ENCLOSURE

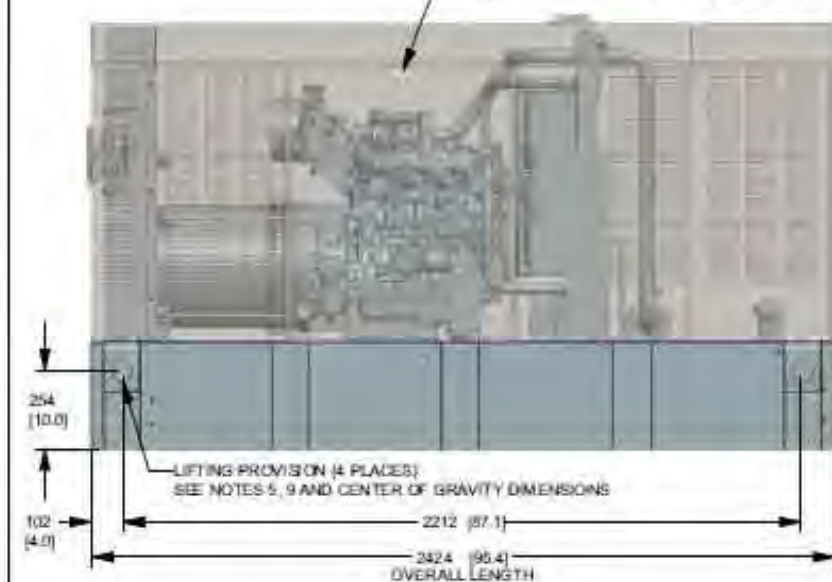
LIFT OFF DOOR PROVIDES ACCESS TO: FUEL FILL, FUEL LEVEL GAUGE, NORMAL VENT, INNER TANK EMERGENCY VENT, OUTER TANK EMERGENCY VENT, OPTIONAL 90% ALARM ASSEMBLY, OPTIONAL 5 GALLON SPILL BOX

WISE ACTION LATCH, ONE PER DOOR, LIFT-OFF DOORS ON FRONT, RIGHT, AND LEFT SIDES



FRONT VIEW

- NOTES:
- MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1194 (47") WIDE X 2718 (107") LONG. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
 - ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
 - CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
 - SEE SPECIFICATION SHEET OR OWNERS MANUAL
 - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR.
 - REMOVE THE REAR TANK AND REAR ENCLOSURE COVER PANEL TO ACCESS THE STUB-UP AREAS AS FOLLOWS:
 - HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION, NEUTRAL CONNECTION, BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.
 - LOW VOLTAGE CONNECTIONS INCLUDING TRANSFER SWITCH CONTROL WIRES AND ACCESSORY RELAY CONNECTION (QTY 4).
 - CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
 - ENGINE SERVICE CONNECTIONS:
 OIL DRAIN: 3/8" NPT
 EXHAUST OUTLET: 2" O.D.
 - BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND AND RECIRCULATION OF DISCHARGE AIR AND FOR IMPROPER COOLING AIR FLOW.
 - EXHAUST SYSTEM MAXIMUM BACK PRESSURE: 35 INCHES H2O.
 - REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
 - MOUNTING BOLTS OR STUDS TO CONCRETE PAD SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS).



RIGHT SIDE VIEW

DRAWING CREATED FROM PRO/ENGINEER 3D FILE. ECD MODIFICATION TO BE APPLIED TO SOLID MODEL ONLY.

INSTALLATION DRAWING

GENERATOR SYSTEMS AND CHASSIS (SEE NOTE 1) (SEE DRAWING WHICH IS SUPPLIED IN TECHNICAL AND MUST NOT BE USED FOR ANY PURPOSES OTHER THAN FOR WHICH IT IS DESIGNED AND WITHOUT THE APPROVAL OF THE COMPANY OR ITS AUTHORIZED REPRESENTATIVE. (GENERATOR SYSTEMS) (SEE NOTE 2)

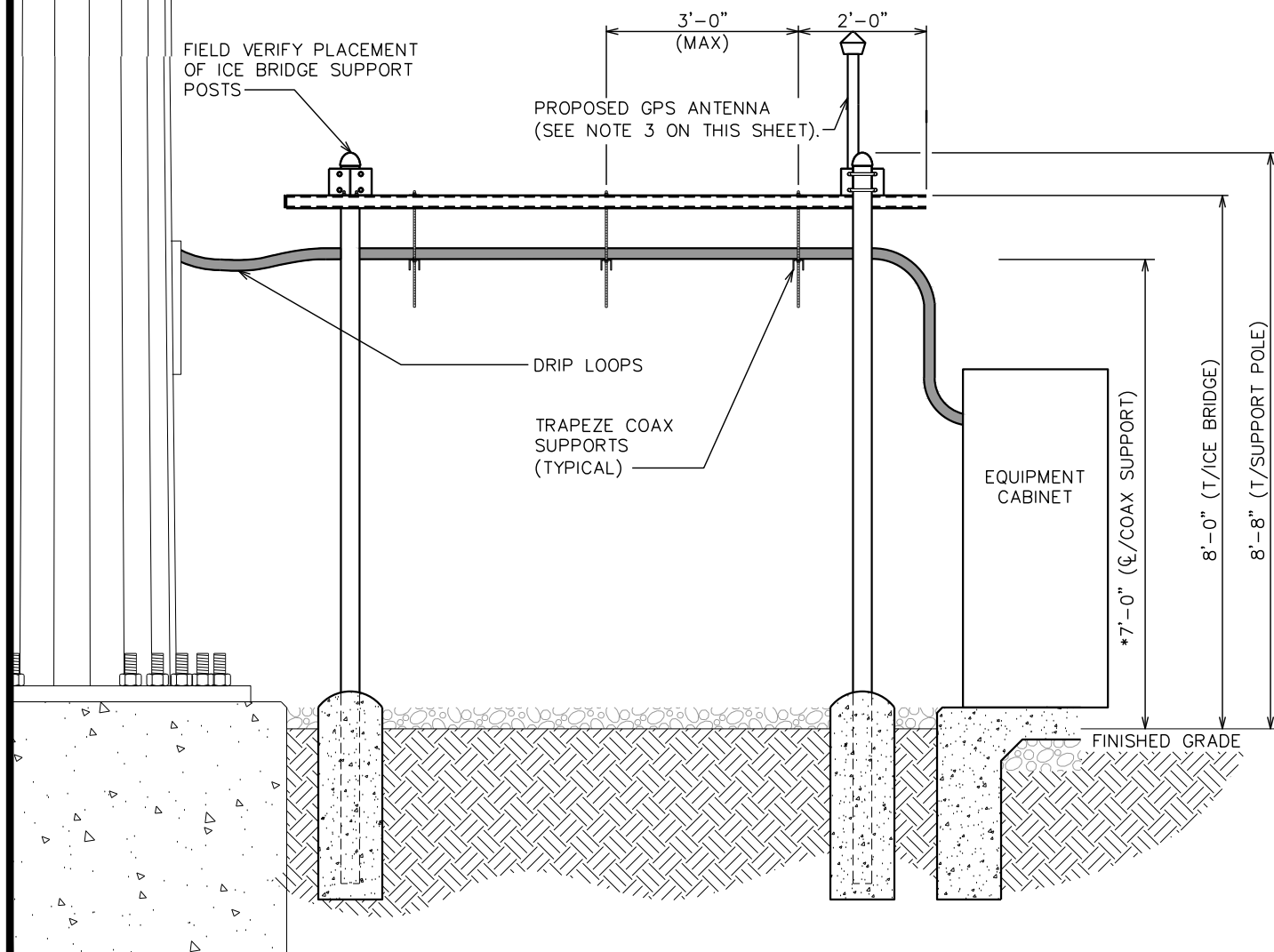
ELECTRICALLY APPROVED (INSIDE WINDCHILL)



TITLE			
INSTALL PROTECTOR D24L EXT			
ISSUE DATE:			
SIZE	CAGE NO	DWG NO	REV
B		0K4893	B
SCALE	WT-KG	SHEET	1 of 2
0.050			

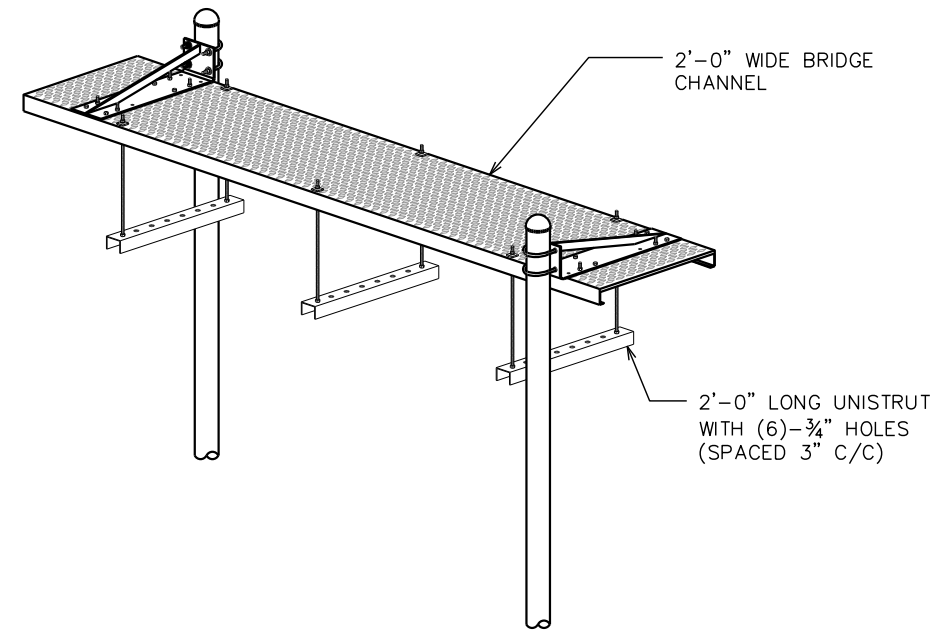
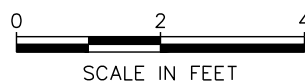
NOTES:

1. COAX MUST COME OFF ON TOWER AT AN ELEVATION LOWER THAN ICE BRIDGE TO PREVENT WATER MIGRATING TOWARDS EQUIPMENT CABINETS.
2. ZIP TIES ARE NOT TO BE PERMANENT BUT MAY BE USED FOR TEMPORARY CONSTRUCTION.
3. GPS ANTENNAS SHALL BE MOUNTED TO THE ICE BRIDGE POST WITH A UNIVERSAL GPS MOUNTING KIT (VALMONT P/N: B1841) OR AN APPROVED EQUIVALENT.



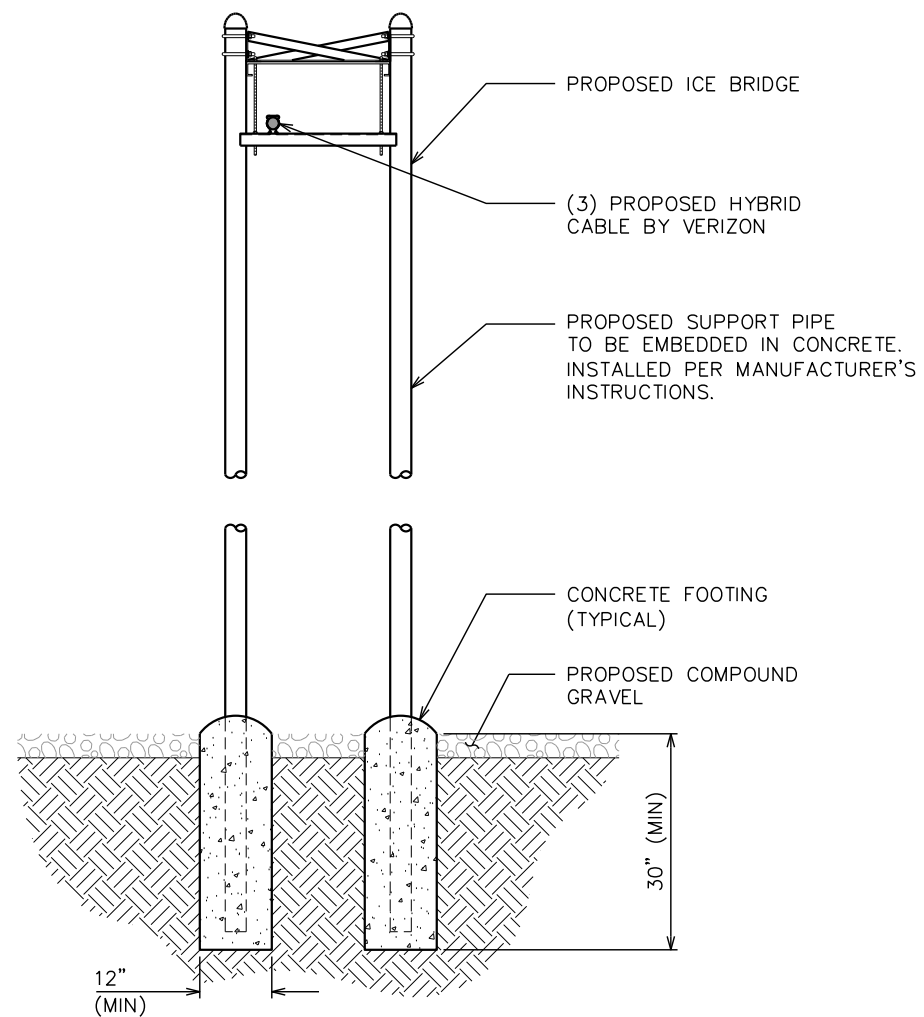
ICE BRIDGE DETAIL

SCALE: 3/8" = 1'-0"



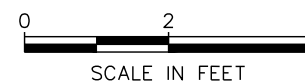
ISOMETRIC VIEW

SCALE: N.T.S.



SIDE VIEW

SCALE: 3/8" = 1'-0"



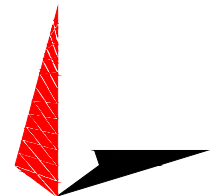
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
4326 E SUNNY ACRES LN
SPANISH VALLEY, UT 84532
(SAN JUAN COUNTY)

PLANS PREPARED FOR:



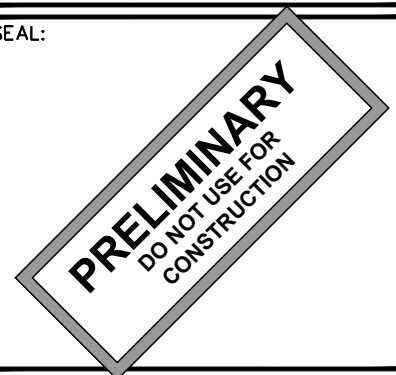
1800 DIAGONAL ROAD, SUITE 600
ALEXANDRIA, VA 22314

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
4700 DAHLIA STREET
DENVER, CO 80216
OFFICE: (303) 566-9914
www.tepgroup.net

SEAL:



REV	DATE	ISSUED FOR:
1	10-10-23	PRELIMINARY
0	09-21-23	PRELIMINARY

DRAWN BY: MKB | CHECKED BY: KES

SHEET TITLE:

**VERIZON
ICE BRIDGE
DETAILS**

SHEET NUMBER:

C-8

REVISION:

1

TEP#:333909.883690

VERIZON ANTENNA / COAX / RRH KEY							
SECTOR	TECHNOLOGY	EXISTING OR NEW	MANUFACTURER MODEL #	AZIMUTH	ANTENNA ϵ (AGL)	CABLES	RRU
ALPHA	700, 850, 1900, AWS, AWS3	NEW	ERICSSON AIR6419	0°	123'.9"±	(3) HYBRID	(1) ERICSSON 4408 (1) ERICSSON AIR 6419 (1) ERICSSON 4890 (1) ERICSSON 4490
ALPHA	CBAND NR CBRS LTE	NEW	JMA MX16FIT865-04	0°	121'±		
BETA	700, 850, 1900, AWS, AWS3	NEW	ERICSSON AIR6419	120°	123'.9"±		
BETA	CBAND NR CBRS LTE	NEW	JMA MX16FIT865-04	120°	121'±		
GAMMA	700, 850, 1900, AWS, AWS3	NEW	ERICSSON AIR6419	240°	123'.9"±		
GAMMA	CBAND NR CBRS LTE	NEW	JMA MX16FIT865-04	240°	121'±		

- CONTRACTOR TO REFER TO FINAL RFDS PRIOR TO CONSTRUCTION.
- ANTENNA DESIGN PROVIDED BY VERIZON IN THE FORM OF RFDS DATED N/A.

ADDITIONAL:

- (2) OVP BOX (MOUNTED ON TOWER)

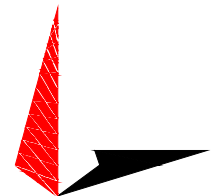
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
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 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



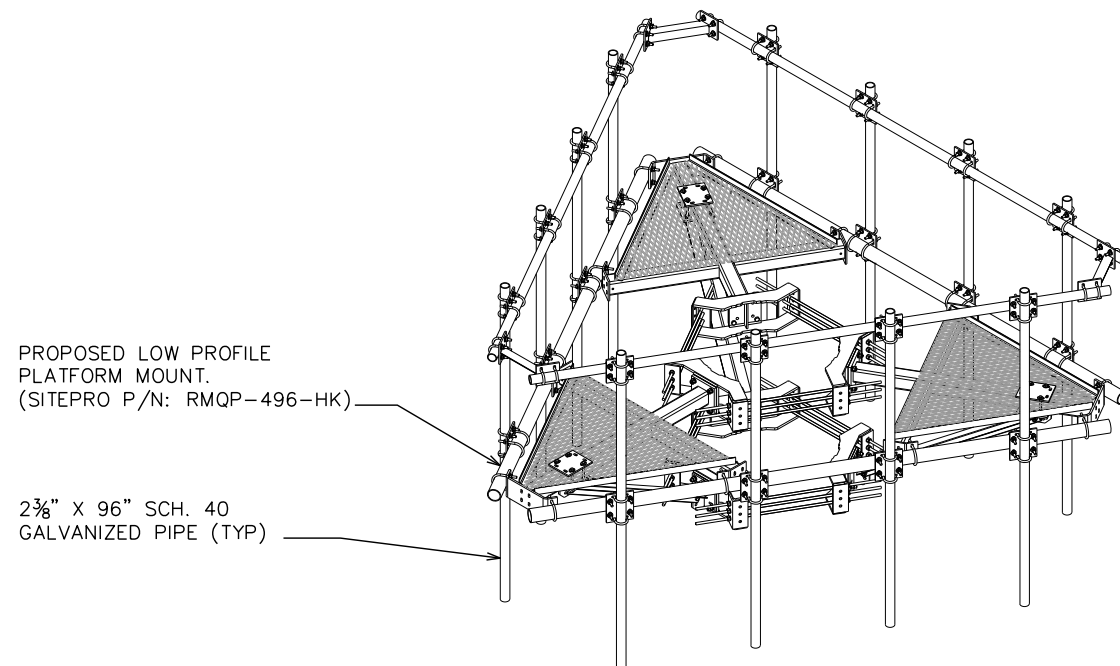
1800 DIAGONAL ROAD, SUITE 600
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PLANS PREPARED BY:

