STATEMENT OF WORK (SOW)

FOC Installation Projects B675 to B55 & B990 to B28

JBSA-Randolph AFB, San Antonio TX

22 April 2026

U.S. Air Force 502d Communications Squadron Telecommunications Infrastructure

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1.0 SCOPE

Communications outside plant infrastructure expansions are critical to ensure premium exchanges of voice, data, and security transmissions directly supporting AETC and Air Force missions worldwide. Buildings 990 and 675 are essential Core Nodes that ensure Base Agencies and Mission Partners support through the installation and patching of circuits to feed newer systems such as Environmental Management Control System (EMCS), Intrusion Detection System (IDS), and growing new requirements. This installation will replenish the current saturated circuit capacity between the two nodes and diminish multiple daisy-chained cables which are not in accordance with current Air Force standards. Available infrastructure capabilities are paramount for the 502d Air Base Wing (ABW) and 502d Communications Squadron (CS)being able to provide the "Premiere Installation Support" that is expected.

This is a firm fixed price contract in which the Contractor shall provide non-personal services, to include all personnel, equipment, tools, supervision, and other items and services necessary to complete the requirement under paragraph 4.0. All work shall be performed in accordance with industry and commercial practices, using commercial/industry standard equipment, materials, supplies and tools, and all work shall be performed in accordance with all applicable laws, regulations, and instructions. Copies of all required licenses, certificates, and permits shall be provided to the Government upon request.

2.0 GENERAL REQUIREMENTS

2.1 Safety Requirements

2.1.1 Site Coordination

The Contractor shall meet with the base safety officer immediately upon arrival on site for review of the specific safety requirements prior to installation. The 502d Communications Squadron (CS) Project Manager (PM) will coordinate the meeting.

2.1.2 Confined Space

The Contractors and Subcontractors entering spaces on JBSA-Randolph, TX are responsible for the safety of their personnel and for their own permit space program as outlined in DEPARTMENT OF THE AIR FORCE MANUAL (DAFMAN) 91-203, dated 25 March 2022 (www.e-publishing.af.mil). The primary Contractor is responsible for all Subcontractor confined space operations.

2.1.3 Accident/Incident Reporting and Investigation

The Contractor shall record and report all available facts relating to each instance of injury to either Contractor or Government personnel to the Base Safety Office and Contracting Officer unless otherwise stated in the SOW. The Contractor shall secure the scene of any accident and wreckage until released by the accident investigative authority through the Base Point of Contact (POC). If the Government elects to conduct an investigation of the incident, the Contractor shall cooperate fully and assist the Government personnel until the investigation is completed.

2.1.4 Work Area(s)

At day's end, the Contractor shall remove all debris and surplus materials from the workplace. Safety barriers shall be in place to protect unfinished work sites at the end of the day. All open holes or trenches shall be completely enclosed by flexible orange construction safety fencing, or other safety barriers, at the end of the workday. On work sites outside the base perimeter, the Contractor shall coordinate with (and abide by the requirements of) the appropriate local, state, and federal agencies to ensure work areas are safe at day's end.

2.1.5 Project Residue

All residue from this project shall be disposed of off base and IAW federal, state, local and base environmental laws, and regulations. All residue produced by horizontal directional boring operations (i.e., slurry) shall be disposed of off base on the same day the residue is produced, at

an appropriate disposal facility at the Contractor's expense, IAW federal and state environmental laws and regulations. Under no circumstances will the Contractor stage or store boring residue in slurry ponds or other containment areas on JBSA-Randolph, TX.

2.1.6 Traffic Control

In the event base vehicular traffic is to be disrupted by trenching or horizontal directional boring, the Contractor shall **notify the Contracting Officer and 502 CS PM** no later than **(NLT) 21 business days in advance** to inform base Security Forces and Emergency Services personnel of the planned disruptions. On work sites outside the base perimeter, coordinate any traffic disruptions with local authorities.

2.2 Security Requirements

2.2.1 Secured Space Access

Stated work and associated products shall be performed at the UNCLASSIFIED level. There are no security clearance requirements for Contractor employees. However, some of this work may take place in secure areas where Contractor employees must be escorted at all times. While working in secure areas, Contractor employees will be required to adhere to local security procedures (i.e.: sign-in/sign-out of secure areas, remain within line-of-sight of government escort, restricted or no use of wireless communications, etc.). **The Contractor shall coordinate access with the Contracting Officer and 502 CS PM to secure areas at least 3 business days ahead of time. It is the Government's responsibility to provide escorts.**

2.2.2 Operational Security (OPSEC)

Network infrastructure drawings (MHDS, MH / HH locations, fiber paths, etc.) are on the 502 CS Critical Information List and must be protected. The Contractor shall take appropriate measures to protect detailed information pertaining to the Furnish, Install and Test (FI&T) effort, to include appropriate marking of documents as "Controlled Unclassified Information (CUI)," and ensuring limited distribution of documents and schematics/drawings to only those individuals with a valid need to know. IAW AIR FORCE INSTRUCTION (AFI) 10-701, OPERATIONS SECURITY (OPSEC), dated 23 July 2019 (www.e-publishing.af.mil). **The Contractor shall develop an OPSEC plan to ensure the protection of CUI data either furnished by the Government or produced by the Contractor. The OPSEC plan should be available upon request.**

2.3 Submittal (S) Summary

2.3.1 General Information

Submittals are directed for the convenience of the Government in reviewing the Contractor's planned approach and compliance with the requirements of the contract. It is also a mechanism whereby the Contractor may propose deviations, color choices, as-built drawings, etc., at an early

point in the contract where changes in approach will have less impact on the materials ordering process.

2.3.2 AF 3000

All submittals are subject to Government acceptance and approval utilizing the AF 3000 Form. Submittals shall meet professional standards, and the requirements set forth in this SOW. All submittals shall be produced using recommended software tools/versions as accepted by the Government. Reference 7.3, Appendix C. Table of Submittals of this SOW.

2.3.3 Submittal Description (SD)

Submittal descriptions (SD) below are required and further described in other sections of the SOW.. Other requirements pertaining to submittals are included in individual sections of the SOW. Submittal Description (SD) numbers and titles as follows:

2.3.3.1 SD-01 Preconstruction Submittals

Submittals which are required prior to start of construction (work) issuance of contract notice to proceed, or commencing work on site, or the start of the next major phase of the construction on a multi-phase contract, includes schedules, tabular list of data, or tabular list including location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.

- Certificates of insurance
- Surety bonds
- List of proposed Subcontractors
- List of materials
- Construction progress schedule
- Submittal register
- Safety plan
- Performance schedule
- Quality Control (QC) plan
- Environmental protection plan
- Traffic Control plan

2.3.3.2 SD-02 As-Built Drawings (S)

Drawings, diagrams and schedules specifically prepared to illustrate work completed.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

2.3.3.3 SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work. Samples of warranty language when the contract requires extended product warranties.

2.3.3.4 SD-04 Test Results/Reports (S)

Reports signed by authorized officials of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accordance with specified requirements. Unless specified in another section, testing must have been within three years of date of contract award for the project.

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipping to the job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Final acceptance test and operational test procedure.

2.3.3.5 SD-05 Certificates (S)

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that the product, system, or material meets specification requirements. Must be dated after the award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer or Subcontractor through Contractor & SOW. The purpose of the document is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Permit-required confined space entry permits. Text of posted operating instructions.

Calibration certificate

2.3.3.6 SD-06 Manufacturer's Instructions (S)

Preprinted material describing the installation of a product, system or material, including special

notices and Safety Data Sheet (SDS) concerning impedances, hazards and safety precautions.

2.3.3.7 SD-07 Operation and Maintenance Data (S)

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel, including manufacturer's help and product line documentation necessary to maintain and install equipment. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item. This data is intended to be incorporated in an operations and maintenance manual or control system.

2.3.3.8 SD-08 Closeout Submittals (S)

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Submittals required for Guiding Principal Validation (GPV) or Third-Party Certification (TPC).

Special requirements are necessary to properly accept the work done by contractor IAW with SOW and properly close out the contract. For example, Record Drawing, Final Testing, and as-built drawings, etc. Also, submittal requirements that are necessary to properly close out a major phase of construction on a multi-phase contract.

2.3.3.9 SD-09 Plans (S)

Information/ documentation the Contractor has to provide to show the execution of particular phase of project, this include but not limited to Waste Management, Quality Control, Environmental, etc.