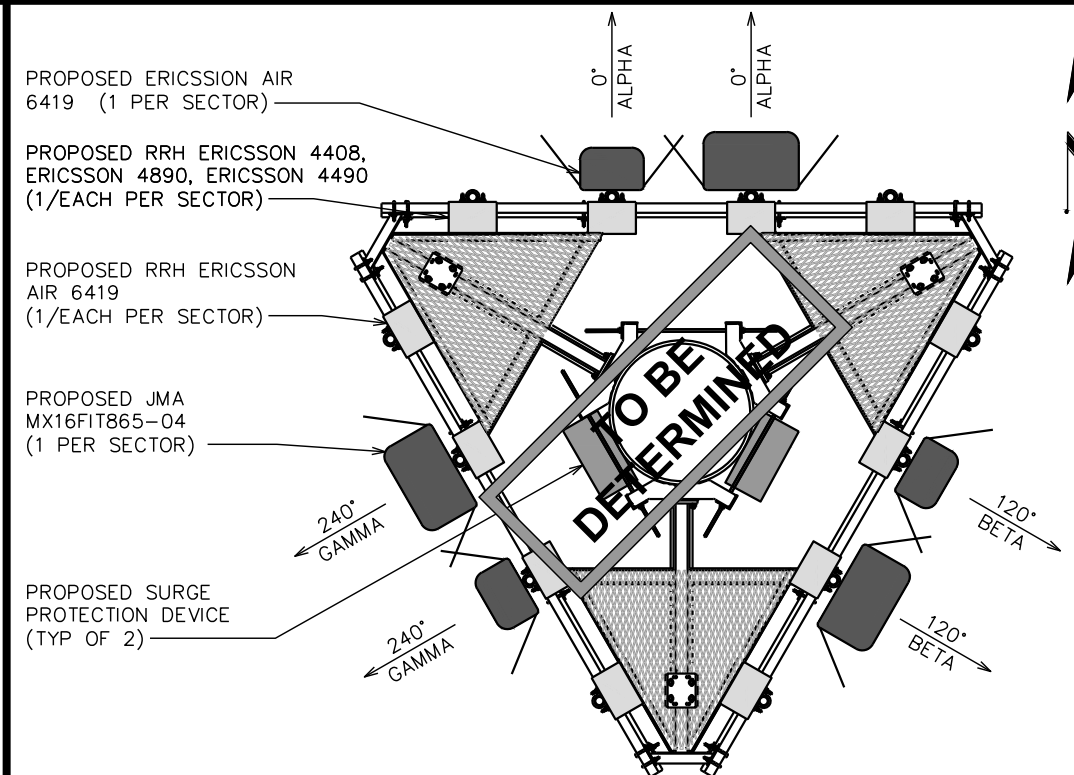


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ANTENNA / COAX / RRH KEY

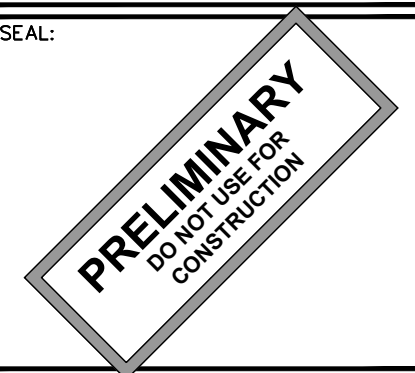


ANTENNA MOUNT



ANTENNA ORIENTATION @ 121'

SEAL:



REV	DATE	ISSUED FOR:
1	10-10-23	PRELIMINARY
0	09-21-23	PRELIMINARY

DRAWN BY: MKB | CHECKED BY: KES

SHEET TITLE:

ANTENNA MOUNTING DETAILS

SHEET NUMBER: | REVISION:

C-9 | **1**

TEP#:333909.883690

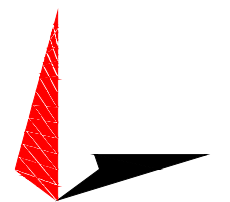
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



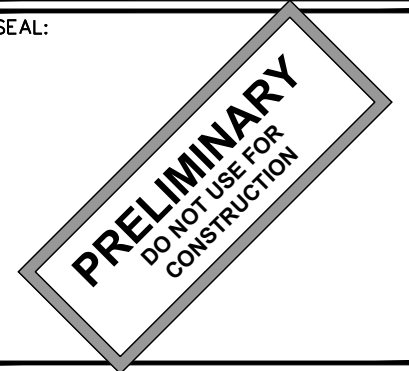
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

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SEAL:

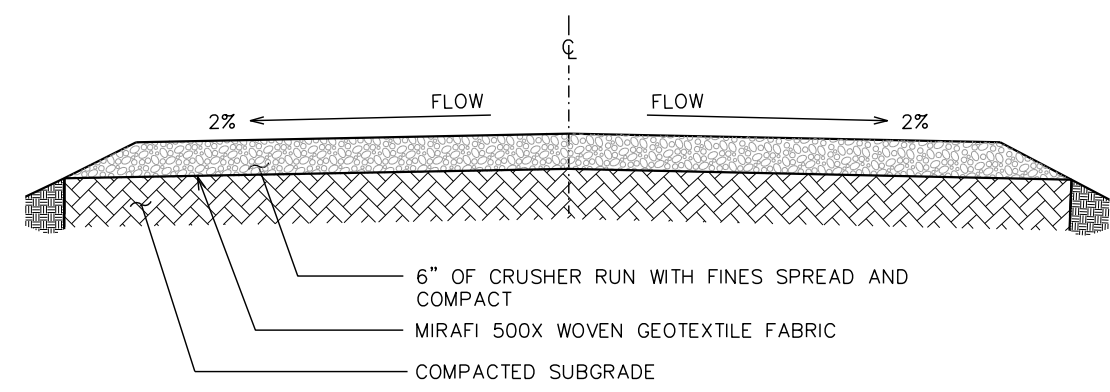


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1	10-10-23	PRELIMINARY
0	09-21-23	PRELIMINARY

DRAWN BY: MKB | CHECKED BY: KES

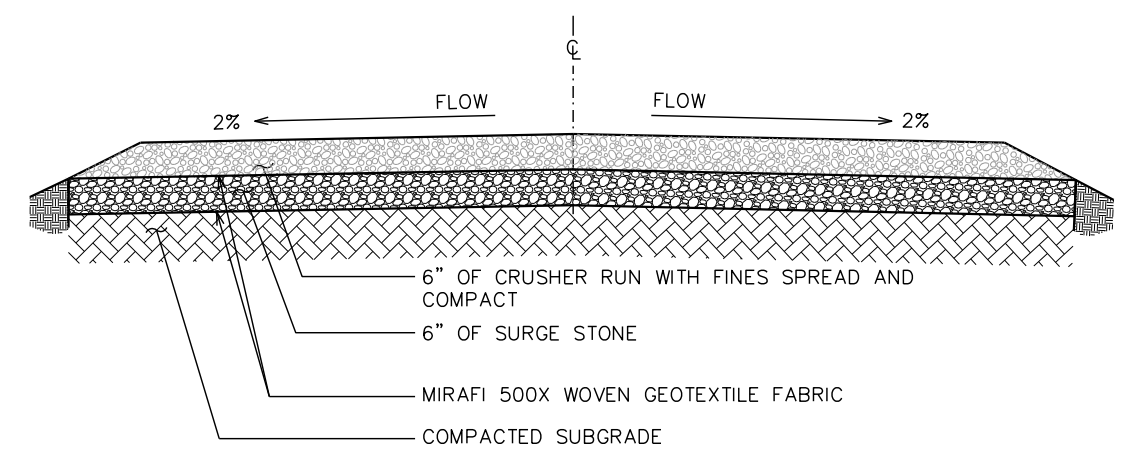
SHEET TITLE:
DRIVEWAY DETAILS

SHEET NUMBER: **C-10** | REVISION: **1**
 TEP#:333909.883690



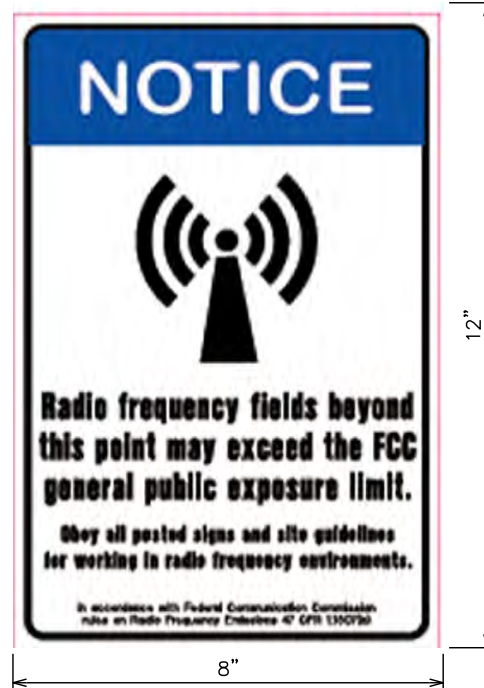
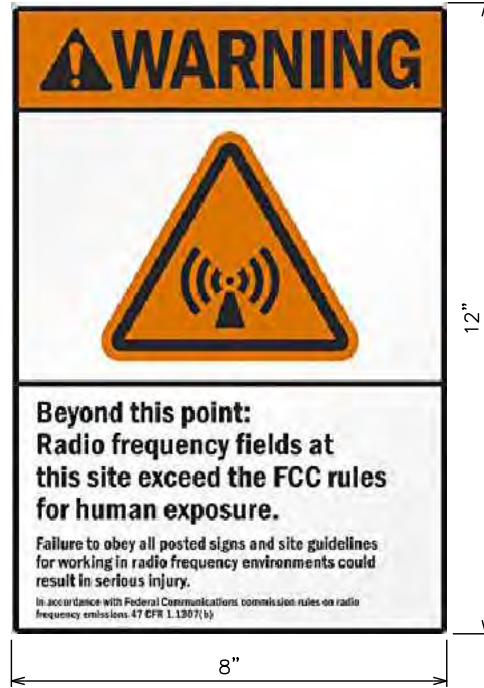
STANDARD ROAD SECTION (GOOD SUBGRADE)

SCALE: 3/8" = 1'-0"




STANDARD ROAD SECTION (POOR SUBGRADE)

SCALE: 3/8" = 1'-0"



NOTES:

- ALL SIGNS TO BE HUNG ON FENCE USING HOG RINGS OR ALUMINUM FENCE TIES. ZIP TIES OR REBAR WIRE WILL NOT BE ACCEPTABLE
- THE RED WARNING SIGN SHALL BE PLACED ON THE TOWER, IDEALLY AT THE BASE OF THE SAFETY CLIMB.

SITE # UT-109
SITE NAME: Spanish Valley
FCC ASR # _____
FOR LEASING AND ACCESS INFORMATION CALL:

Dimensions: 18 inches wide, 12 inches high



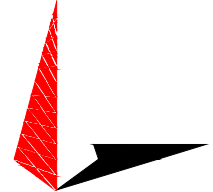
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

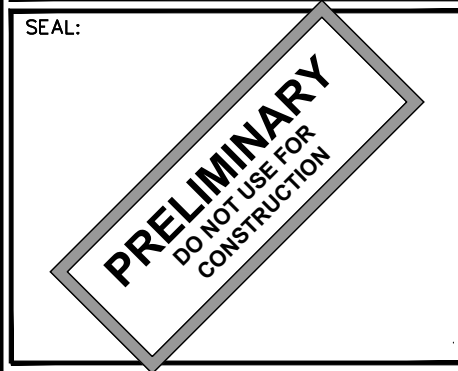


1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:
SIGNAGE DETAILS

SHEET NUMBER: **C-11** REVISION: **1**
 TEP#:333909.883690

SCOPE:

1. PROVIDE LABOR, MATERIALS, INSPECTION, AND TESTING TO PROVIDE CODE COMPLIANCE FOR ELECTRIC, TELEPHONE, AND GROUNDING/LIGHTNING SYSTEMS.

CODES:

1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LAWS AND CODES. THESE INCLUDE BUT ARE NOT LIMITED TO THE LATEST ADOPTED EDITIONS OF:
 - A. THE NATIONAL ELECTRICAL SAFETY CODE
 - B. THE NATIONAL ELECTRIC CODE – NFPA-70
 - C. REGULATIONS OF THE SERVING UTILITY COMPANY
 - D. LOCAL AND STATE AMENDMENTS
 - E. THE INTERNATIONAL ELECTRIC CODE – IEC (WHERE APPLICABLE)
2. PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR.
3. AFTER COMPLETION AND FINAL INSPECTION OF THE WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF COMPLETION AND APPROVAL.

TESTING:

1. UPON COMPLETION OF THE INSTALLATION, OPERATE AND ADJUST THE EQUIPMENT AND SYSTEMS TO MEET SPECIFIED PERFORMANCE REQUIREMENTS. THE TESTING SHALL BE DONE BY QUALIFIED PERSONNEL.

GUARANTEE:

1. IN ADDITION TO THE GUARANTEE OF THE EQUIPMENT BY THE MANUFACTURER, EACH PIECE OF EQUIPMENT SPECIFIED HEREIN SHALL ALSO BE GUARANTEED FOR DEFECTS OF MATERIAL OR WORKMANSHIP OCCURRING DURING A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE OF THE WORK BY THE OWNER AND WITHOUT EXPENSE TO THE OWNER.
2. THE WARRANTEE CERTIFICATES & GUARANTEES FURNISHED BY THE MANUFACTURERS SHALL BE TURNED OVER TO THE OWNER.

UTILITY CO-ORDINATION:

1. CONTRACTOR SHALL COORDINATE WORK WITH THE POWER AND TELEPHONE COMPANIES AND SHALL COMPLY WITH THE SERVICE REQUIREMENTS OF EACH UTILITY COMPANY.

EXAMINATION OF SITE:

1. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE JOB AND SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS AFFECTING THE PROPOSED ELECTRICAL INSTALLATION AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. FAILURE TO COMPLY WITH THE INTENT OF THIS SECTION WILL IN NO WAY RELIEVE THE CONTRACTOR OF PERFORMING THE WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM OR SYSTEMS.

CUTTING, PATCHING AND EXCAVATION:

1. COORDINATION OF SLEEVES, CHASES, ETC., BETWEEN SUBCONTRACTORS WILL BE REQUIRED PRIOR TO THE CONSTRUCTION OF ANY PORTION OF THE WORK. CUTTING AND PATCHING OF WALLS, PARTITIONS, FLOORS, AND CHASES IN CONCRETE, WOOD, STEEL OR MASONRY SHALL BE DONE AS PROVIDED ON THE DRAWINGS.
2. NECESSARY EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWING.
3. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS, ETC., WITH APPROVED METHOD AS LISTED BY UL.

RACEWAYS / CONDUITS GENERAL:

1. CONDUITS SHALL BE INSTALLED IN LISTED RACEWAYS. CONDUIT SHALL BE RIGID STEEL, EMT, SCH40 PVC, OR SCH80PVC AS INDICATED ON THE DRAWINGS. THE RACEWAY SYSTEM SHALL BE COMPLETE BEFORE INSTALLING CONDUITS.
2. EXTERIOR RACEWAYS AND GROUNDING SLEEVES SHALL BE SEALED AT POINTS OF ENTRANCE AND EXIT. THE RACEWAY SYSTEM SHALL BE BONDED PER NEC.

EXTERIOR CONDUIT:

1. EXPOSED CONDUIT SHALL BE NEATLY INSTALLED AND RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS. SUPPORTS AND MOUNTING HARDWARE SHALL BE HOT DIPPED GALVANIZED STEEL.
2. WHERE INSTALLED ON EXTERIOR STRUCTURES OR EXPOSED TO DAMAGE, THE CONDUIT SHALL BE RIGID STEEL.
3. UNDERGROUND CONDUITS SHALL BE RIGID STEEL, SCH40 PVC, OR SCH80 PVC AS INDICATED ON THE DRAWINGS.
4. BURIAL DEPTH OF CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION, BUT SHALL NOT BE LESS THAN THE FROST DEPTH AT THE SITE.
5. CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY ROUTES BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND/OR BUILDING OWNER.

INTERIOR CONDUIT:

1. CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT.
2. CONDUIT RUNS SHALL USE APPROVED COUPLINGS AND CONNECTORS. PROVIDE INSULATED BUSHING FOR ALL CONDUIT TERMINATIONS. CONDUIT RUNS IN A WET LOCATION SHALL HAVE WATERPROOF FITTINGS.
3. PROVIDE SUPPORTS FOR CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.

EQUIPMENT:

1. DISCONNECT SWITCHES SHALL BE SERVICE ENTRANCE RATED, HEAVY DUTY TYPE.
2. CONTRACTOR SHALL VERIFY MAXIMUM AVAILABLE FAULT CURRENT AND COORDINATE INSTALLATION WITH THE LOCAL UTILITY BEFORE STARTING WORK. CONTRACTOR WILL VERIFY THAT EXISTING CIRCUIT BREAKERS ARE RATED FOR MORE THAN AVAILABLE FAULT CURRENT AND REPLACE AS NECESSARY.
3. NEW CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AS DETERMINED BY THE LOCAL UTILITY.

CONDUCTORS:

1. FURNISH AND INSTALL CONDUCTORS SPECIFIED IN THE DRAWINGS. CONDUCTORS SHALL BE COPPER AND SHALL HAVE TYPE THWN (MIN) (75° C) INSULATION, RATED FOR 600 VOLTS.
2. THE USE OF ALUMINUM CONDUCTORS SHALL BE LIMITED TO THE SERVICE FEEDERS INSTALLED BY THE UTILITY.
3. CONDUCTORS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:
 - A. MINIMUM WIRE SIZE SHALL BE #12 AWG.
 - B. CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND #12 MAY BE SOLID OR STRANDED.
 - C. CONNECTION FOR #10 AWG #12 AWG SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTIONS.
 - D. CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP-ON SLEEVES WITH NYLON INSULATOR.
3. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.

UL COMPLIANCE:

1. ELECTRICAL MATERIALS, DEVICES, CONDUCTORS, APPLIANCES, AND EQUIPMENT SHALL BE LABELED/LISTED BY UL OR ACCEPTED BY JURISDICTION (I.E., LOCAL COUNTY OR STATE) APPROVED THIRD PARTY TESTING AGENCY.

GROUNDING:

1. ELECTRICAL NEUTRALS, RACEWAYS AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250. THIS SHALL INCLUDE NEUTRAL CONDUCTORS, CONDUITS, SUPPORTS, CABINETS, BOXES, GROUND BUSSES, ETC. THE NEUTRAL CONDUCTOR FOR EACH SYSTEM SHALL BE GROUNDED AT A SINGLE POINT.
2. PROVIDE GROUND CONDUCTOR IN RACEWAYS PER NEC.
3. PROVIDE BONDING AND GROUND TO MEET NFPA 780 – "LIGHTNING PROTECTION" AS A MINIMUM.
4. PROVIDE GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS, AS REQUIRED BY THE NATIONAL ELECTRIC CODE, RADIO EQUIPMENT MANUFACTURERS, AND MOTOROLA R56 (AS APPLICABLE).

ABBREVIATIONS AND LEGEND	
<p>A – AMPERE AFG – ABOVE FINISHED GRADE ATS – AUTOMATIC TRANSFER SWITCH AWG – AMERICAN WIRE GAUGE BCW – BARE COPPER WIRE BFG – BELOW FINISHED GRADE BKR – BREAKER C – CONDUIT CKT – CIRCUIT DISC – DISCONNECT EGR – EXTERNAL GROUND RING EMT – ELECTRIC METALLIC TUBING FSC – FLEXIBLE STEEL CONDUIT GEN – GENERATOR GPS – GLOBAL POSITIONING SYSTEM GRD – GROUND IGB – ISOLATED GROUND BAR IGR – INTERIOR GROUND RING (HALO) KW – KILOWATTS NEC – NATIONAL ELECTRIC CODE PCS – PERSONAL COMMUNICATION SYSTEM PH – PHASE PNL – PANEL</p>	<p>PNLBD – PANELBOARD PVC – RIGID NON-METALLIC CONDUIT RGS – RIGID GALVANIZED STEEL CONDUIT SW – SWITCH TGB – TOWER GROUND BAR UL – UNDERWRITERS LABORATORIES V – VOLTAGE W – WATTS XFMR – TRANSFORMER XMTR – TRANSMITTER</p>
	<p>-----E----- UNDERGROUND ELECTRICAL CONDUIT -----T----- UNDERGROUND TELEPHONE CONDUIT KILOWATT-HOUR METER ----- UNDERGROUND BONDING AND GROUNDING CONDUCTOR. GROUND ROD CADWELD GROUND ROD WITH INSPECTION WELL</p>

PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:

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 4700 DAHLIA STREET
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SEAL:

REV	DATE	ISSUED FOR:
1	10-10-23	PRELIMINARY
0	09-21-23	PRELIMINARY

DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:
ELECTRICAL NOTES

SHEET NUMBER: **E-1** REVISION: **1**
 TEP#:333909.883690

ILC POWER PANEL SCHEDULE 120/240V 200A

LOAD SERVED	VOLT AMPERES (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PROPOSED VZW LOAD	7280		200A	1	A	2	20A	1500		BLOCK HEATER
		7280		3	B	4	20A		480	BATTERY CHARGER
-	-	-	-	5	A	6	-	-	-	-
-	-	-	-	7	B	8	-	-	-	-
-	-	-	-	9	A	10	-	-	-	-
-	-	-	-	11	B	12	-	-	-	-
-	-	-	-	13	A	14	-	-	-	-
-	-	-	-	15	B	16	-	-	-	-
-	-	-	-	17	A	18	-	-	-	-
-	-	-	-	19	B	20	-	-	-	-
-	-	-	-	21	A	22	-	-	-	-
-	-	-	-	23	B	24	-	-	-	-
-	-	-	-	25	A	26	-	-	-	-
-	-	-	-	27	B	28	-	-	-	-
-	-	-	-	29	A	30	-	-	-	-
-	-	-	-	31	B	32	-	-	-	-
-	-	-	-	33	A	34	-	-	-	-
-	-	-	-	35	B	36	-	-	-	-
-	-	-	-	37	A	38	-	-	-	-
-	-	-	-	39	B	40	-	-	-	-
-	-	-	-	41	A	42	-	-	-	-
-	-	-	-	43	B	44	-	-	-	-
-	-	-	-	45	A	46	-	-	-	-
-	-	-	-	47	B	48	-	-	-	-

VOLT AMPS	7280	7280				1500	480	VOLT AMPS
L1 VOLT AMPERES	8780		7760	L2 VOLT AMPERES				
L1 AMPS	73.2		64.6	L2 AMPS				
	73.2			MAX AMPS				
	91.5			MAX AMPS x125%				
	100.6			X 110% FOR MAIN				

NOTES:

- ELECTRICAL SERVICE SHALL BE 800A, 120/240V, 1φ 3 WIRE.
- SERVICE SHALL BE INSTALLED WITH A BREAKER TYPE DISCONNECT.
- WHEN UTILITY COMPANY REQUIRES A SERVICE DISCONNECT OTHER THAN THE MAIN BREAKER IN POWER PANEL OF THE UTILITY CABINET, REMOVE BONDING JUMPER IN EQUIPMENT SHELTER AND BOND SERVICE DISCONNECT PER NEC REQUIREMENTS.
- POWER PANEL SCHEDULE SHOWN IS FOR REFERENCE ONLY, ACTUAL LOADING MIGHT VARY DEPENDING ON FINAL EQUIPMENT CONFIGURATION, BUT WILL NOT EXCEED 200A.

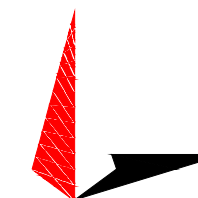
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



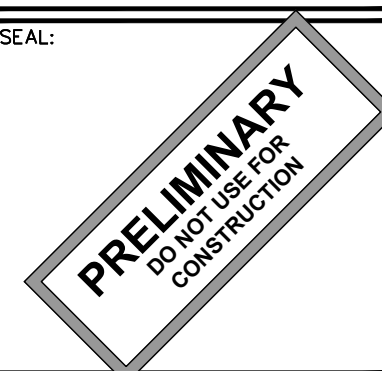
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



TOWER ENGINEERING PROFESSIONALS
 4700 DAHLIA STREET
 DENVER, CO 80216
 OFFICE: (303) 566-9914
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SEAL:

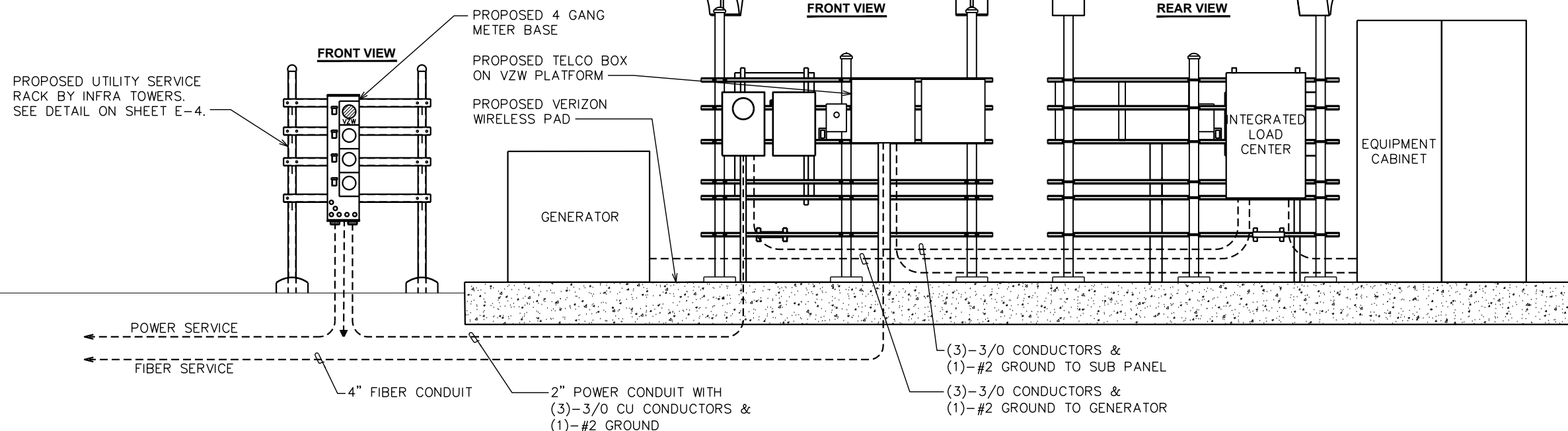


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0	09-21-23	PRELIMINARY

DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:
ONE-LINE ELEVATION & POWER PANEL SCHEDULE

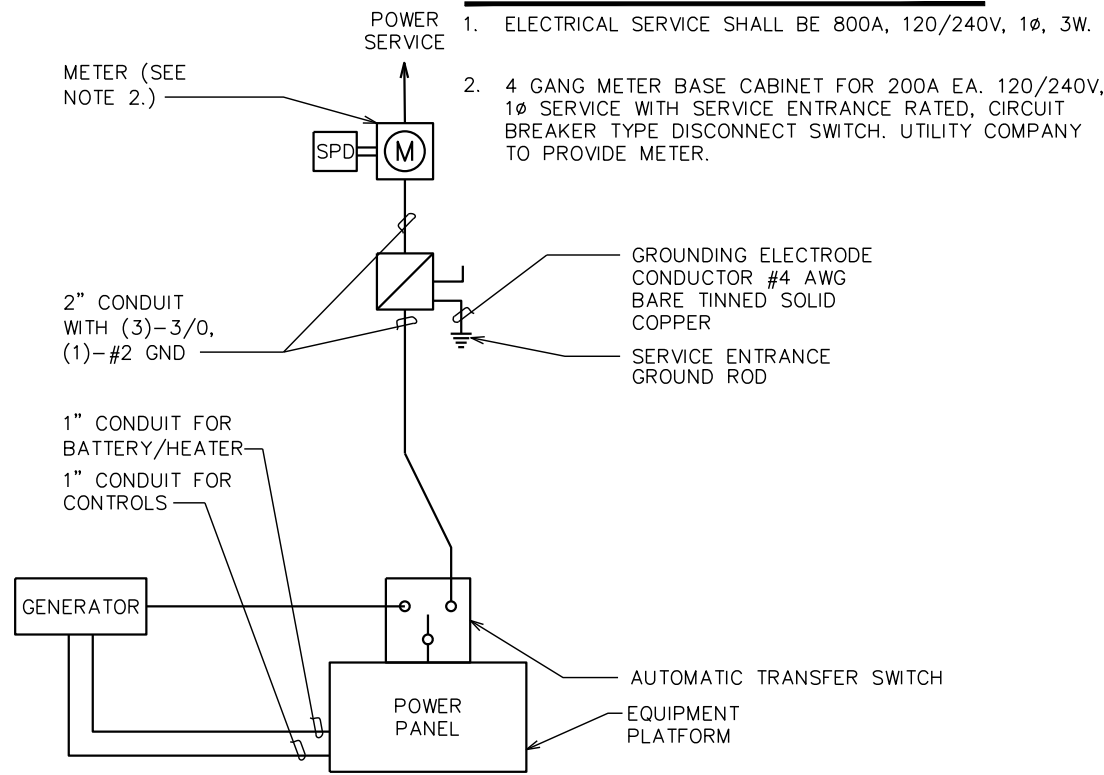
SHEET NUMBER: **E-2** REVISION: **1**
 TEP#:333909.883690



ONE-LINE ELEVATION

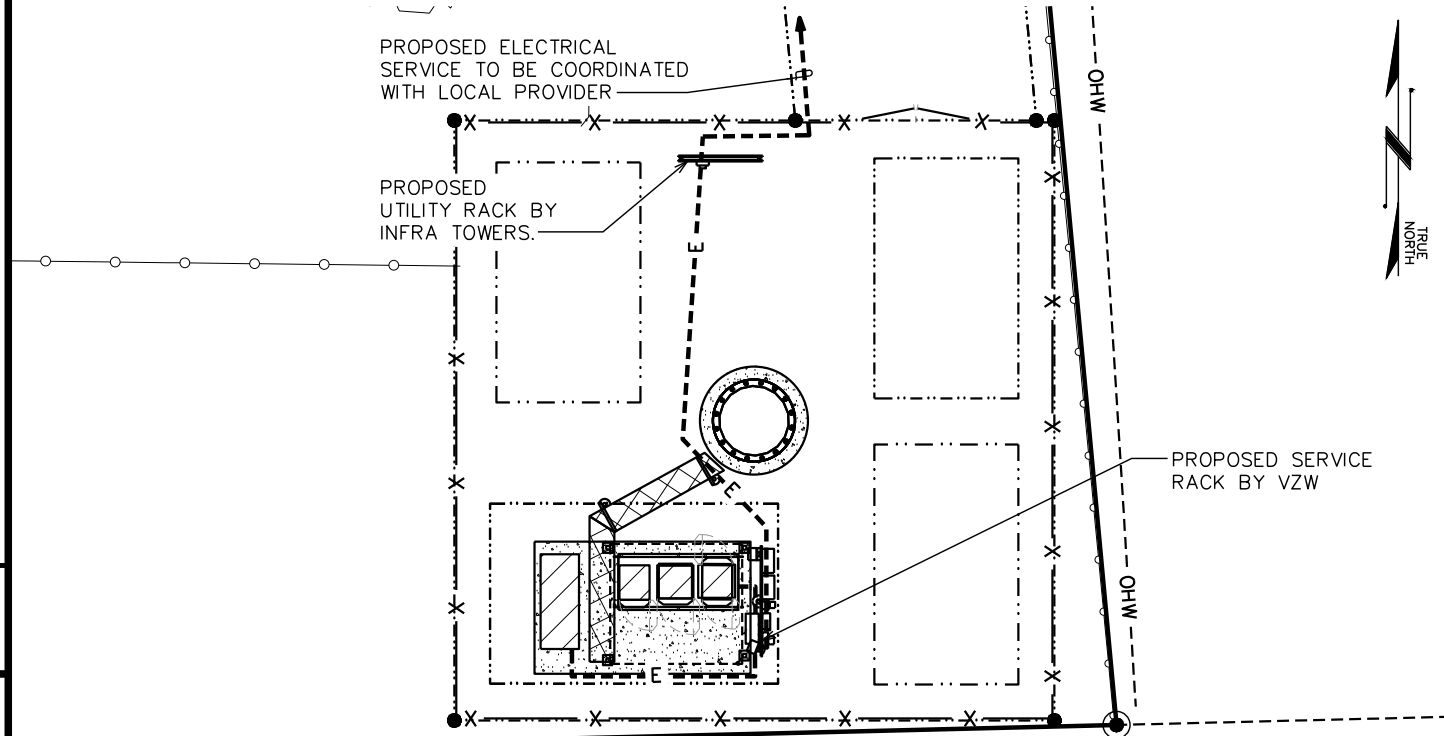
SCALE: N.T.S.

ONE LINE DIAGRAM NOTES:



NOTES:

1. ALL TELCO CONDUITS ARE TO BE STUBBED IN D-MARC LOCATION.
2. ALL POWER CONDUITS ARE TO BE TERMINATED AT THE METER CENTER.
3. THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO TRENCHING. ANY DAMAGE CAUSED TO THE EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
4. ALL CONDUITS SHALL BE INSTALLED PRIOR TO FINISH GRADING, GEOFABRIC, AND STONE INSTALLATION.
5. CONTRACTOR SHALL INSTALL SWEEPS AT ALL CONDUIT DIRECTION CHANGES.



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 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:

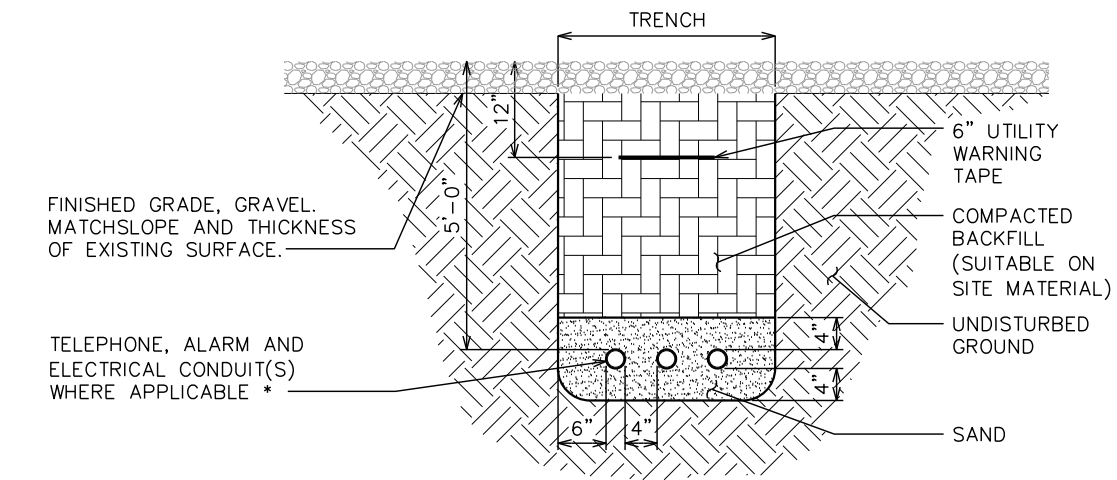
TOWER ENGINEERING PROFESSIONALS
 4700 DAHLIA STREET
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ONE-LINE DETAIL

SCALE: N.T.S.

NOTES:

1. ACTUAL SEPARATION OF CONDUITS TO BE DETERMINED BY SITE SPECIFIC REQUIREMENTS.
2. PROVIDE PVC CONDUIT BELOW GRADE EXCEPT AS NOTED BELOW.
3. PROVIDE RGS CONDUIT AND ELBOWS AT STUB UP LOCATIONS (I.E. SERVICE POLES, EQUIPMENT, ETC.)
4. PROVIDE RGS CONDUIT FOR INSTALLATIONS BELOW PARKING LOTS AND ROADWAYS.



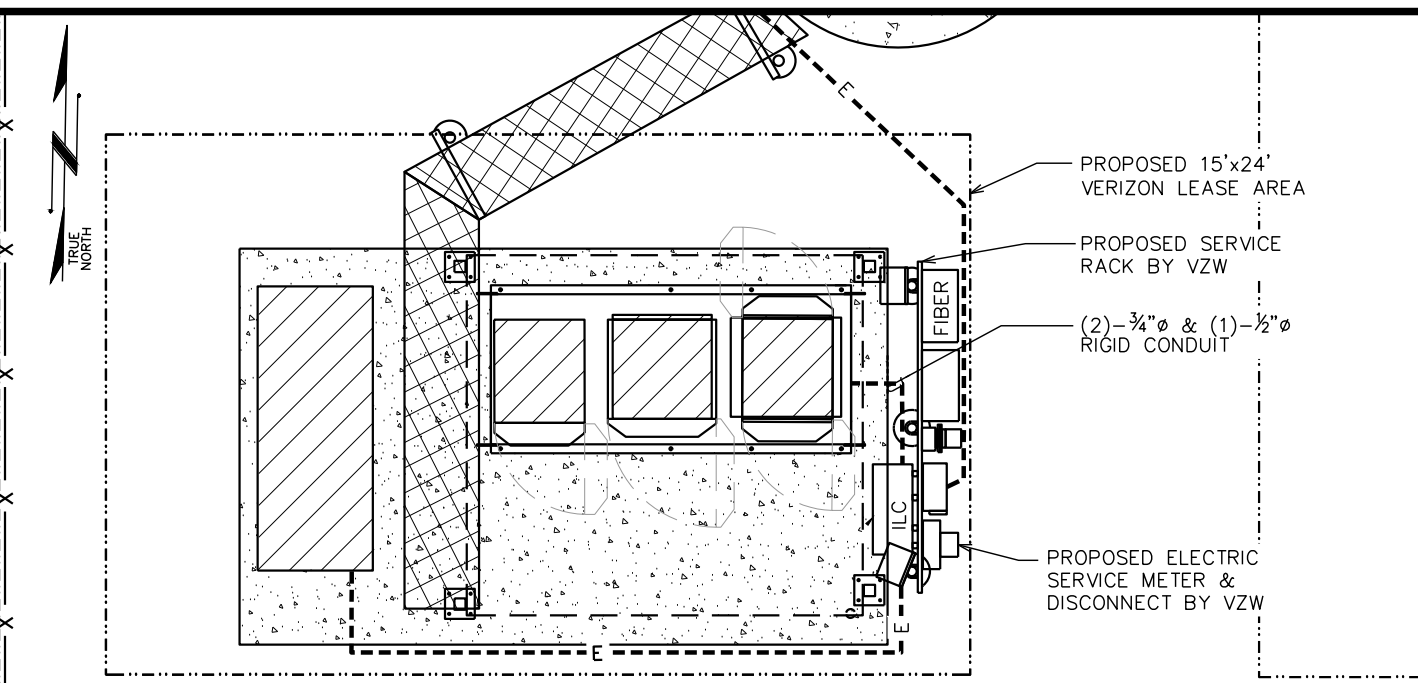
* CONDUIT SEPARATION & DEPTH DIMENSIONS TO BE VERIFIED WITH LOCAL UTILITY COMPANY REQUIREMENTS.

UNDERGROUND CONDUIT(S) TRENCH DETAIL

SCALE: N.T.S.