A. Environmental Compliance

The Contractor shall comply with the most stringent environmental federal, state, and local laws and regulations, and Air Force policies, instructions, and plans. The federal Government is not exempt from compliance with environmental regulations. The Contractor shall maintain an awareness of changing environmental regulatory requirements to avoid environmental deficiencies for activities on JBSA-Randolph, TX. If applicable, the Contractor shall ensure their subcontractors comply IAW JBSA Hazardous Waste Management Plan, Section 3.1.4.1 of the JBSA Environmental Specifications and any other regulations found under section 7.1 Appendix A.

B. Soil Testing (S)

All excavated soil must be reused on site or removed from the installation at the completion of the project. No permanent stockpiling of soil is authorized. Based on characterization, soil must be transported to a disposal location approved by 802 Civil Engineering Squadron (CES). Prior to soil removal, the Contractor shall perform the following test methods and analytical

parameters for every 200 cyd (cubic yard) of soil that is to be removed from JBSA:

a) Resource Conservation and Recovery Act (RCRA) 11 metals (method 3W 7000 series, Totals analysis and, Toxicity Characteristic Leaching Procedure (TCLP) extraction)
b) Organochlorine Pesticides/Polychlorinated Biphenyl (PCBs) (method SW 8080, total analysis and, TCLP extraction)
c) Semi-volatile organic Compounds (SVOCs) (method SW 8270, TCLP extraction)
d) Volatile Organic Compounds (VOCs) (method SW 8260 TCLP extraction)
e) Non-halogenated Organics (SW 8015, TCLP extraction)
f) Total Petroleum Hydrocarbons (TPH) (TX method 1005)

The contractor shall submit all analytical results to 502CES/CEIS for review prior to removal of soil from area specific location. The Contractor shall request and receive an approved digging permit prior to trenching and/or boring.

A. Soil Removal

Once the soil has been tested **but prior to removal,** the Contractor shall:

1. Submit to the Government Lab results for signature approval from the Hazardous Waste Program Manager
2. Submit signed Profile and Lab Results to Landfill for approval Hazardous Waste Program Manager
3. Once approved by Landfill pick up the manifest and send to the Government for Hazardous Waste Program Manager Signature
4. Manage the waste.
5. Ensure that Hazardous Waste Program Manager receives the final Landfill signed copy.

B. Texas Pollutant Discharge Elimination System (TPDES)

As required by Base Civil Engineer (BCE), the Contractor shall obtain approvals for TPDES under provisions of Section 402 of the Clean Water Act and Chapter 26 of the Texas water Code. The storm water/environmental plan is the sole responsibility of the Contractor. Base Civil Engineering/CEV will review and advise to ensure minimum standards and storm water controls/BMPs are in place to ensure compliance. The Contractor shall implement storm water controls/BMPs to ensure sediment, due to storm water runoff, does not enter storm drainage channels and/or inlets.

The Contractor shall conduct an initial meeting **within 10 business days of the Contractor site survey** with the base environmental office to identify TPDES preparations and/or the storm water/environmental plan.

The Contractor shall review the TPDES requirements applicable to the base; develop a plan to comply with the TPDES; obtain approval of the TPDES plan from all appropriate

government agencies; and comply with any other applicable state requirements for construction.

The Contractor shall implement, monitor, and manage the National Pollutant Discharge Elimination System (NPDES) Plan.

C. Recycling

i. General Information

Numerous Executive Orders direct all federal activities to develop and implement a mandatory recycling program. Recycling across JBSA is focused on the elimination of recyclable materials from the trash and burial in a landfill. DOD mandates diversion of 60% of all non-hazardous solid waste generated by Construction and Demolition projects and the diversion of 50% of all other non-hazardous solid waste through recycling or reuse. Contractors shall be responsible for recycling or disposing of all solid waste generated by their activities.

ii. Point of Contact

Contact the Recycling Program Manager at 210-671-4800/4838 for assistance.
It is the contractor's responsibility and requirement to coordinate all communications and documentation with 502 CES/CEIE Environmental Offices through the 502 CS PM.

D. Recyclable Materials

Recyclable Materials include, but are not limited to items such as asphalt, concrete, wood, used oils, newspapers, magazines, books, phonebooks, paper, envelopes; ferrous and non-ferrous scrap metal; glass bottles; all plastics; Corrugated cardboard; and items such as toner cartridges, batteries and wooden pallets. With prior coordination with the CO and JBSA Qualified Recycling Program, the Contractor may provide scrap metals to JBSA for recycling. JBSA accepts the following for recycling: Scrap Metal; cardboard; aluminum cans; paper; plastic (resin ID# 1 & 2); wood pallets; and ink & toner cartridges.

Recycled metal that has tested positive for lead based paint will require a waste manifest, weight ticket, and certificate of disposal from the selected recycling facility.

E. Compressed Cylinders

Compressed gas and liquid fuel cylinders MUST NEVER be placed into any containers, recycling bins in buildings, scrap metal dumpsters, or base refuse and trash dumpsters. Contact the Hazardous Waste Manager at 210-652-6204 for specific guidance on disposal of these items.

F. Waste Management

i. Waste Management Plan (S)

The contractor shall develop a Waste Management Plan (WMP). **A Waste Management Plan shall be submitted within the Environmental Protection Plan as mentioned in section 2.3.3.1.** The Waste Management Plan, refers to paragraph titled Submittals, shall include, but not be limited to, the following:

- Description and estimated quantities of the proposed job-site waste including construction and demolition debris to be generated.
- The name of the landfill(s) where solid waste will be disposed of, applicable landfill tipping fee(s), and the projected cost of disposing of all project waste in the landfill(s).
- Waste type and tonnage generated from project. This includes waste that is separated for re-use, salvage, recycling, or disposal; associated weights and estimated cost savings shall be reported to 502 CES monthly. This can be accomplished by presenting waste manifest, recycling center receipts, and certificate of disposal, etc.
- Cost information on the Waste Management Plan for solid waste disposal, recycling, and cost savings for wastes (weight/tons) diverted from the landfill to the 502 CES/CEIE monthly.

ii. Environmental Meetings

Project Managers shall meet with 502CE/ Environmental Management staff during the planning phase of the project to identify possible pollution prevention and solid waste diversion opportunities.

Integrated Solid Waste Management Plan (ISWMP) Implementation
The Contractor Shall:

- Designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Integrated Solid Waste Management Plan for the project.
- Distribute copies of the Integrated Solid Waste Management Plan to key personnel and submit the plan to the Contracting Officer as part of the Environmental Protection Plan (see Submittals section).
- Provide on-site instruction of appropriate separation, handling, and recycling, salvage, re-use, and return methods to be used by all parties.
- Lay out and label a specific area to facilitate separation of materials for potential recycling,

salvage, re-use, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials. Reduce the amount of solid waste generated through procurement of products with less or reusable packaging, buying only the amounts needed, investigating new recycling/re-use opportunities, and altering operations to reduce waste (e.g., using double-sided copies).

- Ensure safe and effective solid waste management through the proper storage

2.3.3.10 SD-10 Asbestos (S)

Materials to be disturbed inside and on the outside of this building, other than those with available sample results, should be assumed positive for asbestos containing material. **Therefore, an asbestos survey must be completed prior to starting work in applicable buildings as identified by the 502 CS PM. The results of the survey shall be submitted to the Contracting Office for 502CS PM review and 502CES/CEIS approval**. Any disturbance of this material by any abrasive or physical means, must be done by a Certified Asbestos Abatement Team. Samples must be collected and analyzed by an accredited and certified laboratory.

The contractor shall provide a copy of all asbestos surveys to the Contracting Officer for processing and acceptance by the JBSA Environmental Toxics office for areas to be disturbed during the installation of fiber optic cables and devices. We recommend the following: AEHS Inc, 210-656-9300, Environmental Occupational Solutions 210-495-1918, Astex Environmental Services 210-828-9800.

2.3.3.11 SD-11 Permits (S)

The Contractor shall obtain, and process all permits as required to complete the work contemplated herein.

- **DAF 103**, *Base Civil Engineering Work Clearance Request* (Digging permit), shall be submitted through base civil engineer **21 business days in advance of digging activities. A copy of the approves DAF 103 shall be submitted to the Contracting Officer within 48hrs after approval.**
- **DAF 1024,** *Confined Spaces Entry Permit*, shall be coordinated through base safety office **5 business days in advance.** The Contractor shall be prepared to provide proof of their Confined Space Entry Safety training program, along with the DAF Form 1024, to base safety. **A copy of the approved DAF 1024 shall be submitted to the Contracting Officer within 48hrs after approval.**
- The Contractor shall bore and/or trench, excavate, & mark and barricade any open trenches and pits IAW Occupational Safety & Health Administration (OSHA) Code of Federal Regulations (CFR) 29 Part 1926, Subpart P – Excavations.
- **All utility markings, flags, etc. shall be maintained after initial identification.** The Contractor is responsible for ensuring the DAF Form 103 remains current. The Contractor

shall take precautions to protect existing utility/infrastructure. If existing utility is severed or damaged due to neglect or if attributed to the fault of the Contractor, then the Contractor shall repair and return the utility/infrastructure back to the same condition it was in prior to the damage.

- **Contractor shall submit a monthly AF103 to the Contracting Office and 502CS PM no later than the 15th of month.**

2.3.3.12 SD-12 Integrated Project Team (IPT) (S)

A weekly IPT meeting will take place that includes Contractor representatives (primary Contractor's PM and Site Lead), the 502 CS PM, Contracting Office representative(s), and all other base stakeholders as requested. The purpose of the IPT meeting is to discuss project progress, problems being encountered, and other necessary information to ensure success and timely completion of contract requirements. The Contracting Office will chair the first IPT and all sequential meetings will be chaired by the Primary Contractor PM. The IPT Meeting chair shall provide an agenda and teleconference capability for the duration of the project. The Contractor shall record and distribute meeting minutes **no later than 24 hours after IPT meetings utilizing the minute format provided by the Contracting Office.**

2.3.3.13 SD-13 Contractor Personnel

A. Project Management (S)

The Contractor shall provide the name and number of the Project Manager (PM) and alternate(s) responsible for executing the contract, as well as for ensuring continuity and handling validation results and complaints. This information should be submitted to the Contracting Officer no later than 5 business days after the award. The Contractor shall identify the Project Manager's or alternate's range of authority to act for the Contractor relating to daily contract operation. The Project Manager is not required to be on site; however, they must be available telephonically and attend all IPT meetings. The Contractor is responsible for keeping this information up to date whenever there are personnel changes.

B. Site Point of Contact (POC) (S)

The Contractor shall designate and provide the name and number of the Contractor's on-site team leader and alternate(s) as the Site POC for individual projects to the Contracting Officer no later than 5 business days after the award. The Site POC or alternate(s) shall be on site during duty hours until project completion. The Site POC shall be the interface for all work site communications with the Government, including quality, safety, and discrepancy matters. The contract manager or alternate shall have full authority to act for the Contractor on all contract matters

relating to the daily operation of this contract. The Contractor is responsible for keeping this information up to date whenever there are personnel changes.

C. Personnel Requirements

The Contractor shall have at least one Project Manager, Site POC (Lead On-Site Installer), or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the jobsite always during the performance of Contract work.

2.3.3.14 SD-14 Minimum Contractor Qualifications

A. Certification (S)

At a minimum, the lead on-site installer will be BICSI certified for the work being performed (copper and/or fiber)**. The contractor shall provide the certification to the Contracting Officer no later than 5 business days after receipt of the award for 502CS PM approval.** This Lead On-Site Installer can serve as the Site POC and shall be available during normal duty hours to meet on the installation within 1 hour with the CO or government PM to discuss problem areas**.**

B. Minimum Experience

The primary and sub-contractor (if any) shall have previous experience installing Fiber Optic Cabling on a military installation.

2.3.3.15 SD-15 Warranty (S)

The Contractor shall provide a 1-year warranty. The warranty period shall start from the date of system and/or project acceptance. **The Contractor shall provide written procedures and required information for warranty services to the Contracting Office at or prior to final site acceptance for 502 CS PM final acceptance approval.**

2.3.3.16 SD-16 Manuals and Practices (S)

If applicable, the Contractor shall provide the latest version of operation, installation, and maintenance manuals and practices/users guide for each system installed as provided by the original manufacturer with all new equipment to 502 CS PM at the final walkthrough.

3.0 INSTALLATION REQUIREMENTS

The Contractor shall install single mode, all dielectric, loose buffer tube, water blocked, OSP cable suitable for underground applications. The intent is to install the cable in one continuous length, to the extent that it is practical. The cable shall comply with industry standards regarding

manufacturers' cable marking, jacket, rip cords, water blocking, fiber color coding, jacketing materials, etc. In addition, the fibers shall comply with industry standards regarding mode field diameter, core cladding concentricity, attenuation, and dispersion characteristics at 1310 nm and 1550 nm.

3.1 Installation Standards

The Contractor shall install Customer-Owned Outside Plant Telecommunications Infrastructure IAW with **UFC 03-580-01, 21-010 USAISEC Outside Plant Design Criteria, and BICSI OSPDRM** which the Government will provide via Department of Defense (DoD) Secure Access File Exchange (SAFE) after receipt of award. Any deviation from the above installation standards must be submitted on a RFI for the 502 CS PM review and Contracting Officer's approval. Each cable installation and cutover shall be coordinated with the 502 CS PM. The sequence of installation is at the Contractor's discretion. For base standardization and maintenance, recommend using products which are interchangeable with Corning for fiber installations. Should the BICSI OSPDRM, USAISEC, and UFC 3-580-01 conflict, UFC 3-580-01 will supersede.

3.2 Underground Utilities Markings

The Contractor shall coordinate with base agencies to ensure markings are placed over existing base infrastructure prior to digging or directional drilling and shall take precautions to protect existing infrastructure. The contractor shall be responsible for the costs associated with repair of any damage caused during installation when the infrastructure is clearly marked. **The DAF Form 103 (digging permit) shall be submitted through Civil Engineering 21 business days in advance of digging activities. The contractor is responsible for maintaining all markings.**

3.3 Service Outages

The Contractor shall be responsible for preventing any unscheduled outages (i.e., cutting or disabling any in-service cables or equipment), contractor-caused, interruptions of communications capabilities that are properly identified. **The Contractor shall coordinate planned outages with the Contracting Office and 502 CS PM at least 30 business days in advanc**e of the outage if the implementation necessitates disruption of service (e.g., communications, electrical, or other utilities).

3.4 Installation Schedules (S)

The Contractor shall provide a complete milestone schedule that denotes project activities to include time-phased start and completion dates for the project and sub-projects associated with the installation of the components and system. A draft **installation schedule shall be provided with the Contractors proposal for review and acceptance by the government.**

3.5 Measurements

Distances provided in this document are approximations and <u>should NOT</u> be used for ordering materials (cable, ducts, inner duct, etc.) or determining duct lengths. The Contractor is required to perform their own measurement prior to installation and ordering of materials to determine exact distances.

3.6 Utility Separation

When communications ducts cross either power duct or buried power cable, maintain a minimum separation of 3 inches of concrete or 12 inches of well-tamped earth between the 2 or 12 inches of well tamped earth when parallel; for pipes (e.g., gas, water, oil) maintain 6 inches when crossing or 12 inches when parallel. This is IAW the NESC Rule 320B.

3.7 Spacers and Tracer Wire

Along the length of the duct run, if the ducts are installed by trenching, spacers shall be placed at 5-foot intervals and cable-warning tape shall be buried 1 foot below the surface and shall follow the duct route. The tape shall be a minimum of 3 inches wide and orange in color with the appropriate warning message. Sand shall be installed a minimum of 3” below conduit and 6" above conduit. Notify 502 CS PM 3 business days prior to QA inspection of the depth, sanding and cable marking. All new tracer wire installed for this project needs to have a wire nut and label installed at all wire ends, and those wire ends secured but not connected to grounds. The tracer wire shall be exposed, free from the conduit and capped (insulated). The tracer shall be secured and routed to the MH or HH neck to a point where maintenance personnel may access the wire without having to enter the MH / HH and tagged with a label indicating it as a "Duct Tracer Wire to xxx - Do Not Remove (where xxx is the other end of the wire)". Tracer wires shall not be connected to any grounding system. Tracer wire shall be pulled back from building entrances until it is underground to prevent lightning damage.

3.8 Paved Surface Crossings

The Contractor shall cut and restore, bore and /or trench, or punch in order to cross paved surfaces. Paved surfaces may be asphalt, concrete, brick, or some type of paving stone. Paved surfaces include roads, driveways, sidewalks, and parking lots. Paved surface crossings shall be IAW guidelines set forth by the BCE. At a minimum, grade of Polyvinyl Chloride (PVC) conduit at open trench paved surface crossings, or crossings which are planned for paving in the future, shall be Schedule 40 and shall be concrete encased. If horizontal directional drilling (HDD) is used, then it will be in compliance with commonly accepted telecommunications industry standards and practices relative to the installation, stabilization, and protection of conduits through a bore under a paved surface.

3.9 Existing Maintenance Holes

The Contractor shall be responsible for pumping out MH/HH. Water, mud and debris from MH/HH shall be disposed of IAW the Texas Pollutant Discharge Elimination System (TPDES**)**. Please see section 2.3.3.9(B)(B) of this SOW.