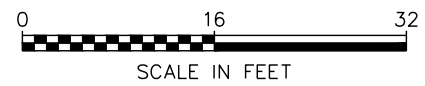
POWER AND TELCO PLAN

SCALE: 1/16" = 1'-0"



VERIZON POWER AND TELCO PLAN

SCALE: 3/16" = 1'-0"



SEAL:

PRELIMINARY
 DO NOT USE FOR CONSTRUCTION

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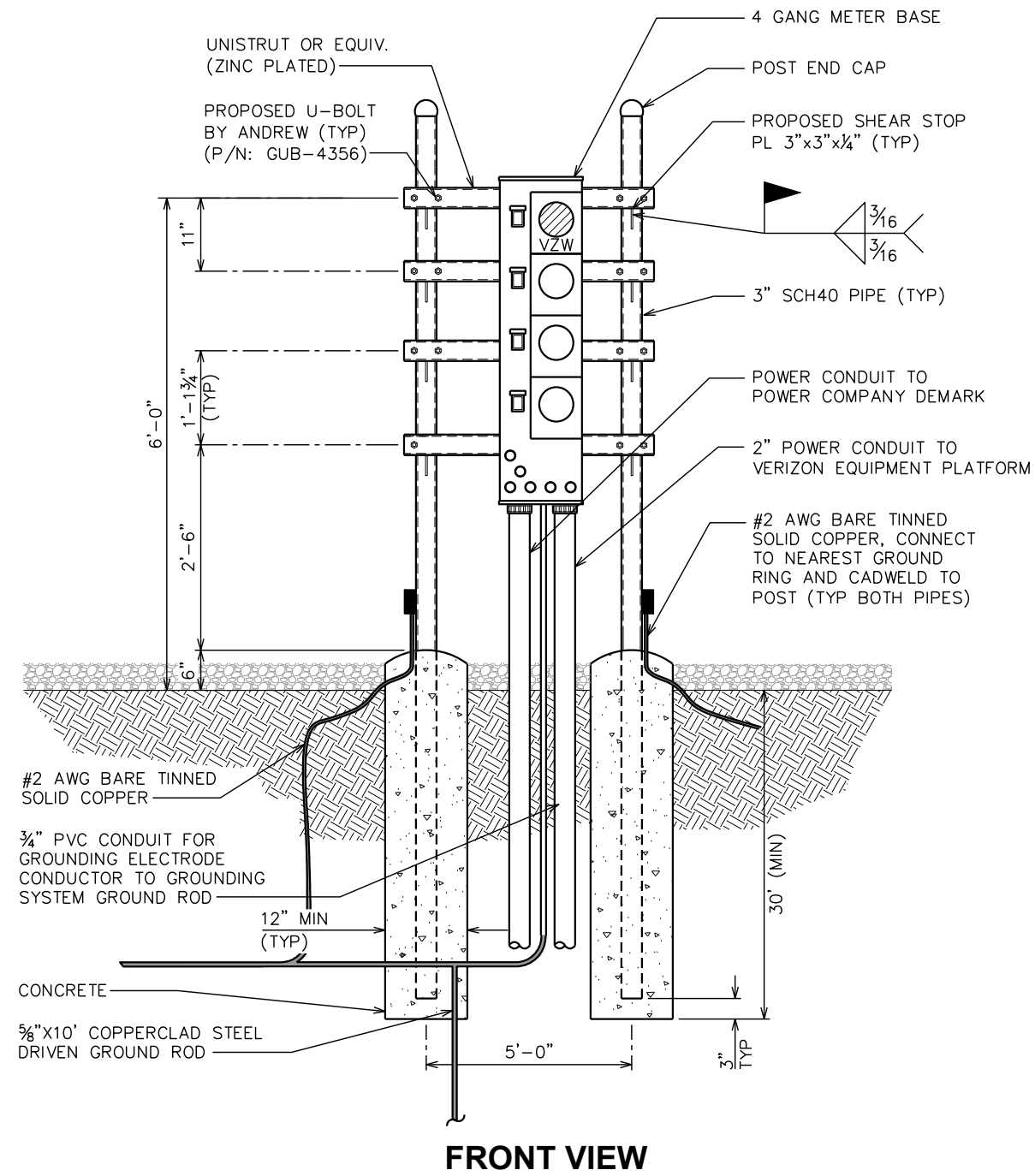
DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:
POWER/TELCO PLAN AND ONE-LINE DIAGRAM

SHEET NUMBER: E-3	REVISION: 1
TEP#:333909.883690	

NOTES:

- ① REFER TO THE SITE LAYOUT PLAN FOR THE EXACT LOCATION OF THE H-FRAME.
- ② CONTRACTOR TO COORDINATE WITH LOCAL UTILITY COMPANY FOR METER.
- ③ ROCKY MOUNTAIN POWER TO PROVIDE AND INSTALL METER SOCKET.
- ④ CONTRACTOR TO ENSURE METER RACK WORKING SPACES REQUIRED BY THE NEC (ART. 110.26), STATE, OR LOCAL CODES ARE MAINTAINED BOTH ON THE FRONT SIDE AND THE BACK SIDE OF THE H-FRAME PRIOR TO INSTALLATION.
- ⑤ SHOW LOCATION (INCLUDING DIMENSIONS) OF ALL CAPPED UNDERGROUND CONDUIT ON FINAL AS-BUILT DRAWINGS SUBMITTED TO OWNER.
- ⑥ COORDINATE EXACT LOCATION OF UNDERGROUND FEEDERS AND CIRCUITRY WITH THE OWNER.
- ⑦ CONTRACTOR SHALL COORDINATE EFFORTS WITH (LOCAL, ELECTRICAL) AUTHORITY HAVING JURISDICTION (AHJ) AND OTHER TRADES TO DETERMINE "FROST" LINE, AND TYPE(S) OF RACEWAYS REQUIRED FOR INSTALLATION.
- ⑧ BOND ALL ELECTRICAL EQUIPMENT TO RACK.
- ⑨ DIMENSIONS SHOWN ARE APPROXIMATE AND MAY BE ALTERED IN THE FIELD AS APPROVED BY OWNER TO BETTER SUIT ACTUAL CONDITIONS OR EQUIPMENT RECEIVED.

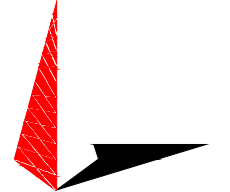


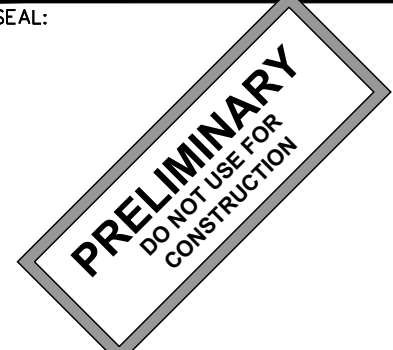
FRONT VIEW

PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:

 1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
 4700 DAHLIA STREET
 DENVER, CO 80216
 OFFICE: (303) 566-9914
 www.tepgroup.net

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SHEET TITLE:
**INFRA TOWERS
 SERVICE
 RACK DETAILS**

SHEET NUMBER:
E-4

REVISION:
1

TEP#:333909.883690

SERVICE RACK DETAILS

SCALE: 1/2" = 1'-0"



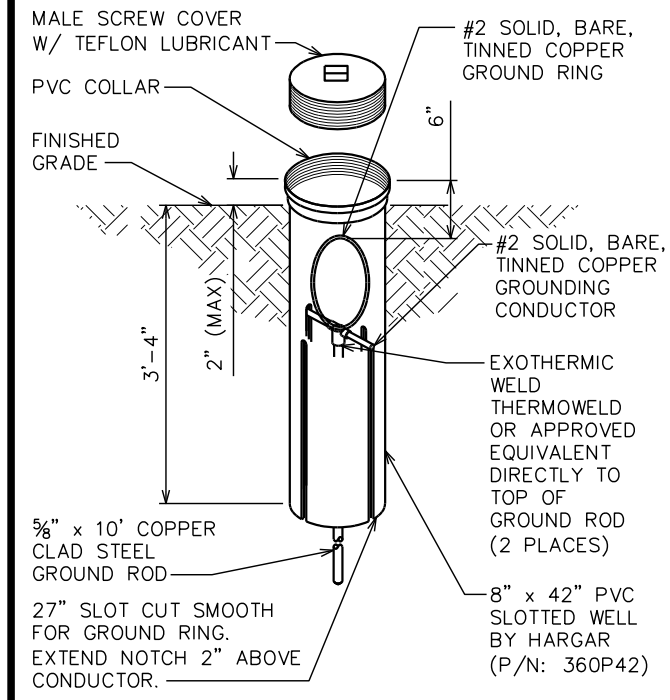
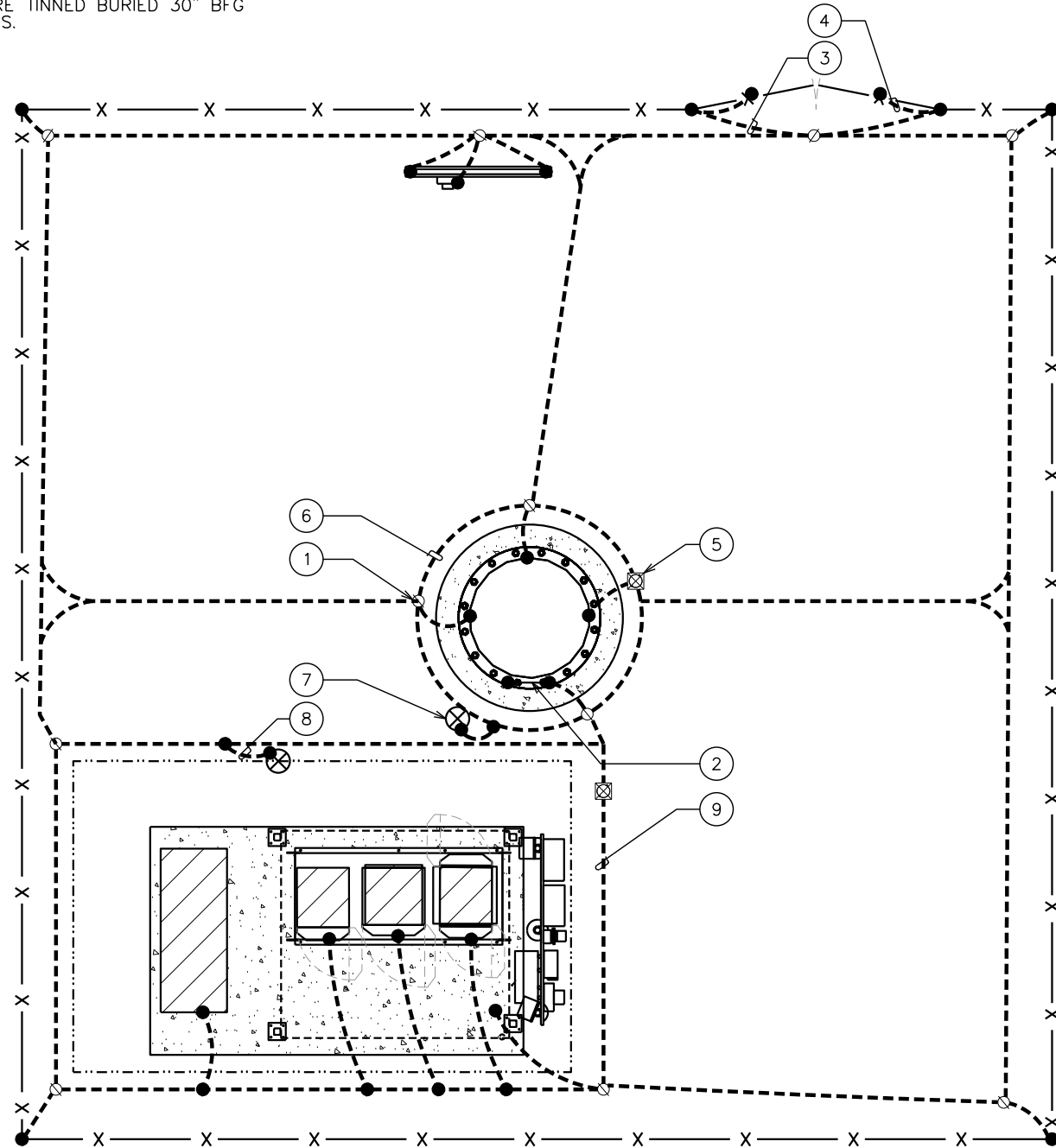
DRAWING NOTES:

- ① 5/8" x 10' COPPER GROUND ROD (TYP).
- ② CIGBE GROUND BAR.
- ③ GATE POST BONDING. SEE DETAIL ON THIS SHEET.
- ④ FENCE GATE GROUNDING. SEE DETAIL ON THIS SHEET.
- ⑤ PROPOSED INSPECTION WELL. SEE DETAIL ON THIS SHEET.
- ⑥ PROPOSED TOWER GROUND RING. #2 COPPER CONDUCTOR-BARE TINNED BURIED 30" BFG BY INFRA TOWERS.

- ⑦ ICE BRIDGE SUPPORT POST (TYP).
- ⑧ ICE BRIDGE SUPPORT BONDING CONDUCTOR. #2 COPPER CONDUCTOR-BARE TINNED BURIED 30" BFG (TYP).
- ⑨ VERIZON EQUIPMENT GROUND SYSTEM. SEE VERIZON STANDARD DETAIL INDEX FOR GROUNDING DETAILS.

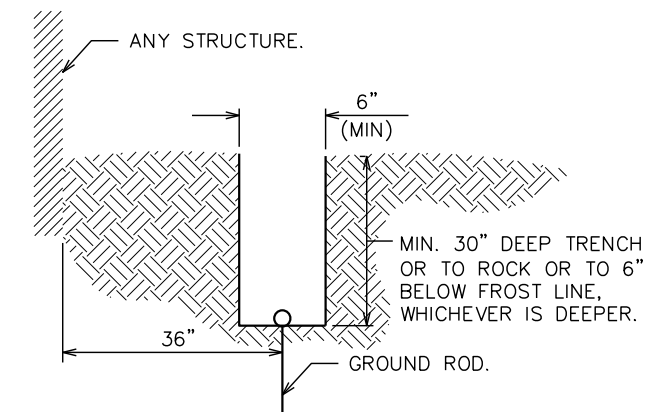
GROUNDING NOTES

1. GROUNDING ELECTRODES SHALL BE CONNECTED IN A RING USING #2 SOLID CONDUCTOR. THE TOP OF THE GROUND RODS AND THE RING CONDUCTOR SHALL BE 30" (MIN) BELOW FINISHED GRADE. GROUNDING ELECTRODES SHALL BE DRIVEN ON 10'-0" CENTERS. (6'-0" MINIMUM; 16'-0" MAXIMUM.)
2. BONDING OF THE GROUNDED CONDUCTOR (NEUTRAL) AND THE GROUNDING CONDUCTOR SHALL BE AT THE SERVICE DISCONNECTING MEANS. BONDING JUMPER SHALL BE INSTALLED PER N.E.C. ARTICLE 250.30.



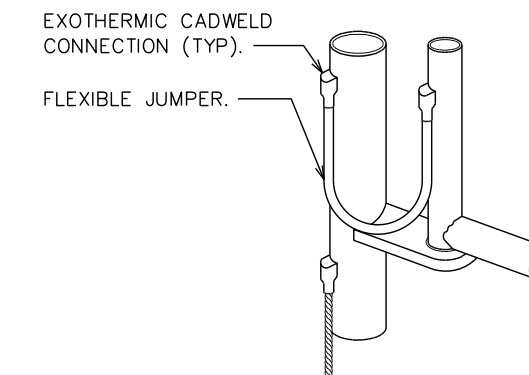
INSPECTION WELL DETAIL

SCALE: N.T.S.



TRENCH DETAIL

SCALE: N.T.S.



GROUNDING AT GATE POST

SCALE: N.T.S.

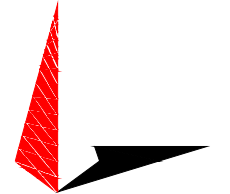
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



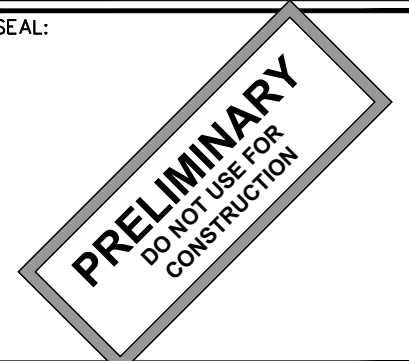
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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 4700 DAHLIA STREET
 DENVER, CO 80216
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O	09-21-23	PRELIMINARY

DRAWN BY: MKB CHECKED BY: KES

SHEET TITLE:

GROUNDING PLAN AND DETAILS

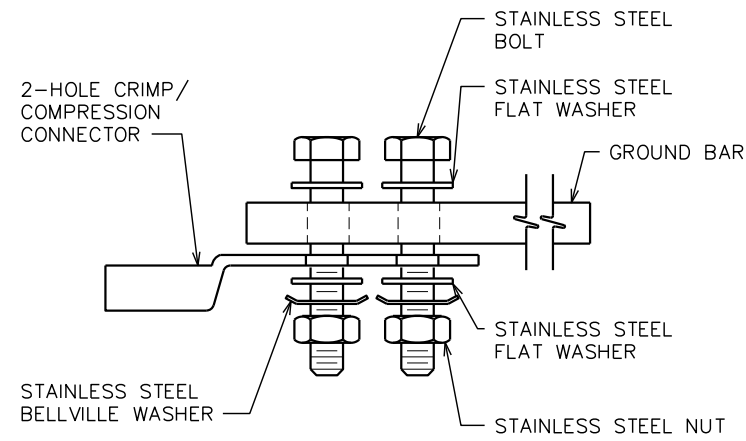
SHEET NUMBER: REVISION:

G-1 **1**

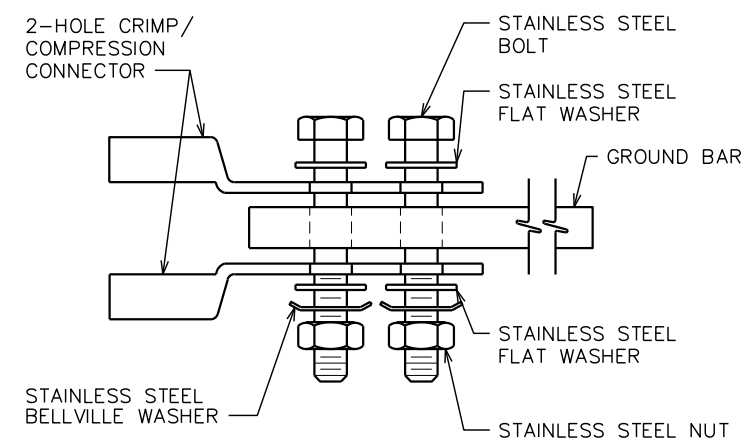
TEP#:333909.883690

TYPICAL GROUNDING PLAN

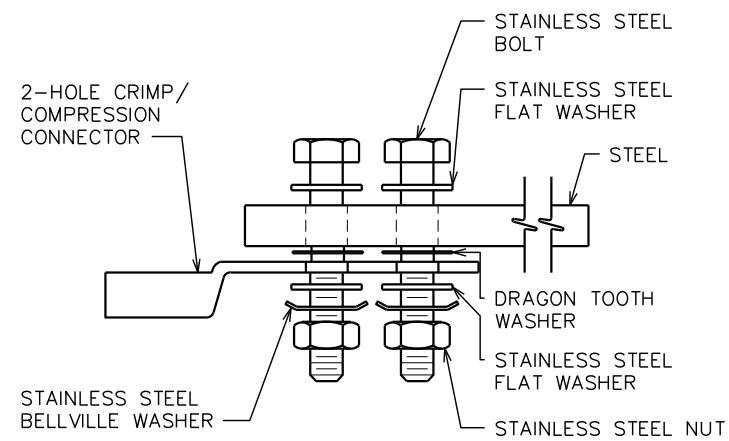
SCALE: N.T.S.



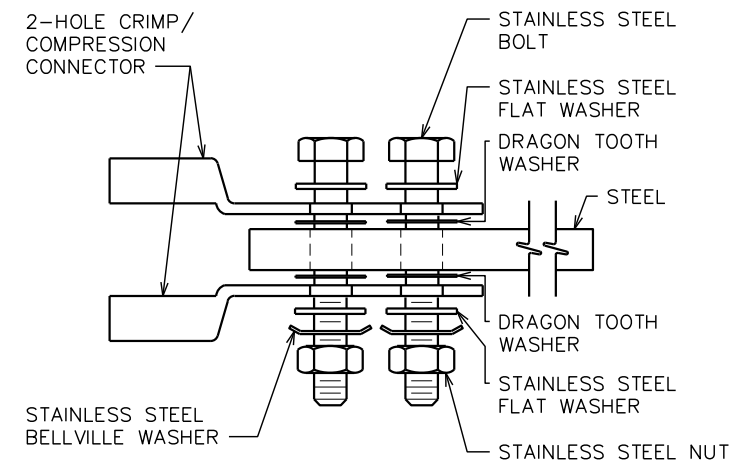
SINGLE CONNECTOR AT GROUND BARS



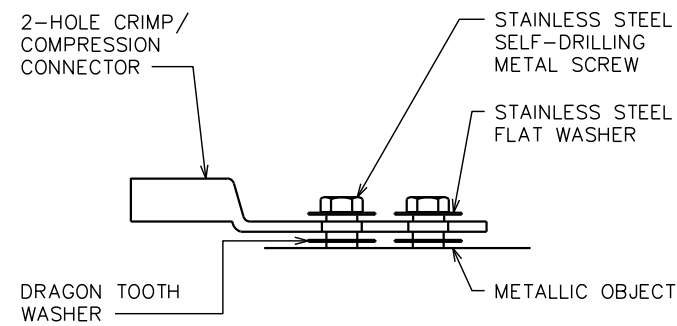
BACK TO BACK CONNECTOR AT GROUND BARS



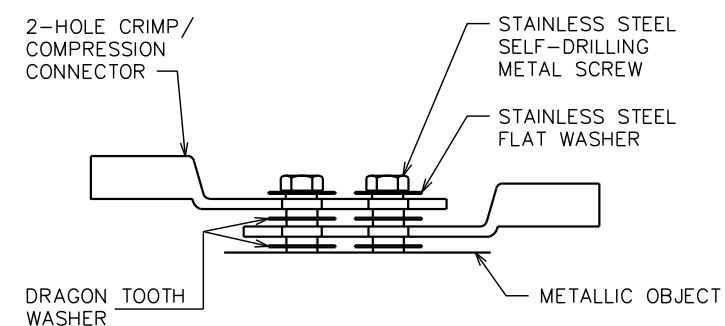
SINGLE CONNECTOR AT STEEL OBJECTS



BACK TO BACK CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS



BACK TO BACK CONNECTOR AT METALLIC/STEEL OBJECTS

NOTES:

1. CHOOSE BOLT LENGTH TO ALLOW A MIN. OF THREE THREADS EXPOSED.
2. BURNISH MOUNTING SURFACE TO REMOVE PAINT IN THE AREA OF THE CONNECTOR.
3. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE OF CONNECTOR AND WIPE OFF EXCESS COMPOUND.
4. APPLY CLEAR HEAT SHRINK OVER ENTIRE LENGTH OF LABEL FOR PROTECTION. (REFER TO CONDUCTOR LABELS SECTION.)