3.10 Quality Control

The Contractor shall establish and maintain an effective quality control (QC) system and support the Government through various inspections during this project. The Contractor shall provide or support the following "must see" section milestones through the installation of this project.

3.11 Materials Submittals/List of Material (LOM) (S)

The Contractor shall provide a complete list of material to include type/brand as identified in this Statement of Work that will be utilized/installed to complete this requirement. **To receive the Notice to Proceed, the contractor shall submit a LOM to the Contracting Office 10 business days after receipt of the award for review and approval by 502 CS PM.**

3.12 Installation Test Plan (S)

The Contractor shall provide a test plan to the Contracting Office 10 business days prior to starting installation for the 502 CS PM to review and accept, to show the system shall be pre-tested, in-progress-tested, post-tested, and cut-over plan to demonstrate to the Government that the system is fully operational and meets or exceeds the specified requirements and that the system is fully ready to be placed into service. The Contractor shall test the system to demonstrate its proper performance to the Government's Quality Assurance (QA) representative. These tests shall be accomplished prior to the system being placed into service.

3.13 Excavations

All excavations shall be inspected for compliance with applicable installation and safety directives. After material is placed, the Contractor shall inspect and document the installation. **The Contractor shall notify the 502 CS PM and Contracting Office, no later than (NLT) 3 business days, prior to backfilling to allow the 502 CS QA to inspect the installation for approval.** All QA discrepancies noted must be corrected prior to the Contractor backfilling.

3.14 Site Restoration/Debris Removal

The Contractor shall be responsible for surface restoration. Restoration at each location shall be subject to final inspection and approval by the BCE IAW guidelines set forth by the BCE.

The Contractor shall dispose of all residues from this project off base and IAW local and host base environmental laws and regulations.

The Contractor shall be responsible for grounds restoration to include, backfilling, soil compacting, reseeding, re-sodding or any other necessary material and services required to restore ground conditions to the original condition IAW with guidelines set forth by the BCE. The Contractor shall perform follow-up ground restoration, if that location is not up to its original condition due to surface settling or lack of turf germination or seeding.

3.15 Duct Rodding & Proofing

The Contractor shall schedule QA inspection with the 502 CS PM through the Contracting Office, NLT 3 business days, for rodding and proofing of all newly installed ducts to allow the 502 CS QA to inspect the installation for approval as found in section 3.1 Installation Standards of this SOW.

3.16 Mule Tape

The Contractor shall install a waterproof, corrosion resistant, pre-lubricated flat woven polyester mule tape with sequential footage markings (1250-lb pulling strength) in any vacant newly installed conduit for future cable installations. The mule tape shall extend into the maintenance holes/hand holes and be secured to a cable rack or pulling iron. The Government will verify installation.

3.17 Cable Racks and Cable Rack Supports

Cable racks shall be installed in new manholes, and maintenance holes as per UFC 3-580-01 Section 3-3.2.6. Cable Racks must be galvanized steel and not plastic in accordance with RUS Bulletin 1751F-643 and RUS Bulletin 1753F-151 found in the UFC reference. Splices shall not be supported by the cables that enter each end of the splice case. The splices shall be supported by cable hooks, secured with wrap lock or cable straps, under the splice case. Telecommunications industry standard cable hooks of the appropriate length shall be provided to support cables and splice cases. The cable hooks shall be secured using cable rack locking clips. All cables shall be supported using racking clips, cable racks, and cable hooks.

3.18 New Duct

New ducts shall be permanently labeled (stencil or spray paint) on the wall of each building / MH / HH indicating the connecting Building / MH / HH at the other end of the duct (for example, "To MH306H"). The same information shall appear on the Contractor's completed as-built drawings.

3.18.1 Bends and Sealing

Contractor shall install bends and seals IAW with UFC 3-580-01 Para 3-6.8.4 Bends and Sweeps as well as Para 3-6.8.7 Placement.

3.18.2 Entrance Conduits into New and Existing Maintenance Holes (MH) / Hand Holes (HH)

When new entrance conduits/ducts or sleeves are required, the Contractor shall core drill (from inside out) and install the necessary holes and install the ducts or sleeves, if knockout does not exist. Penetration shall not be in such a location through the wall as to block use of existing ducts in the MH / HH. New ducts will be a minimum of 12 inches from either the MH / HH floor or

ceiling, and minimum 4 inches from the side walls as approved by 502 CS PM. The minimum bending radius for entry conduit/ducts shall be no less than 10 times the inside diameter of the conduit. Ducts and openings around ducts shall be sealed to prevent moisture from entering the MH / HH with hydraulic cement.

Note: All new bellends installed in HH / MH shall be flush to wall.

3.19 Fiber Optic/Copper Splices

Contract will coordinate with Contracting Office and 502CS PM to have the Government QA ~~to~~ inspect the inside of the splice case before closure pressure testing with "dry air" is performed. A maintenance loop/coil of 75 feet of cable shall be provided on each cable entering and leaving a splice case in a MH or HH. Intermediate cable splices shall be minimized and consist of fusion splices in a high quality re-enterable splice case. Only splice closures intended for underground applications shall be used in the underground system. The Contractor shall use standard re-enterable fiber splice closures.
The closures shall have adequate strength to protect the splice and maintain cable shield electrical continuity in the below ground environment.

All splicing shall be performed IAW RUS Bulletin 1735F-401, Standards for Splicing Copper and Fiber Cable. The Core Alignment fusion splice method shall be used for all splicing and terminations of fiber optic cable.

3.20 Fiber Optic Terminations

Newly installed FOC shall be terminated on new Fiber Optic Distribution Panel (FODP) using no shorter than, LC-47'' Fan-Out Kit splice on connector method. All components will be interchangeable with Corning brand products as directed by 502 CS. Distribution panels shall be designed for rack mounting in 19 in. (48 cm) racks or wall mounted as required. Panels shall be sized according to cable and method of termination.

3.21 Testing (S)

The Contractor shall submit all test equipment and personnel required to conduct testing. The Contractor shall record all inspections and tests as they are accomplished and make all test sheets/results available for 502 CS PM as tests are completed. **The Contractor shall notify the 502 CS PM and Contracting Office at least 5 business days prior to any testing.** All testing will be IAW accepted telecommunications industry standards for the type of test being conducted and the testing requirements listed in UFC 3-580-01 section 3-9.7.3.1 as applicable. **The Contractor shall provide test reports to the 502 CS PM and Contracting Office within 10 business days of completing the testing.** Contractor is required to locate/repair any testing irregularities if caused by the installation at the Contractor's own cost. Any splicer's errors detected shall be corrected in the splice in which they were made. In the event fiber needs to be repaired after installation, a retest of all strands (not just the repaired strands) will be required. No cable faults or splicer's errors are allowed in the new cable. The Contractor is required to locate and repair cable faults or splicer's errors if caused by the installation.

3.21.1 Copper Testing (Not Applicable)

3.21.2 Fiber Optic Cable Tests (S)

All strands of all fiber optic cables shall be tested IAW UFC 3-580-01 section 3-9.7.3.1. As a minimum, the following tests shall be performed. Both the Optical Time Domain Reflectometer and Optical Power Meter tests will be used for all end-to-end circuits. Between FODPs, bi-directional testing at 1310 nm and 1550 nm is required. The Optical Time Domain Reflectometer **shall have minimum 1km "launch cable" for SM fiber and minimum 450 feet "launch cable" for MM fiber at both ends of cable.**

Testing of the Fiber Optic Cables on the reel shall be provided 14 business days prior to installation. **to the Contracting Office for the 502CS PM review and approval.** All Test reports will be in a sortable format and must show test measurement values and distances.

Note: The Contractor shall schedule all required cable testing 5 business days in advance.

3.22 Evaluating Existing Cable/Testing New Cable (S)

When the installation includes work on an existing cable, the installer shall test all affected pairs/strands before completing any throws or splices. **A list of the defective pairs shall be submitted within 3 business days of discovering defects before the work proceeds to the Contracting Office for 502CS PM review**. After the cable work is completed, the installer shall test all affected cable pairs/strands. The installer shall also clear trouble on any existing pairs that were not on the original list.

3.23 Labeling

The contractor shall, upon installation of the new FOC, re-label the entire FOC count from the CN to EB with the new information / counts / origination and destination IAW UFC 3-580-01 Para 3-9.8

3.24 Cable Tags

All tags shall be permanently labeled using a label maker or similar tag (handwritten tags are not permitted), easily visible and corrosion resistant. Cable tags shall be installed in all MH / HH, maintenance loops and FODP locations. When cables pass through MH / HH, put a tag on the cable, approximately 2 feet from each duct entrance and at each splice location. Information on the cable tag shall identify cable ID plus count and then by size plus type. The same information shall appear on the Contractor's completed as-built drawings submittal.

Example: 36L8.3F

FO 1050 - 3425, 1-36

First line: "36" stands for Fiber Count. "L" stands for Loose Tube Buffer or ("T") for Tight Tube Buffer. "8.3" stands for Single Mode. "F" stands for Filled Core (otherwise leave blank).

Second line and following: "FO" stands for Fiber Optic cable. "1050 - 3425" stands for from Building Number 1050 - To Building Number 3425. "1 - 36" stands for Cable/Strand Count.

3.25 FODP Marking

Panels are labeled alphabetically in descending order. The contractor shall use the next available space in alphabetical order. FODP shall be stenciled/marked with black ink or paint or adhesive backed decals in letters and numbers. If the manufacturer has not identified the sequence in which ports on FODPs (pigtail modules) are counted, the Contractor shall provide designation labels/strips to identify the sequence in which they are counted. Each splice tray shall be marked to identify the fiber count contained in the splice tray. The marking shall identify the FODP by number (building number) and cable ID (cable number and count).

Example: FODP-H

FO 3425-1050, 1-36

3.26 Final Acceptance

Final acceptance tests for cable facilities installed will be performed **IAW UFC 3-580-01 section 3-9.7.3.1 as applicable, and a 502 CS PM must be present at time of testing.** The contractor shall calculate passive Cable System Attenuation loss on the link(s) being installed. Calculated loss will total the sum of fiber cable attenuation coefficient (db/km) X Length (km), connector attenuation (db), and splice attenuation (db). This calculated loss shall accompany test readings and will be the maximum acceptable reading for the Government. All test results must be reviewed and approved by the assigned 502 CS QA representative prior to completion of this project. Any identified test results not meeting industry standards must be corrected, retested, and resubmitted to the official QA representatives for final review prior to payment by the US Government.

- **The Contractor shall schedule final testing with the 502 CS PM and Contracting Office 5 business days in advance**. The test equipment used will have a calibration certificate indicating calibration was completed within 1-year.

- **The calibration certificate (S)**

    - **Calibration Certificate will be provided at the time of testing. Final acceptance will be scheduled 5 business days in advance**.

3.26.1 Acceptance/Installation Test Report (S)

The Contractor shall provide an installation test report of the results of the testing

accomplished under the installation test plan. **Test report(s) shall be provided no later than 10 business days after test(s) to the 502 Contracting Office for 502CS PM approval.** The format of test report will be included in Test Plan for approval. The test report must be in a sortable format and must match time and date when test was completed.

3.26.2 As-Built Drawings (S)

The 502 CS shall supply existing system drawings if available. **The contractor shall provide as-builts drawing 10 business days prior to the final government inspection of MH / HH / TR to the Contracting Office for 502 CS PM approval.** The Contractor shall provide updated drawings in Visio for building, rack elevation and OSP. OSP shall additionally be provided in PDF format. These drawings shall depict the entire pathway and details of the installation, including but not limited to North indicator icon, labeling, cables, innerducts, geotextile fabric inner-duct, MH / HH, conduits, maintenance loops, distances, bores, trenches, and building entrances. **Detailed butterfly drawings will also be required**. If the existing cable diagram or butterfly drawings are not available, the Contractor shall create the missing cable diagram/ butterfly drawings to include all the components used in this project.

3.26.3 Geospatial Submittal (S)

The Contractor shall record/deliver geospatial data of new outside plant distribution system to the Contracting Office for 502CS PM approval and provide as-built documentation (shape files) of all new installed MH system components (including metadata) compatible with the CIPS CVC drawing system. Data points shall be recorded at the center of each MH / HH lid and at intervals not to exceed 25 feet along cable routes. Sufficient data points shall be recorded to capture any change in direction along the route. All GPS coordinates shall have +/- 3 feet accuracy for all readings. The Government is responsible for providing the Contractor with a copy of the installation's most current GeoBase CIP, and current CVC drawings of the areas of interest. The Government will review the shape files in CVC and transcribe the information to the CVC system. **Shape files shall be delivered upon project completion. Files shall be submitted prior to payment of completion of work to the Contracting Office for 502 CS PM.**

4.0 SPECIFIC REQUIREMENTS

The Contractor shall provide all equipment, tools, materials, supplies, transportation, labor, supervision, management, and other incidentals necessary to meet the requirements as stated in this SOW. **The Contractor shall comply with the current TIA telecommunication installation and testing commercial standard and base installation standards**. All equipment, supplies, and materials provided shall be new and not refurbished. The Contractor shall install SM, loose buffer tube, water blocked, OSP FOC suitable for underground applications. The intent is to install the cable in one continuous length, to the extent that it is

practical. **The cable will meet RUS 7 CFR 1755.900 criteria; will comply with industry standards regarding manufacturers' cable marking, jacket, rip cords, water blocking, fiber color coding, jacketing materials, etc.** In addition, the FOC will comply with industry standards regarding mode field diameter, core cladding concentricity, attenuation, and dispersion characteristics at 1310 nm and 1550 nm.

4.1 Outside Plant Requirements

This section describes the underground MH / conduit system, flexible geotextile multiple cell fabric inner-duct and fiber optic cable installation requirements. **The Contractor shall install Customer-Owned "Outside Plant Telecommunications Infrastructure" IAW UFC 03-580-01, 21-010 USAISEC Outside Plant Design Criteria, BICSI OSPDRM, and 758B Customer-Owned Outside Plant Telecommunications Infrastructure Standard**. Each cable installation shall be coordinated with the 502 CS so that the impact on the building users is properly coordinated. The sequence of installation is at the Contractor's discretion.

See Project Sketches **In section 8.0 Drawings/Diagrams** below for reference and estimated distances of existing and proposed infrastructure and cables routes. This is only a proposed solution. The Contractor is free to make any recommendations pertaining to the accomplishment of this requirement in their proposal.

4.1.1 Requirement #1 Fiber Expansion from Bldg. 675 to Bldg. 55

The Contractor shall install the following new infrastructure; one new manhole (MH) (6'W x 12'L x 7'H), eight (1) 4" conduit approximately 3,300 feet, eight 1-3x3" Geo-textile fabrics approximately 3,300 feet, and two (2) 12 ports Fiber Optic Distribution Panel (FODP). (Coordinate exact location with 502d CS/SCXP).

Note: A maintenance loop/coil of 75 feet shall be left available at the first MH from the building; at each splice point MH location; every change of direction; and at every third MH. The maintenance loop shall be properly labeled and securely supported by 2 cable hooks. Cable hooks are to be positioned so the highest one supports the underside of the top of the coil and the bottom hook supports the underside of the bottom of the coil.

4.1.1.1 Outside Plant Installation

This section describes the underground cables, flexible geotextile multiple cell fabric, innerduct and MH/HH plus conduit system installation requirements. The Contractor shall design and install Customer-Owned Outside Plant Telecommunications Infrastructure IAW UFC 3-580-01 Para 2-3 System Design Requirements each cable installation shall be coordinated with Contracting Office and 502 CS PM to minimize the disruption of work for personnel in the building. The sequence of installation is at the Contractor's discretion.

4.1.1.2 Conduit Systems and Inner-ducts Installation

The Contractor shall install the following new infrastructure: 1 new MH, one 4" conduit

approximately, 3,300 feet, one 3 X 3" Geo-textile fabrics approximately 3,300 feet.

4.1.1.3 Maintenance Hole / Hand Hole

The Contractor shall install (1) new maintenance hole (MH) at the location shown on Figure (3). The dimensions of the MH shall be 6'W x 12'L x 7' H. Coordinate exact new MH location with 502d CS/SCXP

NOTE: 502 CS PM shall provide final numbering/ID for the new MHs/HHs installed IAW this para.

4.1.1.4 Duct Bank Infrastructure

The Contractor shall install one 4" Schedule 40 conduit and HDPE (High Density Polyethylene) SIDR (Standard Inside Dimension Ratio) 11.5 conduit approximately 3,300 feet per the table below.

Note: Open trenching is not permitted. Installation of duct bank infrastructure must be done via directional bore method.

The Contractor shall install one 4" Schedule 40 conduit per the table below.

From Maintenance Hole	To Maintenance Hole	Quantity	Size (inches)	Approx. Distance (Feet)	Figure	Comment
ITN 675	MH-47	1	4	310	1,2,3	Install one 4" schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.
MH-47	MH-51	1	4	640	1,2,3	Install one 4" schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.