CONNECTOR AND HARDWARE DETAIL

SCALE: N.T.S.

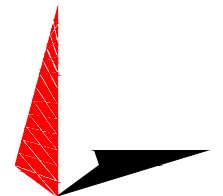
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



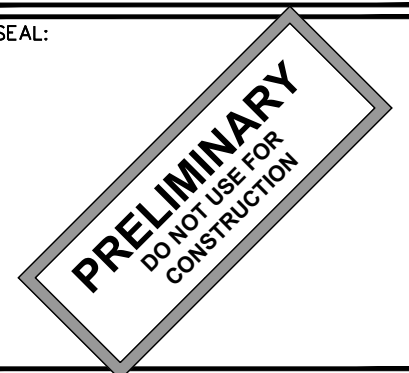
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

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 4700 DAHLIA STREET
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SHEET TITLE:

**GROUNDING
 DETAILS**

SHEET NUMBER: REVISION:

G-2

1

TEP#:333909.883690

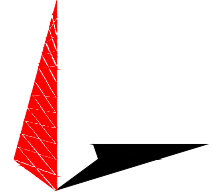
NOTES:

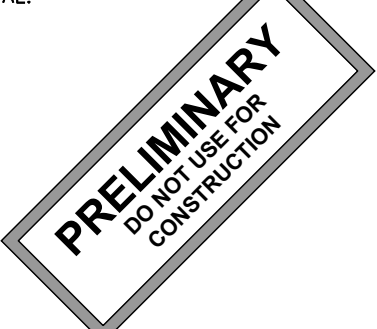
1. MINIMUM BEND RADIUS OF #2 SOLID CONDUCTOR IS 12"
2. ALL GROUND BARS SHALL BE INSTALLED WITH TAMPER RESISTANT MOUNTING HARDWARE

PROJECT INFORMATION:
UT-109
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 4326 E SUNNY ACRES LN
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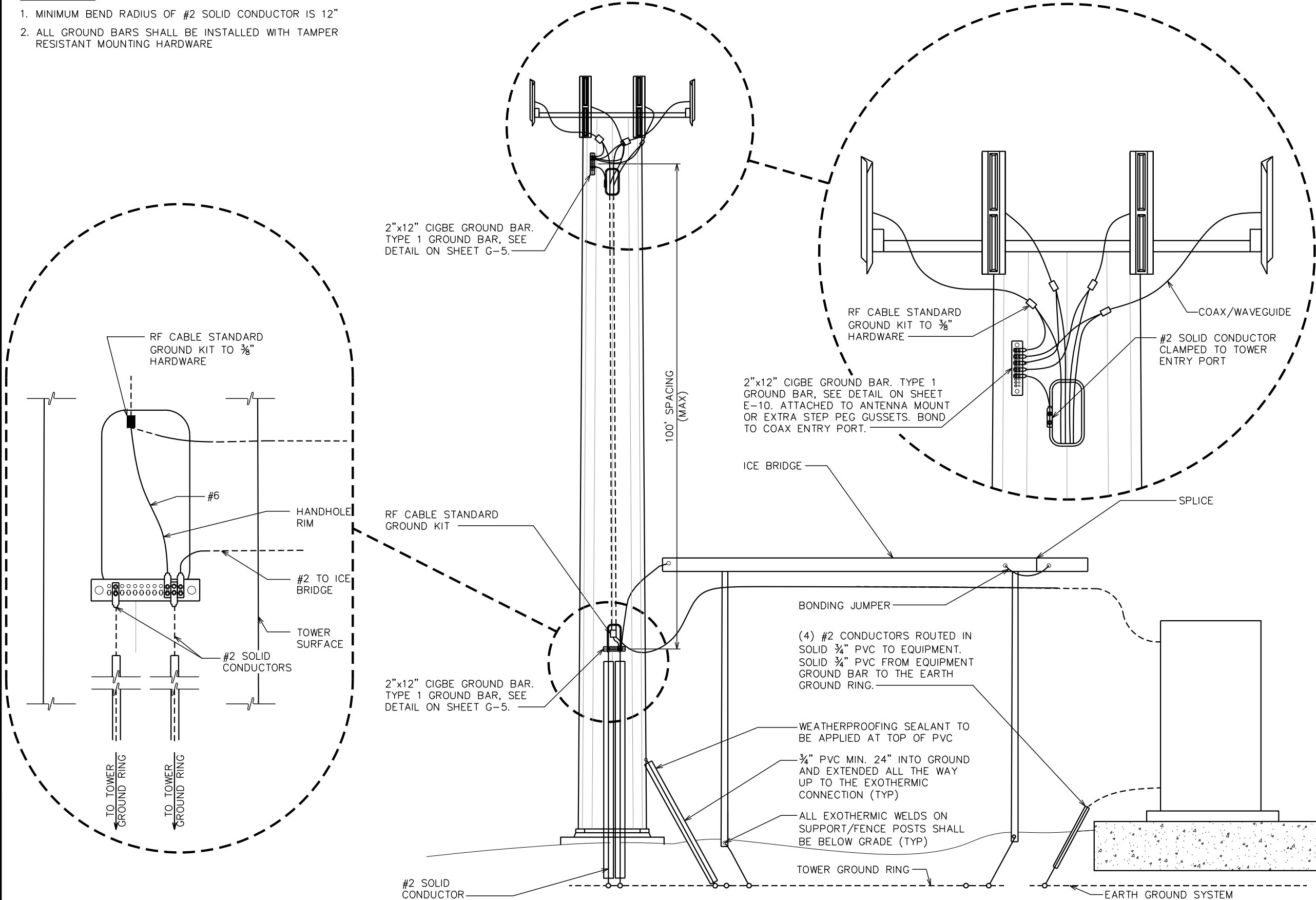
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SHEET TITLE:
GROUNDING DETAILS II

SHEET NUMBER: **G-3** | REVISION: **1**
 TEP#:333909.883690



TYPICAL ICE BRIDGE, COAX, STANCHION, AND TOWER GROUNDING DETAIL

SCALE: N.T.S.

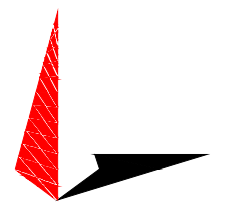
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
 4326 E SUNNY ACRES LN
 SPANISH VALLEY, UT 84532
 (SAN JUAN COUNTY)

PLANS PREPARED FOR:



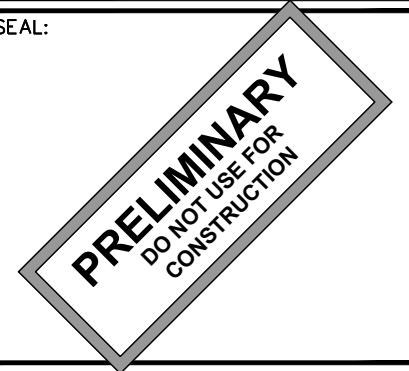
1800 DIAGONAL ROAD, SUITE 600
 ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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 4700 DAHLIA STREET
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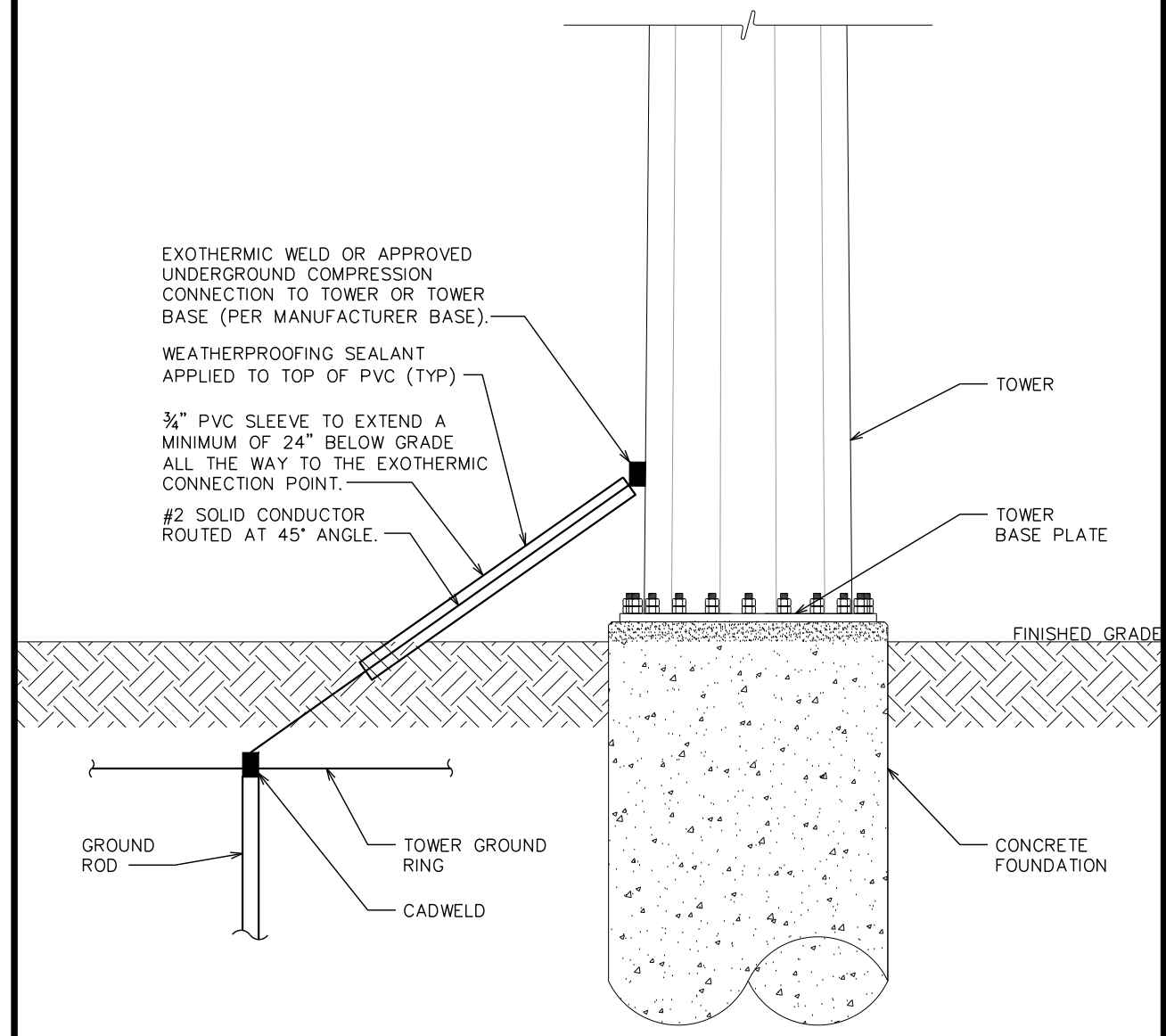
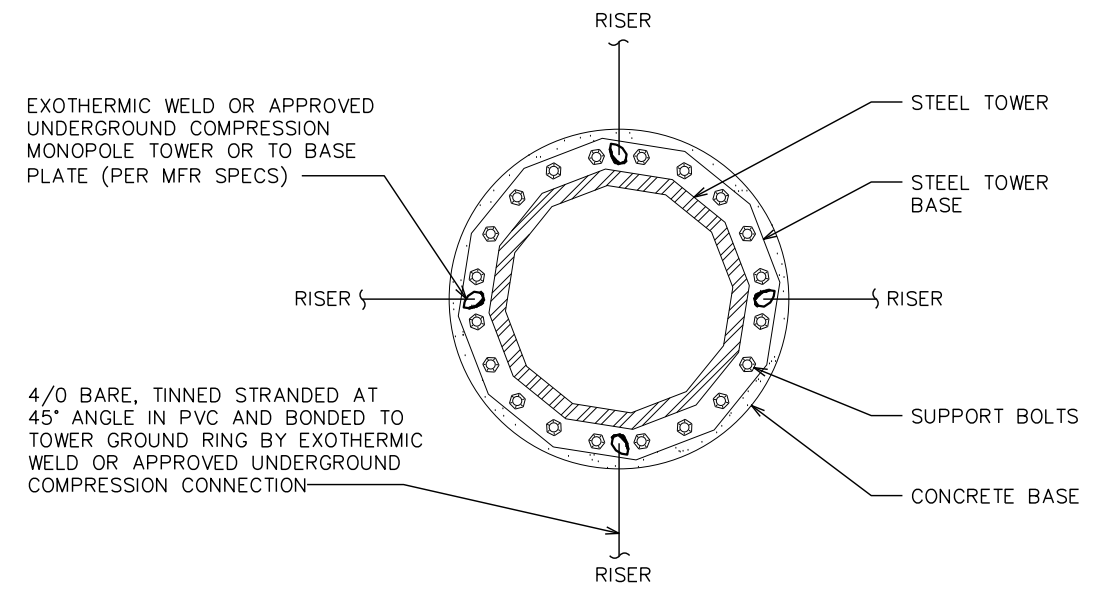


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SHEET TITLE:
**GROUNDING
 DETAILS III**

SHEET NUMBER: **G-4** REVISION: **1**
 TEP#:333909.883690

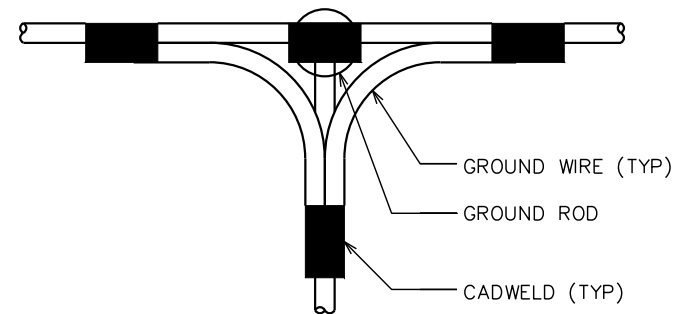


TOWER BASE GROUNDING DETAIL
 SCALE: N.T.S.

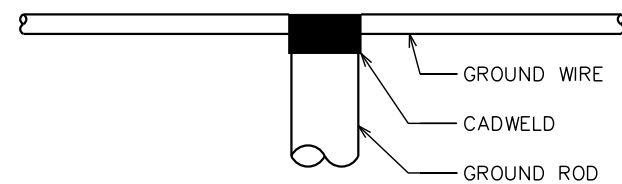
TOWER GROUNDING
 SCALE: N.T.S.

NOTE:

MINIMUM SPACING OF 12"
BETWEEN ALL CADWELDS



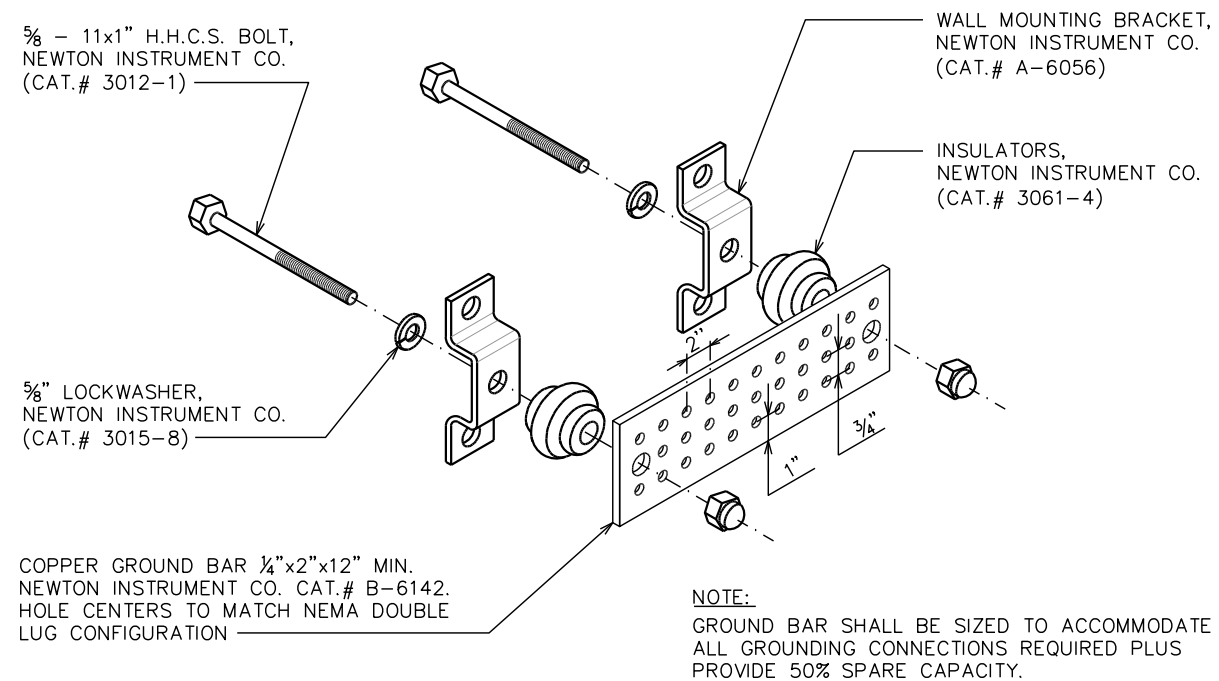
TOP VIEW



SIDE VIEW

CADWELD GROUNDING DETAIL

SCALE: N.T.S.



COPPER GROUND BAR 1/4"x2"x12" MIN.
NEWTON INSTRUMENT CO. CAT.# B-6142.
HOLE CENTERS TO MATCH NEMA DOUBLE
LUG CONFIGURATION

NOTE:
GROUND BAR SHALL BE SIZED TO ACCOMMODATE
ALL GROUNDING CONNECTIONS REQUIRED PLUS
PROVIDE 50% SPARE CAPACITY.

STANDARD GROUND BAR DETAIL

SCALE: N.T.S.

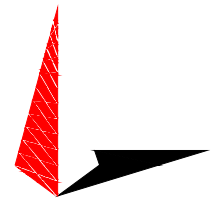
PROJECT INFORMATION:
UT-109
SPANISH VALLEY
4326 E SUNNY ACRES LN
SPANISH VALLEY, UT 84532
(SAN JUAN COUNTY)

PLANS PREPARED FOR:



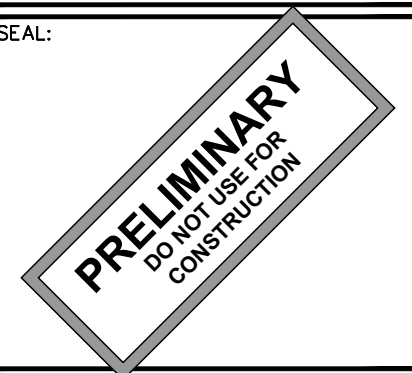
1800 DIAGONAL ROAD, SUITE 600
ALEXANDRIA, VA 22314

PLANS PREPARED BY:



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SHEET TITLE:

**GROUNDING
DETAILS IV**

SHEET NUMBER:

G-5

REVISION:

1

TEP#:333909.883690



Date: November 2, 2023

To: Tierney Rowe; Infra Towers, LLC

Re: Coverage assessment and alternative site analysis; Spanish Valley, UT

Dear Ms. Rowe,

TeleMtn Engineering has completed an assessment of Verizon's current and proposed wireless coverage in and around Spanish Valley and Moab, UT, and along US-191 into San Juan County, UT. The assessment was focused on the following three factors:

- 1) Current coverage in the Spanish Valley area, and the demonstrated need for additional indoor coverage as well as extended coverage along US-191 to the south.
- 2) Coverage enhancements provided by the proposed new wireless facility in the vicinity of Spanish Valley and Moab, UT.
- 3) Suitability of existing towers for the purpose of providing the desired coverage, as alternatives to the proposed new wireless facility.

Methodology:

This analysis was completed using a professional quality propagation modelling and network planning tool (Forsk, Atoll). The site configurations modelled were "typical" of configurations used by the leading national wireless service providers and the antenna orientations modelled were optimized for the desired service area. The technology modelled was LTE in the AWS band (2100Mhz). Coverage thresholds used are likewise "typical" for the leading national carriers and are reasonable representations of coverage for highly reliable voice and data usage.

Findings:

The current indoor coverage in the Spanish Valley can be broadly characterized as marginal. Some areas with a favorable line of sight to existing cell sites may experience adequate service, while others may have unreliable or no service at all. Likewise, in-vehicle coverage may also be "spotty" depending on location, especially along US-191 south of the Grand-San Juan County line.