MH-51	MH-56	1	4	210	1,2,3	Install one 4" schedule 40 conduit. Open trenching is not permitted; directional bore method must be used.
MH-56	MH-58	1	4	275	1,2,3	Install one 4" schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.
MH58A	MH-182	1	4	465	1,2,3	Install one 4" schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.
MH-182	HH-182E	1	4	550	1,2,3	Install one 4" schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.
HH-182E	New MH-182F	1	4	400	1,2,3	Install one 4" schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.

New MH-182F	New entry point on NW side of building 55	1	4	450	1,2,3	Install one 4” schedule 40 conduits. Open trenching is not permitted; directional bore method must be used.

4.1.1.5 New Metallic Conduit Infrastructure (Not Applicable)

4.1.1.6 Geo- textile Fabric Installation

Install approximately 3,300 feet of Geo-textile fabrics IAW the following Table:

From Maintenance Hole	To Maintenance Hole/Building	Quantity	Approx. Distance (Feet)	Figure	Comment
ITN 675	MH-47	1	310	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.
MH-47	MH-51	1	640	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.
MH-51	MH-56	1	210	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.
MH-56	MH-58	1	275	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.
MH58A	MH-182	1	465	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.
MH-182	HH-182E	1	550	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.

HH-182E	New MH-182F	1	400	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.
New MH-182F	New entry point on NW side of building 55	1	450	1,2,3	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.

Note: Distances are approximate. The Contractor shall measure and verify all distances prior to installation. The Contractor shall provide notice a minimum of 3 business days to the 502 CS PM prior to working in all maintenance holes and CNs/EBs. The 3 business days' notice allows for scheduling of necessary escorts. Failure to provide the minimum time required could result in project delay at the Contractor's expense.

4.1.1.7 Fiber Optic Cable Installation

The Contractor shall install approximately 3,340 feet (maintenance loops not included) of 12-strand armored shielded FOC from Bldg. 675 to Bldg. 55.

Note: All fiber optic cables will be installed in new or existing innerduct.

The Contractor shall coordinate each cable installation with the 502 CS PM to minimize the impact on building users. The intent is to install the cable in one continuous length, to the extent that it is practical. The Contractor shall determine whether there is some practical reason for an intermediate splice in the cable at some maintenance hole/hand hole between the cable end points. If an underground splice is necessary, IAW commonly accepted telecommunications industry practices found in section 3.1 of this document for fusion splicing optical fiber cable and sealed with a splice case suitable for the application. If a splice case is installed in a maintenance hole/hand hole it shall be pressure tested IAW the manufacturer's instructions. If a splice case leaks, it shall be reinstalled and retested. A coil of 75 feet FOC shall be provided on each cable entering or leaving a splice case in a maintenance hole or hand hole.

4.1.1.8 Fiber Optic Cable Installation from Bldg. 675 to Bldg. 55

FROM	TO	Approx. Distance (Feet)	Notes
Bldg. 675	MH-47	310	Install inside new 3x3 maxcell

MH-47	MH-51	640	Install inside new 3x3 maxcell
MH-51	MH-56	210	Install inside new 3x3 maxcell
MH-56	MH-58	275	Install inside new 3x3 maxcell
MH-58	MH-58A	40	Install inside new 3x3 maxcell
MH-58A	MH-182	465	Install inside new 3x3 maxcell
MH-182	HH-182E	550	Install inside new 3x3 maxcell
HH-182E	New MH-182F	400	Install inside new 3x3 maxcell
New MH-182F	New EP on NW side of building 55	450	Install inside new 3x3 maxcell

4.1.1.9 Building Terminations

The Contractor shall furnish and install the following FODPs. Coordinate with 502 CS PM for location.

4.1.1.10 Bldg. 675

The Contractor shall install one (1) 12-port Fiber Optic Distribution Panel (FODP) on existing rack in the Comm. room of building 55. Terminate the 12-strand SM armored shielded FOC to the FODP using, no shorter than, LC-47'' Fan-Out Kit splice on connector method. Verify the locations of the equipment rack and the FODP with 502 CS PM

4.1.1.11 Bldg.55

The Contractor shall install one (1) 12-port Fiber Optic Distribution Panel (FODP) on existing rack in the Comm. Room of building 55. Terminate the 12-strand SM armored shielded FOC to the FODP using, no shorter than, LC-47'' Fan-Out Kit splice on connector method. Verify the locations of the equipment rack and the FODP with 502 CS PM

4.1.2 Requirement #2 Fiber Expansion from Bldg. 990 to Bldg. 28

The Contractor shall EFI&T new 12-strand SM FOCs from Bldg. 990 to Bldg. 28 at JBSA-Randolph.

4.1.2.1 Outside Plant Installation

The Contractor shall install the following new infrastructure; approximately 300 feet of one 4" Schedule 40 conduit, approximately 300 of one 3"x3" Geotextile maxcell, approximately 2,435 feet of 12- strand fiber optic Cable (FOC) and install two 12 port fiber distribution panels. Reference appropriate sections below and Section 8.0 Project Drawings/Diagrams, Figure 4 for details.

4.1.2.2 Conduit Systems and Inner-ducts Installation

The Contractor shall install the following:

Maintenance Hole (Not Applicable)

Duct Bank Infrastructure

The Contractor shall install one 4" Schedule 40 conduit per the table below.

From	To	Approx. Distance (Feet)	Quantity	Notes
MH-185	New EP on SE side of building 28	300	1	Open trenching is not permitted; directional bore method must be used.

4.1.2.3 New Metallic Conduit Infrastructure (Not Applicable)

4.1.2.4 Geo- textile Fabric Installation

Install approximately 300 feet of Geo-textile fabrics IAW the following Table:

From	To	Approx. Distance (Feet)	Quantity	Notes
MH-185	New EP on SE side of building 28	300	1	Install one-3x3" Geo-textile fabric (one cell must be detectable type) in the new 4" conduit.

Note: Distances are approximate. The Contractor shall measure and verify all distances prior to installation. The Contractor shall provide a minimum of 72hrs notice to the 502 CS PM prior to working in all manholes and ITBs/EBs. The 72hr window allows for scheduling of necessary escorts. Failure to provide the minimum time required could result in project delay at the Contractor's expense.

4.1.2.5 Fiber Optic Cable Installation

The Contractor shall install approximately 2,435 feet (maintenance loops not included) of 12-strand SM armored shielded FOC from Bldg. 990 to Bldg. 28 by utilizing new and existing infrastructure.

4.1.2.6 From Bldg. 990 to Bldg. 28

The Contractor shall install approximately 2,435 feet (maintenance loops not included) of 12-strand SM FOC from Bldg. 990 to Bldg. 28. Terminate 12-strand SM FOC in the new 12-port FODP in Bldgs. 990 & 28.

Note: All fiber optic cables will be installed in new or existing maxcell.

FROM	TO	Approx. Distance (Feet)	Notes
Bldg. 990	MH-103	280	In vacant innerduct
MH-103	MH-104	595	In vacant innerduct
MH-104	MH-181	375	In vacant innerduct
MH-181	MH-180	235	In vacant innerduct
MH-180	MH-180A	320	In vacant innerduct
MH-180A	MH-185	330	In vacant innerduct
MH-185	New EP on SE side of building 28	300	In new maxcell

4.1.2.7 Building Terminations:

The Contractor shall install the following FODPs. Coordinate with 502 CS PM for location:

A. Bldg. 990

The Contractor shall install one (1) 12-port Fiber Optic Distribution Panel (FODP) in existing rack in the Comm. room of Bldg. 990. Terminate the 12-strand SM armored shielded FOC to the FODP using, no shorter than, LC-47'' Fan-Out Kit splice on connector method. Verify the locations of the equipment rack and the FODP with 502 CS PM.

B. Bldg. 28

The Contractor shall install one (1) 12-port Fiber Optic Distribution Panel (FODP) in an existing rack of Bldg. 28. Terminate the 12-strand SM armored shielded FOC to the FODP using, no shorter than, LC-47'' Fan-Out Kit splice on connector method. Verify the locations of the equipment rack and the FODP with 502 CS PM.

5.0 GENERAL INFORMATION

5.1 Ordering of Materials

The Contractor shall order all material within 30 days after government review and acceptance of LOM. The Contractor shall notify the Contracting Officer of any materials deliveries estimated to be more than 30 days, without exception and provide proof of ordering and estimated shipment.

5.2 Period of Performance

The number of days for completion includes installation, ordering and delivery of all material, final cleanup of the premises, testing and approval of testing, and submission of all required submittals per SOW.

5.3 Place of Performance

The place of performance is JBSA-Randolph, TX.