The proposed new wireless facility will provide substantial new coverage in and around Spanish Valley, as well as on US-191 south of Spanish Valley. The coverage enhancements will be particularly pronounced for in-building use. This point is significant given that the latest survey released by the Centers for Disease Control and Prevention (attached) shows that ~75%

of Utahns live in a “wireless only” household. In addition to the in-building coverage improvements, the proposed site will improve coverage and reliability for vehicular usage along US-191 through Spanish Valley, and to the south.

Predicted coverage from the five existing sites identified within a seven-mile radius of the proposed site did not show significant coverage improvements in the desired coverage area of Spanish Valley. In addition, the relative proximity of these sites to Verizon’s current sites, and further distance from the target coverage area, would create interference to the current coverage area without any significant improvements to the target coverage area.

Conclusion:

It is the opinion of TeleMtn Engineering that the coverage plots in the attached report depict a clear coverage/service benefit from the proposed new wireless facility in Spanish Valley. Likewise, they also clearly show that none of the alternative locations analyzed can provide a comparable coverage benefit in the target coverage area.



About TeleMtn Engineering:

TeleMtn Engineering is a professional engineering firm headquartered in Nathrop, CO. TeleMtn specializes in providing engineering services to the wireless telecommunications industry. TeleMtn has extensive expertise in Radio Frequency engineering and network planning as well as in physical site design and drafting.

About the author

John Keating is a former co-owner of TeleMtn Engineering and a professional engineer with over 25 years of experience, engineering and evaluating commercial wireless networks. John holds a Bachelor of Science degree in Electrical Engineering from the University of Colorado.

Spanish Valley Tower Analysis

Prepared by:
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PO Box 1453
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Stated Coverage Goals

- Improved indoor coverage in Spanish Valley area
- Improved coverage for emergency use; E-911 and associated caller location accuracy.
- Improved capacity in Spanish Valley and Moab
- Improved coverage along US-191 south of Spanish Valley, into San Juan County.

Analysis Background Details

- Coverage predictions were created using an industry-standard design tool, Atoll 3.5.
- Atoll's Standard Prediction Model was used, with slope, diffraction, and clutter loss parameters tuned for the environment.
- The terrain and land use/land clutter resolution used was 30m.
- All site predictions are based on three-sector designs with antennas oriented so as to maximize the coverage in the desired area.
- The coverage predictions depict LTE coverage in the AWS band (~2100MHz).
- The coverage thresholds depicted are typical of those used by leading wireless providers for planning highly reliable voice and data service in typical settings (in-building, in-vehicle and outdoor).

Coverage Threshold Details

- **Minimum required signal strength:** In general, a signal level (RSRP) of -110dBm is considered necessary to maintain a reliable connection to an LTE network.
- **Outdoor coverage threshold:** Due to blockage from trees, buildings, terrain, multipath interference, etc., adding a 5dB margin increases the probability that the connection can be maintained in a variety of settings. The resultant outdoor signal threshold is **-105dBm** .
- **In-vehicle coverage threshold:** In-vehicle use is subject to the same fading characteristics as outdoor coverage and also by other unique factors such as the loss experienced as the signal passes through the vehicle, and by fast fade losses while traveling at speed. In all, these fading loss can vary from 8dB to 25dB, but here is assumed to be 15dB in combination with the vehicle loss. This yields an in-vehicle threshold of **-95dBm** ($-110\text{dBm} + 15\text{dB}$)
- **In-building coverage threshold:** Using a wireless device while inside a structure subjects the path to losses associated with the signal passing through one or more walls. In general, it is assumed that a typical wall will attenuate the strength of the outside signal by 10dB. Therefore, assuming the signal will pass through two walls, the indoor signal will have experienced a loss of 20dB. Adding in our standard “outdoor” fade margin of 5dB yields an in-building threshold of **-85dBm** ($-110\text{dBm} + 25\text{dB} + 5\text{dB}$).

Evaluation of Towers Within Seven Miles of Proposed Site

- Tower #1 - AT&T/Crown Castle tower 80' (38.5394722N 109.512W)
 - Tower is too close to an existing Verizon site and thus would introduce interference.
 - Available height is too low, and distance to target coverage area is too great, to provide required improvements in Spanish Valley area
 - Location can be difficult to differentiate from existing Verizon tower in coverage maps shown as they are less than 0.1mi from one another
- Tower #2 - Existing Verizon tower 62' (38.5398306N 109.512106W)
 - Configuration (antennas, radios, etc.) depicted is optimized for coverage and performance
 - Modifications that would significantly improve coverage in Spanish Valley are not feasible given the distance to the target coverage area and the site's relatively short height. See discussion on page 7.
- Tower #3 - Sprint tower 80' (38.570275N 109.5279472W)
 - Tower is located farther away from Spanish Valley area than the nearest Verizon tower
 - Due to being located farther away, even if Verizon could go at a significantly increased elevation the tower would cause interference and degrade existing coverage.

Other Towers Within Seven Miles (cont'd)

- Tower # 4 - Grand County MS 50' (38.56723333N 109.5473833W)
 - Tower is located farther away from Spanish Valley area than nearest existing Verizon tower and does not improve signal levels in Spanish Valley
 - Due to being located farther away, even if Verizon could go at an increased elevation the tower, interference caused by overlapping coverage would degrade existing coverage
- Tower #5 - Search and Rescue tower 60' (38.533574N 109.510094W)
 - Available height is too low, and distance to target coverage area is too great to improve service in Spanish Valley area.
 - It is doubtful that the tower can structurally support Verizon's equipment

A Note on Tower Modifications

- Holding all other factors constant, an increase in antenna height will improve signal reception at any given location within the current coverage area. However, unless the antenna is currently obstructed by nearby trees, buildings or terrain features, and the increase will allow the antenna to clear those obstacles, an increase in antenna height (<50%) is generally not going to provide a significant extension of the current coverage area. The reason for this is that signal losses due to increased distance from the serving site will offset signal gains from the increase in antenna height.
- For example; increasing the height of Tower #2 by 50% (to ~90'), would result in a gain of received signal strength by ~3dB. If the service area of the modified tower is now expected to double, the propagation loss over the extended service area would increase by ~6dB. For this reason, modest increases in antenna height generally result in performance improvements within the original coverage area, rather than a significant increase in the extent of the coverage area. Note that the coverage thresholds shown are in 10dB increments.
- Tower increases are typically done to accommodate new tenants such that the new tenant can locate their antenna with enough clearance from current tenants to allow for independent operation, and a comparable service area, rather than an expansion of an established coverage area.

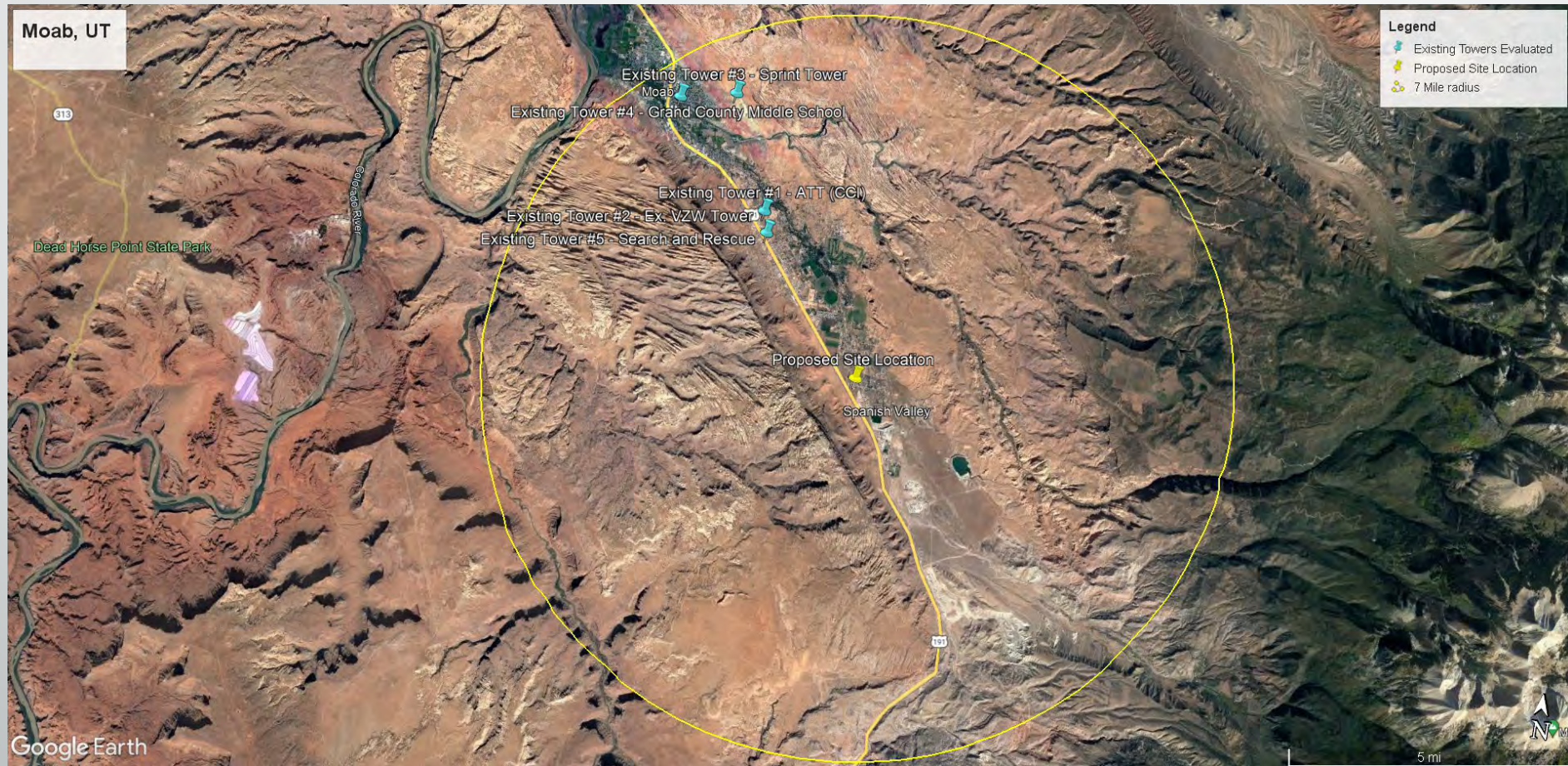
Summary of Analysis

The propagation analysis included in this report shows that the proposed site will provide significant improvements to wireless service in Spanish Valley, as well as along US-191 south into San Juan County, mitigating existing coverage gaps in the vicinity.

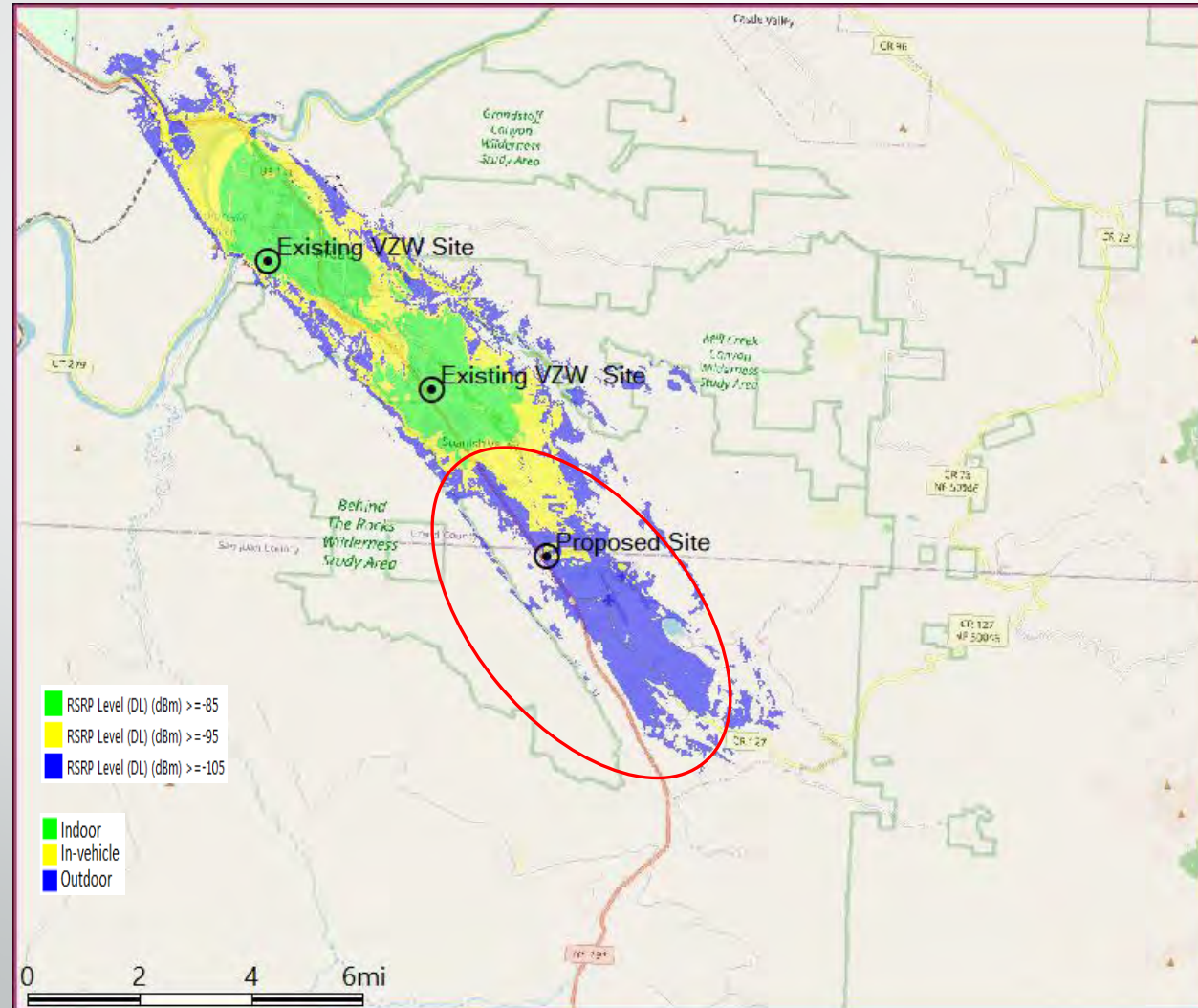
None of the existing site locations evaluated can provide the same level of coverage improvement, nor will any of them meet the stated coverage goals, or close existing gaps in service to any significant degree.

The designed height of the proposed tower is necessary to provide the needed service and to allow for additional future tenants.

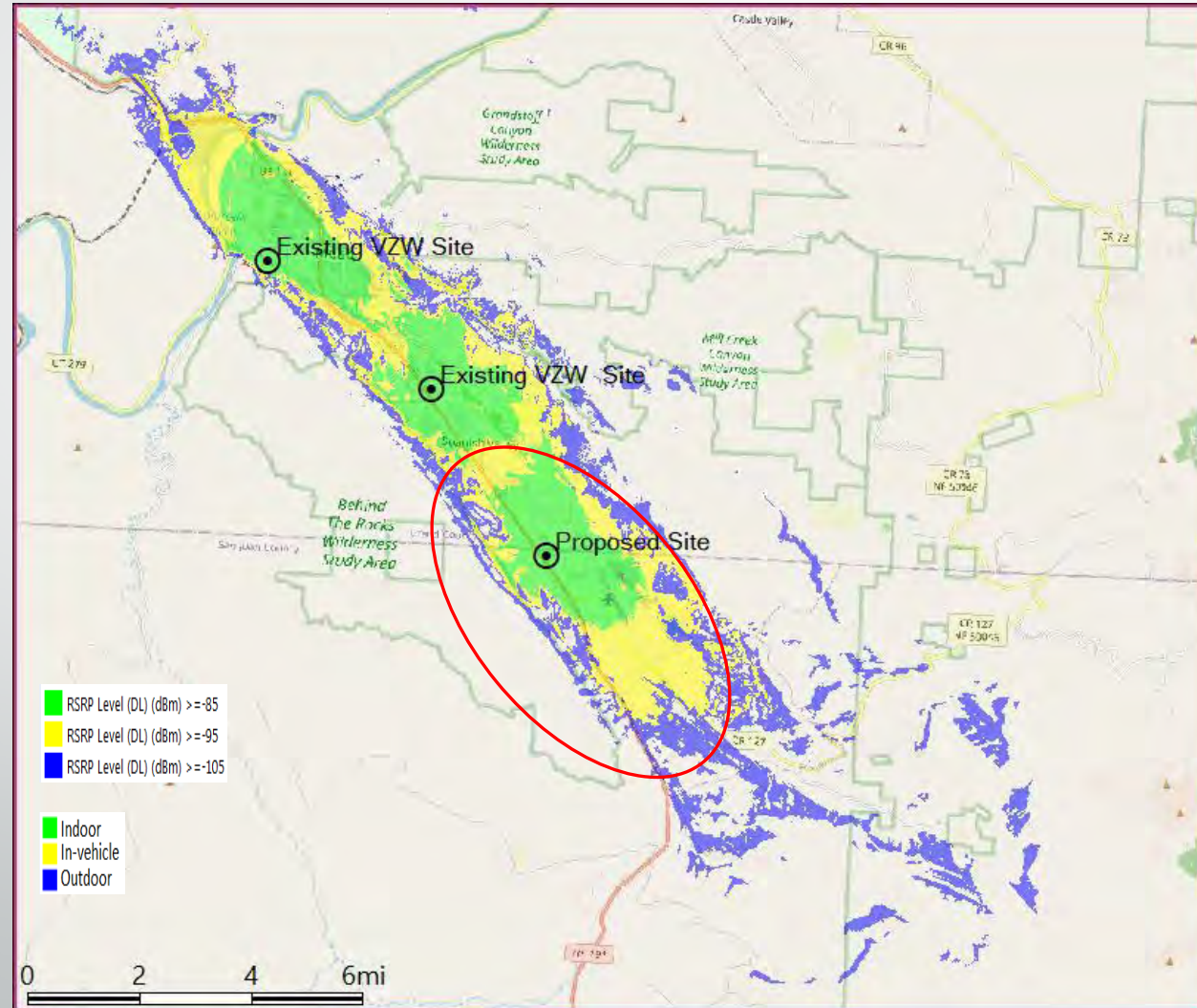
Existing Towers within 7 mi of Proposed Site



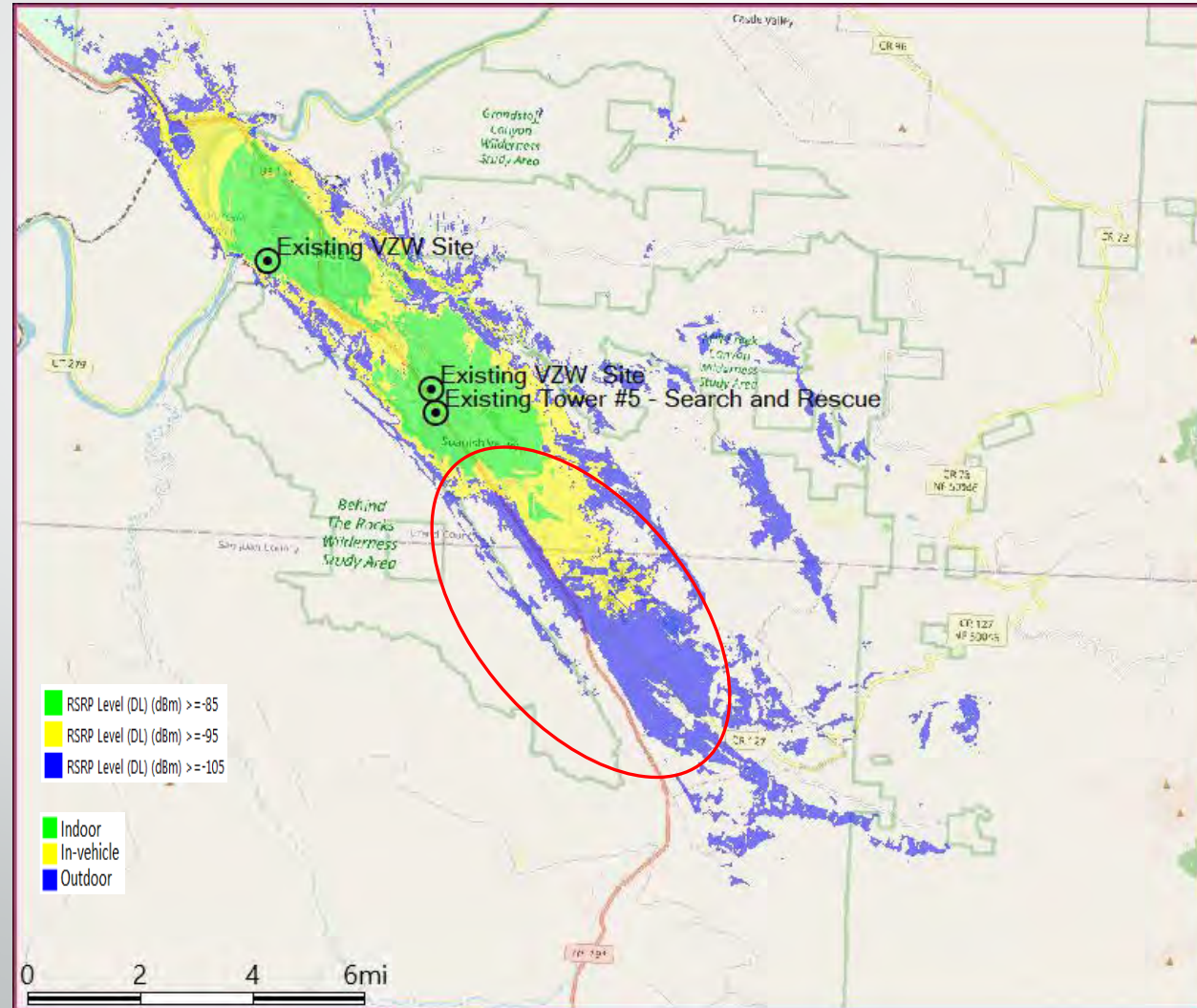
Current Verizon Coverage (inc Tower #2)



Verizon Coverage w/Proposed Site



Current Coverage w/Tower #5 "SAR"





Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2022

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Overview

Since 2007, the National Health Interview Survey (NHIS) Early Release Program has regularly released preliminary estimates of the percentages of adults and children living in homes with only wireless telephones (also known as cellular telephones, cell phones, or mobile phones). These estimates are the most up-to-date estimates available from the federal government concerning the size and characteristics of this population.