5.4 Hours of Operation

The Contractor shall routinely work during normal duty hours M-F 0730 to 1630 hrs. However, mission requirements may necessitate work outside normal hours (nights and/or weekends), especially if existing service must be interrupted. Any site work requested outside of normal duty hours must be requested by the Contractor directly to the Contracting Officer, for approval. The Contracting Officer will consult with BCE on mission capability prior to approval of any unscheduled work.

5.5 Holidays/Down Days

The Contractor shall not perform under this contract on federal holidays or site-unique down-days unless expressly authorized by the Contracting Officer.

Federal Holidays	
25 May 2026	Memorial Day
19 June 2026	Juneteenth
3 July 2026	Independence Day
7 September 2026	Labor Day
13 October 2026	Columbus Day
11 November 2026	Veterans Day
26 November 2026	Thanksgiving Day
25 December 2026	Christmas Day

AETC Family Days	
22 May 2026	Friday
27 November 2026	Friday
24 December 2026	Thursday

5.6 Base Support

If Contractor requires a base laydown area for materials coordination with the 502 CS PM and approval through the base civil engineer group must occur. **Within 30 business days prior the contractor shall submit request for laydown area to the Contracting Officer for 502 CS PM to process through Base CE.**

5.7 Installation Access

- The contractor shall obtain base identification and vehicle passes, if required, for all contractor personnel who make frequent visits to or perform work on the Department of the Air Force installation(s) cited in the contract. Contractor personnel are required to wear or prominently display installation identification badges or contractor-furnished, contractor identification badges while visiting or performing work on the installation.
- The contractor shall submit a written request on company letterhead to the contracting officer listing the following: contract number, location of work site, start and stop dates, and names of employees and subcontractor employees needing access to the base. The letter will also specify the individual(s) authorized to sign for a request for base identification credentials or vehicle passes. The contracting officer will endorse the request and forward it to the issuing base pass and registration office or Security Forces for processing. When reporting to the registration office, the authorized contractor individual(s) should provide a valid driver's license, current vehicle registration, and valid vehicle insurance certificate to obtain a vehicle pass.

- During performance of the contract, the contractor shall be responsible for obtaining required identification for newly assigned personnel and for prompt return of credentials and vehicle passes for any employee who no longer requires access to the work site.
- When work under this contract requires unescorted entry to controlled or restricted areas, the contractor shall comply with [insert any additional requirements to comply with DAFI 31-101, Integrated Defense, and DODMAN5200.02_DAFMAN 16-1405 , Air Force Personnel Security Program] citing the appropriate paragraphs as applicable.
- Upon completion or termination of the contract or expiration of the identification passes, the prime contractor shall ensure that all base identification passes issued to employees and subcontractor employees are returned to the issuing office.
- The contractor shall provide an after-hours contact number or after-hours email in the Emergency Mass Notification System (EMNS) for each of their personnel, whose normal place of duty is on a DoD installation or within a DoD facility. The contractor shall comply with any additional requirements in DAFMAN 10-206 for emergency operational reporting. Foreign Nationals may participate and may remove themselves from the Emergency Mass Notification System at any time. To update information, personnel can access the globe icon on their system desktop screens and choose the "Access Self-Service" option.
- Failure to comply with these requirements may result in withholding of final payment.

5.8 Health and Safety on Government Installations

In performing work under this contract on a Government installation, the contractor shall:

1. Take all reasonable steps and precautions to prevent accidents and preserve the health and safety of contractor and Government personnel performing or in any way coming in contact with the performance of this contract; and

    a. Take such additional immediate precautions as the contracting officer may reasonably require for health and safety purposes

2. The contracting officer may, by written order, direct Department of the Air Force Occupational Safety and Health (AFOSH) Standards and/or health/safety standards as may be required in the performance of this contract and any adjustments resulting from such direction will be in accordance with the Changes clause of this contract.

3. Any violation of these health and safety rules and requirements, unless promptly corrected as directed by the contracting officer, shall be grounds for termination of this contract in accordance with the Default clause of this contract.

6.0 LABOR STANDARDS

6.1 Construction Labor Standards

The applicable Davis Bacon Act (DBA) wage determination applies to the SOW.

6.2 Service Labor Standard (Not Applicable)

7.0 APPENDICES

7.1 Appendix A. Applicable Standards

*The Contractor shall comply with **current** applicable commercial codes and standards.*

21-010 USAISEC Outside Plant Design Criteria 20210729 26 Oct FINAL-REVISED Jan (002)

OSHA CFR 29 Part 1910-268 – Telecommunications

OSHA CFR 29 Part 1926, Subpart P – Excavations

BICSI – Outside Plan Design Reference Manual (OSPDRM)

BICSI Telecommunications Design Methods Manual 15th Edition

BICSI Information Technology Installation Systems Methods Manual

ANSI/TIA-607-E Telecommunications Bonding and Grounding (Earthing) for Customer Premises

ANSI/TIA-569-E Telecommunication Pathways and Spaces

ANSI/TIA-758-B Customer-Owned Outside Plant Telecommunications Infrastructure Standard

RUS 1753F-601a Minimum Performance Specification for Fiber Optic Cables

RUS Bulletin 1735F-401 Standards for Splicing Copper and Fiber Cable

UFC 3-580-01 Telecommunications Interior Infrastructure Planning and Design with Change 1, 01 Jun 2016

UFGS Section 33 82 00 Telecommunications Outside Plant (OSP)

DAFMAN 91-203 Air Force Occupational Safety Fire and Health Standards

JBSA Environmental Specifications

JBSA Hazardous Waste Management Plan, Section 3.1.4.1

Section 402 of the Clean Water Act and Chapter 26 of the Texas Water Code

Note: The Government will use DoD SAFE to provide the awarded Contractor with a copy of publication(s) and applicable standards that are not publicly available or listed in the SOW without a URL link.

7.2 Appendix B. List of Acronyms

ANSI	American National Standards Institute
BCE	Base Civil Engineering
BICSI	Building Industry Consulting Services International
CDRL	Contract Deliverable
CFR	Code of Federal Regulations
CIPS	Cyberspace Infrastructure Planning System
CS	Communications Squadron
CUI	Controlled Unclassified Information
CVC	CIPS Visualization Component
DBA	Davis Bacon Act
FI&T	Furnish, Install and Test
FOC	Fiber Optic Cable
FODP	Fiber Optic Distribution Panel
FY	Fiscal Year
HDPE	High Density Polyethylene
IAW	In Accordance With
IPT	Integrated Process Team
JBSA	Joint Base San Antonio
MH	Maintenance Hole
MHDS	Maintenance Hole distribution System
MRTC	Medical Readiness Training Center
NLT	No Later Than
NPDES	National Pollutant Discharge Elimination System
OPSEC	Operational Security
OSHA	Occupational Safety & Health Administration
OSP	Outside Plant

PDF	Portable Document Format
PM	Project Manager
POC	Point of Contact
PVC	Polyvinyl Chloride
QA	Quality Assurance
RUS	Rural Utilities Service
SCA	Service Contract Act
SDS	Safety Data Sheet
SIDR	Standard Inside Dimension Ratio
SM	Single Mode
SWPPP	Storm Water Pollution Prevention Plan
TDH	Texas Department of Health
TIA	Telecommunications Industry Association
TPDES	Texas Pollutant Discharge Elimination System
TR	Telecommunication Room
UFC	Unified Facilities Criteria
UFGS	Unified Facilities Guide Specifications
USAISEC	U.S. Army Information Systems Engineering Command

7.3 Appendix C. Table of Submittals

SOW Reference	Contract Deliverable	Time Frame	Submitted To
2.3.3.9(B) Soil Testing	The contractor shall submit all analytical results to for review prior to removal of soil from area specific location.	Prior to removal of soil from area specific location.	502ces.ceiea.p2@us.af.mil, Contracting Office, 502CS PM

2.3.3.9(B)(*A*) Soil Removal	1. Submit to the Government Lab results for signature approval from the Hazardous Waste Program Manager (if applicable). 2. Submit signed Profile and Lab Results to Landfill for approval Hazardous Waste Program Manager. 3. Once approved by Landfill p/u manifest and send to the Government for Hazardous Waste Program Manager Signature. 4. Manage the waste. 5. Ensure that Hazardous Waste Program Manager receives the final Landfill signed copy. 6. **Submit final signed landfill manifests to Contracting Officer and 502 CS PM within 3 business days of receiving final signed Landfill manifest**	Prior to removal of soil from area specific location; within 3 business days of receiving final signed landfill manifest	Contracting Office, 502 CS PM