Estimates in this report are based on the second six months of 2022. During this time period, 72.6% of adults and 81.9% of children lived in wireless-only households.

NHIS data can also be used to estimate the percentage of adults who live in wireless-only households and have their own wireless telephone (wireless-only adults). For July-December 2022, 71.7% of adults were wireless-only adults. Demographic subgroups with the highest percentages of wireless-only adults include adults aged 25–29 (87.6%) and 30–34 (88.4%) (Figure), and adults renting their homes (85.3%).

NHIS Early Release Program

This report is published as part of the NHIS Early Release Program. Twice each year, the National Center for Health Statistics (NCHS) releases selected estimates of telephone coverage for the civilian noninstitutionalized U.S. population based on data from NHIS, along with comparable estimates from NHIS for the previous 2 years. The estimates are based on in-person interviews that are conducted throughout the year to collect information on health

status, health-related behaviors, and health care access and utilization. The survey also includes information about household telephones and whether anyone in the household has a wireless telephone.

To provide access to the most recent information from NHIS, estimates using the July–December 2022 data are being released prior to final data editing and final weighting. These estimates should be considered preliminary. Estimates produced using the final data files may differ slightly from those presented here.

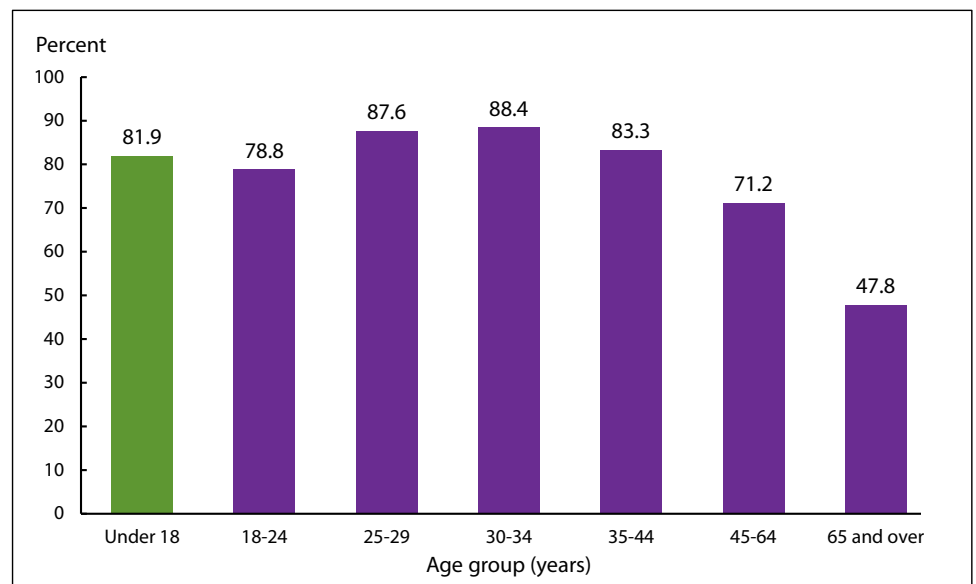
Background

Many health surveys, political polls, and other types of research are conducted using random-digit-dial (RDD) telephone surveys. Most survey research organizations include wireless telephone

numbers when conducting RDD surveys. If they did not, the exclusion of households with only wireless telephones (along with the small proportion of households that have no telephone service) could bias results. This bias—known as coverage bias—could exist if there are differences between people with and without landline telephones for the substantive variables of interest.

Since 2003, NHIS has asked respondents about landlines and wireless telephones in their homes. Compared with adults living in landline households, adults living in wireless-only households are more likely to be people who smoke cigarettes and people who had at least one heavy drinking day in the past year. Adults living in wireless-only households are also less likely to have health insurance coverage, less likely to have a usual place to go for medical care, less likely to have

Figure. Percentages of wireless-only adults and of children living in households with only wireless telephone service, by age group: United States, July–December 2022



NOTES: Wireless-only adults are adults who live in households with only wireless telephone service and have their own wireless telephone.
SOURCE: National Center for Health Statistics, National Health Interview Survey.

received an influenza vaccination in the past year, and more likely to have experienced financial barriers to care.

Previous [Early Release Program reports](#) based on data from 2003-2018 include additional details about these health-related differences between people with and without landline telephones.

Because of these differences, the potential for coverage bias remains a real threat to RDD health surveys that do not include sufficient representation of households with only wireless telephones. NCHS continues to publish estimates of the size and characteristics of this population so that survey research organizations can evaluate whether they have appropriately included this population in their telephone surveys.

Methods

NHIS randomly selects one “sample adult” aged 18 years or older and one “sample child” aged 17 years or younger (if any children live in the household) from each household following a brief initial interview that identifies everyone who usually lives or stays in the household. Information about the sample adult is collected from the sample adults themselves unless they are physically or mentally unable to do so, in which case a knowledgeable proxy can answer for the sample adult. Information about the sample child is collected from a parent or adult who is knowledgeable about and responsible for the health care of the sample child. This respondent may or may not also be the sample adult.

To determine whether the sample adult or child lived in a household with a landline telephone, the respondent was asked if there was “at least one phone inside your home that is currently working and is not a cell phone.” To avoid possible confusion with cordless landline telephones, the word “wireless” was not used in the survey. This question was asked only once, in whichever interview (sample adult or sample child) came first.

Sample adults are also asked whether they “have a working cell phone,” and if not, whether they “live with anyone who has a working cell phone.” This approach permits the identification of adults living in wireless-only households (that is,

households without landlines within which at least one household member has a working cell phone) and of wireless-only adults (that is, adults who live in a wireless-only household and have their own cell phone). Respondents for sample children are only asked if the child lives “with anyone who has a working cell phone,” and only if the wireless status of the household is not yet known from the sample adult interview.

An additional question is included for sample adults who have a cell phone and live in households with landline telephones. The sample adult is asked to consider “all the telephone calls that you answer” and to report whether “all or almost all [are] on your cell phones, some [are] on your cell phone and some on your home phone, or very few or none [are] on your cell phones.” This question permits the identification of “wireless-mostly” adults—defined as adults with both landline and cellular telephones who answer all or almost all calls on cell phones. Landline-mostly adults and dual-users can be similarly identified.

NHIS uses sampling weights to produce representative national estimates. The base weight is equal to the inverse of the probability of selection of the sample address. These weights are adjusted for household and person-level nonresponse using multilevel models predictive of response propensity. Nonresponse-adjusted weights are further calibrated to U.S. Census Bureau population projections and American Community Survey (ACS) one-year estimates for age, sex, race and ethnicity, educational attainment, housing tenure, Census division, and Metropolitan Statistical Area status.

Point estimates and 95% confidence intervals were calculated using SUDAAN software (RTI International, Research Triangle Park, NC) to account for the complex sample design of NHIS. All estimates shown meet the NCHS standards of reliability as specified in [National Center for Health Statistics Data Presentation Standards for Proportions](#).

Differences between percentages were evaluated using two-sided significance tests at the 0.05 level. All differences discussed are statistically significant unless otherwise noted. Lack of comment regarding the difference

between any two estimates does not necessarily mean that the difference was tested and found to be not significant. Because of small sample sizes, estimates based on less than 1 year of data may have large confidence intervals, and caution should be used in interpreting such estimates.

Impact of the COVID-19 Pandemic

Additional caution is warranted when interpreting telephone status estimates from 2020. Due to the COVID-19 pandemic, NHIS data collection switched to a telephone-only mode beginning on March 19, 2020. Personal visits to households resumed in selected areas in July 2020 and in all areas of the country in September 2020. However, contact with households was still attempted by telephone first, and a majority of interviews were completed by telephone. Additionally, starting in August and continuing through the end of December, a subsample of adult respondents who completed an NHIS interview in 2019 were recontacted by telephone and asked to participate again, completing the 2020 NHIS questionnaire. Estimates for 2020 in [Table 1](#) are based on data from both samples.

Response rates were lower and respondent characteristics were different in April through December 2020. The weighted 2020 sample underrepresented adults living alone and adults with family income below the federal poverty level. The sample also underrepresented wireless-only adults, whereas adults living in households with both landline and wireless telephones were overrepresented. Moreover, phoneless households (those with neither wireless nor landline telephones) generally could not be interviewed in Quarter 2, 2020 or as part of the reinterviewed sample. For these reasons, caution should be used in interpreting differences observed in estimates between 2020 and other time periods, particularly for estimates of people living in phoneless households.

The “telephone first” data collection approach that began in July 2020 ended in April 2021. Pre-pandemic interviewing procedures, with initial contact attempts

by personal visit, resumed in May 2021. However, a majority of NHIS interviews in 2021 and 2022 were still completed by telephone rather than in-person (52% in July–December 2022).

Household Telephone Status

From July through December 2022, information on household telephone status was obtained for 13,385 civilian adults aged 18 and over and 3,768 children under age 18. In the second six months of 2022, 72.6% of adults (about 186 million) and 81.9% of children (nearly 60 million) lived in households that did not have a landline telephone but did have at least one wireless telephone (**Table 1**).

The percentages of adults and children living in wireless-only households have been generally increasing since 2003. Consistent with that trend, there was also a statistically significant increase (3.9 percentage points) in the past 12 months—that is, from the second 6 months of 2021 to the second 6 months of 2022—in the percentages of adults living in wireless-only households. Across that same time period, an increase (2.8 percentage points) was also observed for children.

Wireless-only Adults

Seven in 10 adults were wireless-only (71.7%, 183 million); that is, they personally had a wireless telephone and lived in a household that did not have a landline. The percentage of adults who were wireless-only is shown, by selected demographic characteristics, in **Table 2**. Confidence intervals for these percentages are shown in **Table 3**. For July–December 2022:

- Nearly nine in 10 adults aged 25–29 (87.6%) and aged 30–34 (88.4%) were wireless-only (**Figure**). The percentage of adults who were wireless-only decreased as age increased beyond 35 years: 83.3% for those 35–44; 71.2% for those 45–64; and 47.8% for those 65 and over.

- Hispanic adults (80.0%) were more likely than non-Hispanic Asian (73.0%), non-Hispanic Black (69.5%), or non-Hispanic White (69.5%) adults to be wireless-only.
- Men (72.4%) were more likely than women (71.1%) to be wireless-only.
- Adults with family incomes below the federal poverty threshold (77.8%) and adults with family incomes of 100% to less than 200% of the federal poverty threshold (74.9%) were more likely than adults with higher family incomes (70.8%) to be wireless-only.
- Adults living in the Midwest (73.8%), South (74.1%), and West (76.0%) were more likely than those living in the Northeast (58.0%) to be wireless-only.
- More than four in five adults living in rented homes (85.3%) were wireless-only. This percentage is higher than the percentage for adults living in homes owned by a household member (66.2%).

Table 2 also includes estimates of the percentage of adults who were wireless-mostly, landline-mostly, dual users, landline-only, and phoneless, by selected demographic characteristics. Confidence intervals for these percentages are shown in **Table 3**.

Other NHIS Early Release Program Products

This report is published as part of the NHIS Early Release Program. Earlier reports on wireless substitution are at <https://www.cdc.gov/nchs/nhis/erwirelesssubs.htm>.

The prevalence of adults and children living in wireless-only households varies across states. For more information about prevalence estimates at the state level, see

- NCHS. Modeled estimates (with standard errors) of the percent distribution of personal telephone status for adults aged 18 and over, by state: United States, 2020. December 2022. Available from: <https://www.cdc.gov/nchs/data/nhis/>

[earlyrelease/Wireless_state_202212.pdf](https://www.cdc.gov/nchs/data/earlyrelease/Wireless_state_202212.pdf).

In addition to these products, preliminary microdata files containing selected NHIS variables are produced as part of the Early Release Program. The telephone service use variables presented in this report are included in those microdata files. Analysts can access these files through the NCHS Research Data Centers (<https://www.cdc.gov/rdc/>) without having to wait for the final annual NHIS microdata files to be released.

For more information about NHIS and the NHIS Early Release Program, or to find other Early Release Program products, see

- NHIS home page at <https://www.cdc.gov/nchs/nhis.htm>.
- Early Release Program home page at <https://www.cdc.gov/nchs/nhis/releases.htm>.

Suggested Citation

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Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2022

Table 1. Percent distribution of household telephone status for adults and children: United States, 2020-2022

Date of interview	Number of people (unweighted)	Wireless-only household	Landline with wireless	Landline-only household ¹	Phoneless	Landline with unknown wireless	Wireless with unknown landline	Total
Adults								
July–December 2020 ²	17,028	65.8	31.9	1.8	0.4	0.1	0.1	100.0
95% confidence interval	...	64.69-66.81	30.88-32.95	1.60-2.08	0.28-0.52	0.03-0.12	0.04-0.14	...
January–June 2021 ²	13,901	68.0	29.3	1.9	0.5	0.0	0.1	100.0
95% confidence interval	...	66.70-69.34	28.04-30.66	1.66-2.23	0.44-0.69	0.01-0.05	0.09-0.22	...
July–December 2021	14,629	68.7	28.9	1.7	0.6	0.0	0.1	100.0
95% confidence interval	...	67.54-69.81	27.82-29.97	1.48-2.00	0.47-0.75	0.00-0.05	0.05-0.16	...
January–June 2022	13,002	70.7	27.1	1.6	0.4	0.0	0.1	100.0
95% confidence interval	...	69.47-71.97	25.88-28.36	1.41-1.89	0.31-0.59	0.01-0.09	0.02-0.17	...
July–December 2022	13,385	72.6	25.4	1.3	0.6	0.0	0.1	100.0
95% confidence interval	...	71.55-73.67	24.34-26.44	1.11-1.50	0.46-0.75	0.01-0.06	0.04-0.19	...
Children								
July–December 2020 ²	1,984	75.5	23.1	0.6	0.6	-	-	100.0
95% confidence interval	...	72.90-77.91	20.84-25.55	0.29-1.37	0.23-1.80	-	-	...
January–June 2021 ²	4,016	79.1	19.8	0.4	0.7	0.0	0.0	100.0
95% confidence interval	...	77.27-80.78	18.12-21.61	0.17-0.91	0.42-1.05	0.00-0.04	0.01-0.23	...
July–December 2021	4,211	79.1	19.6	0.4	0.8	-	0.0	100.0
95% confidence interval	...	77.45-80.73	18.05-21.35	0.20-0.65	0.55-1.22	-	0.01-0.17	...
January–June 2022	3,585	81.7	17.3	0.5	0.5	-	0.1	100.0
95% confidence interval	...	80.05-83.31	15.70-18.93	0.22-1.02	0.31-0.74	-	0.01-0.31	...
July–December 2022	3,768	81.9	16.9	0.3	0.9	-	0.0	100.0
95% confidence interval	...	80.08-83.64	15.34-18.64	0.11-0.60	0.52-1.41	-	0.00-0.12	...

0.0 Quantity more than zero but less than 0.05.

... Category not applicable.

- Quantity zero.

¹Landline-only refers to households with a landline telephone in which no residents have a working cell phone. In reports based on 2003-2018 data, this category was labeled as "landline without wireless."

²Due to the COVID-19 pandemic, NHIS data collection switched to a telephone-only mode beginning on March 19, 2020. Personal visits resumed in all areas in September 2020. However, contact with households was still attempted by telephone first, and a majority of interviews were completed by telephone. Additionally, from August-December 2020, a subsample of adult respondents who completed an NHIS interview in 2019 were recontacted by telephone and asked to participate again. Response rates were lower and respondent characteristics were different in April-December 2020. Differences observed in estimates between 2020 and other time periods—particularly estimates of people living in phoneless households—may have been impacted by these differences in respondent characteristics. The "telephone first" data collection approach that began in July 2020 continued through April 2021. Pre-pandemic interviewing procedures, with initial contact attempts by personal visit, resumed in May 2021.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

SOURCE: National Center for Health Statistics, National Health Interview Survey.

Table 2. Percent distribution of personal telephone status for adults, by selected demographic characteristics: United States, July-December 2022

Demographic characteristic	Wireless-only adults	Wireless-mostly adults	Dual-users	Landline-mostly adults	Landline-only adults	Phoneless adults	Unknown ¹	Total
Total	71.7	15.2	6.1	3.2	2.1	1.3	0.4	100.0
Age (years)								
18–24	78.8	16.0	2.1	0.4	0.3	1.9	0.5	100.0
25–29	87.6	8.2	1.5	0.3	0.6	1.4	0.5	100.0
30–34	88.4	8.9	1.0	0.1	0.1	1.1	0.4	100.0
35–44	83.3	12.0	2.1	0.4	0.2	1.2	0.8	100.0
45–64	71.2	18.5	6.2	1.7	1.2	0.9	0.3	100.0
65 and over	47.8	17.4	14.6	11.4	6.9	1.7	0.3	100.0
Race and ethnicity								
Hispanic or Latino, any race(s)	80.0	11.6	3.5	0.9	1.5	1.7	0.8	100.0
Asian, single race ²	73.0	16.1	5.1	1.1	1.0	3.0	0.7	100.0
Black, single race ²	69.5	17.9	5.7	2.4	2.2	1.9	0.3	100.0
White, single race ²	69.5	15.7	7.0	4.3	2.3	0.8	0.3	100.0
Other and multiple races ²	77.5	12.5	3.6	1.7	1.3	3.1	0.4	100.0
Sex								
Male	72.4	15.7	5.3	2.6	2.0	1.4	0.6	100.0
Female	71.1	14.7	6.8	3.8	2.1	1.2	0.3	100.0
Education								
Some high school or less	72.5	10.5	5.1	3.4	4.0	3.9	0.5	100.0
High school graduate or GED ³	70.5	13.6	6.3	4.2	3.1	1.8	0.5	100.0
Some post-high school, no degree	72.8	15.1	6.0	3.3	1.7	0.6	0.4	100.0
4-year college degree or higher	71.5	17.8	6.3	2.3	1.0	0.7	0.5	100.0
Family income relative to federal poverty threshold ⁴								
Less than 100%	77.8	9.0	2.8	2.4	3.8	3.7	0.6	100.0
100% to less than 200%	74.9	11.0	4.2	4.1	3.6	2.1	0.3	100.0
200% or greater	70.8	17.0	6.8	3.0	1.4	0.7	0.3	100.0
Geographic region ⁵								
Northeast	58.0	22.6	9.8	5.2	2.5	0.8	1.1	100.0
Midwest	73.8	13.4	5.5	3.7	2.1	1.0	0.5	100.0
South	74.1	14.1	5.8	2.7	1.9	1.2	0.3	100.0
West	76.0	13.0	4.3	2.3	1.9	2.1	0.3	100.0
Metropolitan statistical area status								
Metropolitan	71.8	15.8	6.0	2.9	1.8	1.2	0.4	100.0
Not metropolitan	71.4	11.1	6.6	5.1	3.9	1.5	0.4	100.0

See footnotes at end of table.

Table 2. Percent distribution of personal telephone status for adults, by selected demographic characteristics: United States, July-December 2022—Continued

Demographic characteristic	Wireless-only adults	Wireless-mostly adults	Dual-users	Landline-mostly adults	Landline-only adults	Phoneless adults	Unknown ¹	Total
Home ownership status								
Owned or being bought	66.2	18.1	7.7	4.2	2.4	1.0	0.4	100.0
Renting	85.3	8.2	2.0	0.9	1.4	1.8	0.5	100.0
Other arrangement	66.8	14.7	6.6	**	2.5	**	0.8	100.0
Number of adults in survey sample (unweighted)	9,240	1,963	930	614	414	176	48	13,385

** Estimate does not meet NCHS standards of reliability as specified in *National Center for Health Statistics Data Presentation Standards for Proportions* (available from: https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf).

– Quantity zero.

¹Unknown includes adults with either unknown landline, unknown wireless, or unknown frequency-of-use status (for adults with both landline and wireless telephones). Adults with both unknown landline and unknown wireless status are excluded from the analysis.

²Race groups are non-Hispanic.

³GED is General Educational Development high school equivalency diploma.

⁴Based on family income and family size using the U.S. Census Bureau’s poverty thresholds. Early Release estimates stratified by poverty status are based on reported income only and may differ from similar estimates produced later that are based on both reported and imputed income. Family income relative to the federal poverty threshold was unknown for 11.0% of adults in these analyses. NCHS imputes income when income is unknown, but the imputed income file is not available until the annual NHIS microdata are released.

⁵In the geographic classification of the U.S. population, states are grouped into the following four regions used by the U.S. Census Bureau: *Northeast* includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *Midwest* includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South* includes Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and *West* includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOTES: Data are based on household interviews of a sample of the civilian noninstitutionalized population. Korn and Graubard 95% confidence intervals for these estimates are presented in Table 3.

SOURCE: National Center for Health Statistics, National Health Interview Survey, July-December 2022.

Table 3. Korn and Graubard 95% confidence intervals for percent distributions in Table 2

Demographic characteristic	Wireless-only adults	Wireless-mostly adults	Dual-users	Landline-mostly adults	Landline-only adults	Phoneless adults	Unknown ¹	Total
Total	70.6-72.8	14.3-16.0	5.6-6.6	2.9-3.6	1.8-2.3	1.0-1.6	0.3-0.6	...
Age (years)								
18-24	75.1-82.3	12.9-19.5	1.1-3.7	0.1-1.1	0.0-1.1	0.9-3.5	0.1-1.2	...
25-29	84.7-90.2	6.1-10.8	0.4-3.5	0.0-1.4	0.1-1.6	0.6-2.5	0.1-1.4	...
30-34	85.6-90.8	6.8-11.4	0.4-2.3	0.0-0.5	0.0-0.5	0.6-2.0	0.1-1.0	...
35-44	81.4-85.2	10.4-13.7	1.5-2.8	0.2-0.8	0.1-0.5	0.7-2.0	0.4-1.7	...
45-64	69.5-73.0	16.9-20.1	5.4-7.0	1.3-2.2	0.9-1.6	0.6-1.2	0.1-0.6	...
65 and over	45.9-49.7	16.2-18.7	13.3-15.9	10.3-12.6	6.1-7.7	1.3-2.1	0.1-0.5	...
Race and ethnicity								
Hispanic or Latino, any race(s)	78.1-81.8	10.0-13.3	2.7-4.5	0.5-1.5	1.0-2.2	1.0-2.8	0.3-1.6	...
Asian, single race ²	69.0-76.7	12.7-20.0	3.6-6.9	0.5-2.1	0.4-2.0	1.8-4.6	0.2-1.8	...
Black, single race ²	66.7-72.2	15.8-20.1	4.3-7.4	1.7-3.4	1.5-3.1	1.2-2.8	0.1-0.9	...
White, single race ²	68.2-70.8	14.6-16.8	6.4-7.7	3.9-4.8	2.0-2.7	0.6-1.0	0.2-0.5	...
Other and multiple races ²	72.0-82.4	8.0-18.2	1.8-6.3	0.5-4.2	0.3-3.7	1.3-6.2	0.0-2.0	...
Sex								
Male	71.1-73.7	14.5-16.9	4.8-5.9	2.2-3.1	1.7-2.4	1.0-1.8	0.3-0.9	...
Female	69.5-72.6	13.5-15.9	6.0-7.7	3.3-4.3	1.8-2.5	0.9-1.5	0.2-0.5	...
Education								
Some high school or less	69.9-75.1	8.8-12.4	3.8-6.7	2.4-4.8	3.0-5.3	2.6-5.6	0.1-1.3	...
High school graduate or GED ³	68.7-72.3	12.2-15.2	5.4-7.2	3.5-4.9	2.5-3.7	1.3-2.6	0.2-0.8	...
Some post-high school, no degree	71.0-74.6	13.6-16.8	5.2-6.8	2.8-4.0	1.3-2.2	0.4-1.0	0.2-0.7	...
4-year college degree or higher	69.8-73.2	16.3-19.3	5.5-7.3	1.8-2.9	0.7-1.3	0.4-0.9	0.3-0.7	...
Family income relative to federal poverty threshold ⁴								
Less than 100%	74.8-80.6	7.1-11.1	1.7-4.1	1.6-3.4	2.8-5.0	2.5-5.3	0.2-1.5	...
100% to less than 200%	72.7-77.0	9.2-13.0	3.3-5.2	3.2-5.1	2.9-4.5	1.4-3.0	0.1-0.7	...
200% or greater	69.5-72.0	16.0-18.1	6.1-7.5	2.6-3.4	1.2-1.7	0.5-1.0	0.2-0.6	...
Geographic region ⁵								
Northeast	55.1-60.8	20.9-24.4	8.2-11.7	3.9-6.8	1.9-3.3	0.3-1.6	0.5-1.9	...
Midwest	72.2-75.4	11.6-15.4	4.7-6.4	3.0-4.4	1.6-2.7	0.5-1.7	0.2-0.9	...
South	72.1-76.0	12.7-15.6	5.1-6.6	2.2-3.2	1.5-2.3	0.8-1.5	0.1-0.5	...
West	74.3-77.7	11.4-14.8	3.6-5.1	1.8-2.9	1.5-2.5	1.4-3.0	0.0-0.9	...
Metropolitan statistical area status								
Metropolitan	70.6-72.9	14.9-16.7	5.5-6.6	2.6-3.3	1.5-2.0	1.0-1.6	0.3-0.7	...
Not metropolitan	68.4-74.2	9.0-13.5	5.3-8.1	4.2-6.2	3.0-5.0	1.0-2.3	0.2-0.8	...

See footnotes at end of table.

Table 3. Korn and Graubard 95% confidence intervals for percent distributions in Table 2—Continued

Demographic characteristic	Wireless-only adults	Wireless-mostly adults	Dual-users	Landline-mostly adults	Landline-only adults	Phoneless adults	Unknown ¹	Total
Home ownership status								
Owned or being bought	64.7-67.8	17.0-19.3	7.1-8.4	3.7-4.7	2.1-2.7	0.8-1.2	0.2-0.6	...
Renting	83.8-86.6	7.2-9.4	1.5-2.6	0.7-1.3	1.0-1.8	1.3-2.4	0.2-0.9	...
Other arrangement	59.1-73.8	10.3-20.1	3.4-11.4	...	1.0-4.9	...	0.0-4.2	...

... Category not applicable.

¹Unknown includes adults with either unknown landline, unknown wireless, or unknown frequency-of-use status (for adults with both landline and wireless telephones). Adults with both unknown landline and unknown wireless status are excluded from the analysis.

²Race groups are non-Hispanic.

³GED is General Educational Development high school equivalency diploma.

⁴Based on family income and family size using the U.S. Census Bureau's poverty thresholds. Early Release estimates stratified by poverty status are based on reported income only and may differ from similar estimates produced later that are based on both reported and imputed income. Family income relative to the federal poverty threshold was unknown for 11.0% of adults in these analyses. NCHS imputes income when income is unknown, but the imputed income file is not available until the annual NHIS microdata are released.

⁵In the geographic classification of the U.S. population, states are grouped into the following four regions used by the U.S. Census Bureau: *Northeast* includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *Midwest* includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South* includes Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and *West* includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOTES: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

SOURCE: National Center for Health Statistics, National Health Interview Survey, July-December 2022.



National Health Interview Survey Early Release Program

Modeled estimates (with standard errors) of the percent distribution of personal telephone status for adults aged 18 and over, by state: United States, 2020

Geographic area	Wireless-only adults	Wireless-mostly adults	Dual users	Landline-mostly adults	Landline-only adults	Phoneless adults	Total
Alabama	68.3 (2.4)	14.9 (2.1)	6.5 (1.1)	4.7 (0.7)	4.4 (0.8)	1.1	100.0
Alaska	67.9 (2.3)	17.6 (2.2)	7.0 (1.3)	3.1 (0.6)	3.5 (0.8)	1.0	100.0
Arizona	71.9 (2.1)	15.2 (1.9)	5.6 (1.3)	3.5 (0.6)	2.7 (0.5)	1.0	100.0
Arkansas	69.9 (2.8)	14.7 (2.0)	4.7 (1.2)	6.1 (1.0)	3.5 (0.9)	1.0	100.0
California	64.2 (1.4)	19.0 (1.2)	8.9 (0.8)	4.4 (0.3)	2.7 (0.4)	0.7	100.0
Colorado	71.6 (2.2)	12.5 (1.4)	7.7 (1.3)	4.6 (0.6)	3.1 (0.6)	0.6	100.0
Connecticut	51.7 (2.6)	26.7 (2.7)	10.3 (1.4)	5.6 (0.7)	5.2 (0.8)	0.6	100.0
Delaware	53.5 (2.5)	24.8 (2.8)	12.2 (1.9)	6.3 (0.8)	2.7 (0.7)	0.4	100.0
District of Columbia	63.7 (3.1)	17.9 (3.1)	10.9 (2.1)	4.4 (0.8)	2.5 (0.8)	0.6	100.0
Florida	65.6 (1.5)	18.3 (1.5)	8.0 (1.0)	3.9 (0.3)	3.2 (0.4)	1.0	100.0
Georgia	66.0 (1.8)	18.2 (1.7)	9.0 (1.3)	3.6 (0.4)	2.5 (0.5)	0.8	100.0
Hawaii	54.2 (2.7)	22.9 (3.0)	14.7 (2.2)	4.3 (0.8)	3.4 (0.9)	0.7	100.0
Idaho	78.6 (2.8)	8.8 (1.7)	5.3 (1.2)	3.9 (0.7)	2.8 (0.8)	0.7	100.0
Illinois	66.2 (1.8)	18.1 (1.7)	8.3 (1.0)	4.5 (0.4)	2.1 (0.4)	0.8	100.0
Indiana	69.1 (2.3)	12.6 (1.9)	8.9 (1.4)	4.9 (0.6)	3.4 (0.7)	1.0	100.0
Iowa	70.2 (2.7)	12.5 (1.8)	7.5 (1.5)	5.3 (0.7)	3.7 (0.8)	0.8	100.0
Kansas	69.8 (2.3)	13.8 (1.8)	8.2 (1.7)	4.3 (0.8)	3.1 (0.6)	0.8	100.0
Kentucky	67.9 (2.5)	10.4 (1.6)	8.3 (1.5)	7.5 (0.9)	4.9 (0.9)	1.1	100.0
Louisiana	69.3 (2.2)	16.1 (2.2)	6.2 (1.4)	3.5 (0.7)	3.9 (0.8)	1.0	100.0
Maine	55.2 (3.8)	14.0 (2.3)	13.0 (2.4)	10.4 (1.5)	6.2 (1.1)	1.2	100.0
Maryland	48.5 (2.4)	26.0 (2.4)	14.6 (1.6)	7.0 (0.8)	3.2 (0.7)	0.7	100.0
Massachusetts	47.2 (2.1)	27.4 (2.2)	14.6 (1.6)	6.0 (0.5)	4.1 (0.7)	0.7	100.0
Michigan	63.7 (2.1)	14.7 (1.6)	10.0 (1.4)	7.0 (0.7)	4.0 (0.6)	0.6	100.0
Minnesota	63.8 (2.0)	17.1 (2.0)	8.4 (1.1)	5.7 (0.6)	4.5 (0.8)	0.5	100.0
Mississippi	75.5 (2.7)	11.3 (2.1)	6.0 (1.4)	3.6 (0.6)	2.3 (0.6)	1.2	100.0
Missouri	69.8 (1.9)	12.6 (1.7)	9.0 (1.4)	4.7 (0.6)	2.9 (0.6)	0.9	100.0
Montana	64.6 (3.2)	13.6 (2.2)	8.6 (1.8)	7.6 (1.0)	4.5 (1.0)	1.1	100.0
Nebraska	67.8 (2.6)	18.3 (2.4)	7.1 (1.4)	3.7 (0.6)	2.4 (0.6)	0.6	100.0
Nevada	73.4 (2.3)	15.6 (2.3)	5.9 (1.2)	1.6 (0.4)	2.4 (0.6)	1.0	100.0
New Hampshire	49.9 (2.4)	22.5 (2.8)	13.9 (2.1)	9.1 (1.3)	4.0 (0.8)	0.6	100.0
New Jersey	48.8 (2.1)	25.8 (2.2)	13.9 (1.7)	6.4 (0.6)	4.4 (0.7)	0.7	100.0
New Mexico	76.5 (2.7)	12.1 (2.0)	4.8 (1.3)	2.4 (0.6)	3.0 (0.9)	1.2	100.0
New York	46.7 (1.4)	23.6 (1.4)	15.6 (1.1)	6.9 (0.4)	6.1 (0.6)	0.9	100.0
North Carolina	64.7 (1.8)	16.7 (1.9)	8.9 (1.2)	5.2 (0.5)	3.8 (0.7)	0.8	100.0
North Dakota	58.2 (3.5)	17.5 (2.8)	16.4 (2.4)	4.3 (1.0)	3.1 (0.7)	0.5	100.0
Ohio	65.6 (1.9)	14.4 (1.7)	8.3 (1.2)	7.1 (0.6)	3.7 (0.6)	0.8	100.0
Oklahoma	77.5 (2.3)	11.5 (2.0)	4.9 (1.0)	2.8 (0.5)	2.6 (0.7)	0.7	100.0
Oregon	66.6 (2.4)	16.6 (2.2)	6.8 (1.2)	5.5 (0.8)	3.9 (0.8)	0.6	100.0
Pennsylvania	51.4 (1.7)	20.5 (1.7)	13.1 (1.4)	9.7 (0.6)	4.5 (0.6)	0.9	100.0
Rhode Island	53.9 (3.0)	21.7 (2.7)	10.6 (1.9)	8.6 (1.0)	4.7 (0.9)	0.6	100.0
South Carolina	61.9 (2.5)	16.1 (2.2)	9.2 (1.5)	7.7 (0.9)	4.2 (0.8)	0.9	100.0
South Dakota	71.7 (2.9)	13.8 (1.9)	7.4 (1.6)	1.9 (0.5)	3.9 (0.9)	1.3	100.0
Tennessee	68.0 (1.9)	13.6 (1.7)	8.3 (1.2)	6.1 (0.5)	2.9 (0.6)	1.1	100.0
Texas	71.5 (1.3)	16.9 (1.3)	5.8 (0.7)	2.7 (0.3)	2.3 (0.4)	0.8	100.0
Utah	72.8 (2.4)	15.1 (1.9)	8.2 (1.4)	1.4 (0.4)	1.9 (0.6)	0.6	100.0
Vermont	51.0 (2.5)	17.1 (2.6)	9.9 (1.6)	11.6 (1.2)	9.3 (1.5)	1.1	100.0
Virginia	56.4 (1.9)	20.5 (1.7)	10.4 (1.2)	7.7 (0.6)	4.4 (0.7)	0.6	100.0
Washington	65.0 (1.8)	17.5 (2.0)	10.4 (1.4)	4.1 (0.5)	2.3 (0.5)	0.7	100.0
West Virginia	63.4 (3.2)	13.3 (2.2)	8.0 (1.8)	9.5 (1.3)	4.4 (1.0)	1.3	100.0
Wisconsin	62.2 (2.2)	15.5 (1.9)	9.2 (1.0)	8.2 (0.7)	4.2 (0.7)	0.8	100.0
Wyoming	77.2 (2.3)	12.4 (2.1)	4.4 (1.4)	3.5 (0.8)	2.0 (0.6)	0.6	100.0

See notes on next page.



NOTES: Small-area statistical modeling techniques were used to combine National Health Interview Survey (NHIS) data collected from within specific geographies (states and some counties) with auxiliary data that are representative of those geographies to produce model-based estimates. Estimates for the 50 states and the District of Columbia were modeled using the procedures described in previous National Health Statistics Reports (e.g., <http://www.cdc.gov/nchs/data/nhsr/nhsr039.pdf>), with a few modifications.

- Models were based on three 12-month periods (2018-2020).
- LASSO regression models (least absolute shrinkage and selection operator) were used to select the best set of covariates for the models.
- Potential covariates originally drawn from infoUSA.com were dropped in favor of additional covariates from the American Community Survey (ACS) on internet and smartphone use.
- Due to the impact of the COVID-19 pandemic on data collection, the Census Bureau did not release 1-year estimates for the 2020 American Community Survey. Therefore, ACS data from 2017-2019 were used as covariates. Data from the 2017 ACS were used as covariates in the model for direct estimates derived using data from the 2018 NHIS, 2018 ACS data were used in the model for 2019 NHIS data, and 2019 ACS data were used in the model for 2020 NHIS data.
- The proportion of adults living in households with no telephone service (“phoneless adults”) was not modeled. Other proportions were adjusted so that this estimate agreed with the 2019 ACS estimate for this proportion. 2020 ACS estimates for this proportion are not available due to the impact of the COVID-19 pandemic on ACS data collection.
- The variances for the direct estimates were computed using in-house rather than publicly available sample design variables.

In 2019, the NHIS underwent a questionnaire redesign to better meet the needs of data users. The redesigned NHIS classifies telephone status for adults rather than households. The modeled estimates reported here for 2020 are for adults aged 18 and over who are wireless-only, wireless-mostly, dual users, landline-mostly, and landline-only instead of adults aged 18 and over *living in households* that are wireless-only, wireless-mostly, dual-use, landline-mostly, or landline-only. The direct estimates used in the models for 2019 and 2020 follow the person-level classification of telephone status. However, the direct estimates used in the models for 2018 follow the previous household-level classification of telephone status.

Caution is warranted when interpreting telephone status estimates from 2020. Due to the COVID-19 pandemic, NHIS data collection switched to a telephone-only mode beginning March 19, 2020. This change had little impact on Quarter 1 of 2020 (January–March), but there were lower response rates and differences in respondent characteristics for Quarters 2, 3, and 4 of 2020 (April–December). Telephone-only data collection led to an over-representation of more affluent households, including a greater proportion of homeowners, among the participating sample in Quarter 2. Personal visits to households resumed in selected areas in July 2020 and in all areas of the country in September 2020. However, cases were still attempted by telephone first and a majority were completed by telephone.

Survey weights were adjusted to account for changes in respondent characteristics due to overall changes in the 2020 data collection. However, phoneless households (i.e., those with neither wireless nor landline telephones) generally could not be interviewed in Quarter 2. Caution should be used in interpreting differences observed in estimates between 2020 and earlier time periods.

Additionally, due to concerns about possible loss of coverage and lower response rates typically associated with telephone interviewing, approximately half of the original sample allocated for the last five months of 2020 was replaced with adults who completed the 2019 NHIS interview. Estimates in this table do not include 2020 data from the reinterviewed sample. The overall sample size for 2020 is therefore smaller than for previous years.

Small-area statistical modeling assumes that the design-based estimates of variance are stable and that the direct estimates are unbiased. Users are cautioned that the approach used to create the model-based estimates can produce substantially biased prevalence estimates and unstable variance estimates when the direct estimate from NHIS is based on small sample sizes, when that sample is drawn from only a few geographic areas, and when those few geographic areas are not representative of the state of interest.

SOURCES: NCHS, National Health Interview Survey, 2018–2020; and U.S. Census Bureau, American Community Survey, 2017–2019.

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