2.3.3.9(B)(*F*)(i) Waste Management Plan	A Waste Management Plan shall be submitted within the Environmental Protection Plan as mentioned in section 2.3.3.1.	Prior to start of construction (work) issuance of contract notice to proceed	Contracting Office, 502 CS PM
2.3.3.10 Asbestos	Therefore, an asbestos survey must be completed prior to starting work in applicable buildings and the results of the survey shall be submitted to the Contracting Office for 502CS PM review and 502CES/CEIS approval	Prior to starting in specified building	502ces.ceiea.p2@us.af.Mil, Contracting Office
2.3.3.11 Permits	DAF Form 103 (Digging permit) shall be submitted before digging activities (if applicable).	21 business days in advance of digging activities.	802 CES/502CES/902CES (depending base location)
	The Contractor shall be prepared to coordinate and provide AF Form 1024 (Confined Spaces Entry Permit) along with proof of Confined Space Entry Safety training program	5 business days in advance of confined spaces entry.	Base Safety Officer

	completion (if applicable).		
	Contractor shall submit a copy of the approve DAF103 to the Contracting Office later than 48-hours of approval DAF 103.	48-hours upon receipt of approval	Contracting Officer
	Contractor shall submit a copy of the approve DAF1024 to the Contracting Office later than 48-hours of approval DAF 1024.	48-hours upon receipt of approval	Contracting Officer

2.3.3.12 Integrated Project Team	The Contractor shall record and distribute IPT meeting minutes.	No later than 24 hours after IPT meetings.	Contractor Personnel and Government Personnel
2.3.3.13(A) Project Management	The Contractor shall provide the name, number, and range of authority of the Project Manager and alternate(s) responsible for contract performance and continuity.	No later than 5 business days after award.	Contracting Officer

2.3.3.13(B) Site Point of Contact (POC)	The Contractor shall provide the name and number of the Contractor's on-site team leader and alternate(s) as the Site POC.	No later than 5 business days after award.	Contracting Officer
2.3.3.14(A) Certification	The Contractor shall provide the BICSI certification.	No later than 5 business days after receipt of award.	Contracting Officer
2.3.3.15 Warranty	The Contractor shall provide a 1-year warranty. The warranty period shall start from the date of system and/or project acceptance. The Contractor shall provide written procedures and required information for warranty services.	At or prior to final acceptance.	Contracting Officer
2.3.3.16 Manuals and Practices	The Contractor shall provide the latest version of operation, installation, and maintenance manuals and practices/users guide for each system installed as provided by the original manufacturer with all new equipment.	At the final walkthrough.	502 CS PM
3.4 Installation Schedules	A draft installation schedule shall be provided with the Contractors proposal for review and acceptance by the government	With the Contractor's proposal	Contracting Officer

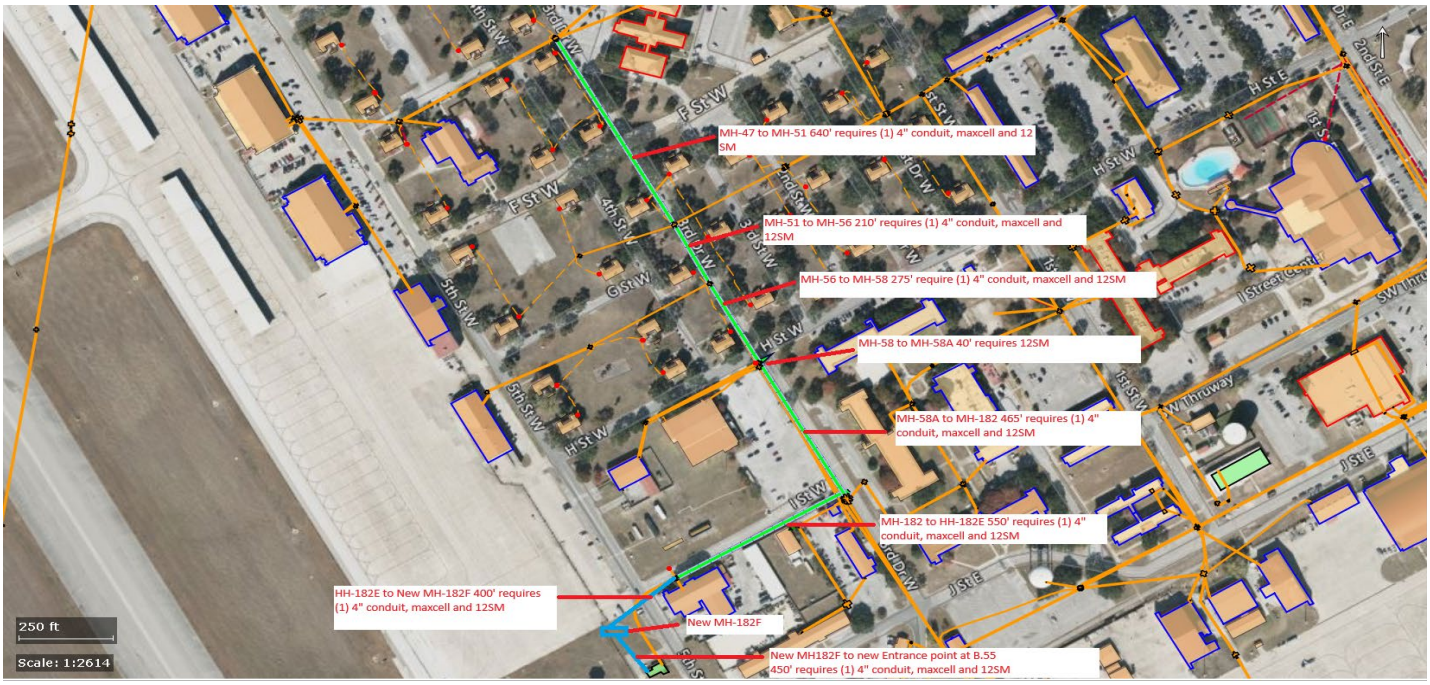
3.11 Materials Submittals/List of Material (LOM)	To receive the Notice to Proceed, the contractor shall submit a LOM to the Contracting Office 10 business days after receipt of the award for review and approval by 502 CS PM.	10 business days after receipt of the award	Contracting Office
3.12 Installation Test Plan	The Contractor shall provide a test plan to see how the system shall be pre-tested, in-progress-tested, post-tested and cut-over plan to demonstrate to the Government that the system is fully operational and meets or exceeds the specified requirements and that the system is fully ready to be placed into service.	10 business days prior to starting installation.	Contracting Officer
3.21 Testing	The Contractor shall provide test reports.	Within 10 business days of completing the testing.	Contracting Officer and 502 CS PM
3.21.2 Fiber Optic Cable Tests	The Contractor shall provide a test report of the Fiber Optic Cables on the reel.	14 business days prior to installation.	Contracting Officer and 502 CS PM
3.22 Evaluating Existing Cable/Testing New Cable	The Contractor shall provide (if applicable) a list of defective pairs/strands.	Within 3 business days of discovering defects before work proceeds.	Contracting Officer and 502 CS PM
3.26 Final Acceptance	The Contractor shall provide a calibration certificate for the test equipment indicating calibration was completed within one year.	At the time of testing.	Contracting Officer and 502 CS PM

3.26.1 Acceptance/Installation Test Report	The Contractor shall provide an installation test report of the results of the testing accomplished under the installation test plan.	No later than 10 business days after test(s) have been completed.	Contracting Officer
3.26.2 As-Built Drawings	The Contractor shall provide updated drawings in Visio for building, rack elevation, and OSP. Detailed butterfly drawings and geospatial data shall also be provided.	10 business days prior to the final government inspection of MH /Telecommunications Room (TR).	Contracting Officer
3.26.3 Geospatial Submittals	The Contractor shall record/deliver geospatial data and provide as-built documentation (shape files) of all new installed MH system components (including metadata) compatible with the Cyberspace Infrastructure Planning System (CIPS) Visualization Component (CVC) drawing system.	Files shall be submitted upon project completion prior to payment of completion of work.	Contracting Officer
5.6 Base Support	The Contractor shall submit a request for base laydown area for materials (if needed).	Submit at least 30 business days prior to the required laydown date.	Contracting Officer

8.0 DRAWINGS / DIAGRAMS

8.1 Figure 1: Fiber Optic Cable Route from Bldg. 675 to Bldg. 55

8.2 Figure 2: Fiber Optic Cable Route from Bldg. 675 to Bldg. 55



8.3 Figure 3: Fiber Optic Cable Route from Bldg. 675 to Bldg.55

8.4 Figure 4: Fiber Optic Cable Route from Bldg. 990 to Bldg. 28