STATEMENT OF OBJECTIVES (SOO)
For

FOC from ITB 146 to ITB 3311 to Bldg 3321 and to Bldg 3323

Goodfellow AFB, TX

25 April 2016

Prepared By

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Table of Contents

1.0 SCOPE.

This Statement of Objectives (SOO) defines the requirements for the Contractor to engineer, furnish, install, and test (EFI&T) single mode (SM) fiber optic cable (FOC) from Information Transfer Building (ITB) 146 to ITB 3311; and from ITB 3311 to Edge Building (EB) 3321, and EB 3323; and conduit systems. The contractor is required to EFI&T all associated equipment required to provide a turn-key solution to establish the fiber connectivity in all facilities as indicated in this SOO. All equipment, supplies, or materials provided shall be new and not refurbished. No equipment, supplies, and material, will be provided by the government.

2.0 REQUIREMENTS.

2.1 GENERAL REQUIREMENTS.

2.1.1 Safety Requirements.

2.1.1.1 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.

2.1.1.2 Confined Space.

The Contractors and Sub-contractors entering spaces on Goodfellow AFB, TX are responsible for the safety of their personnel and for their own permit space program as outlined in AFI 91-203. The primary Contractor is responsible for all Sub-contractor confined space operations.

2.1.1.3 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 unless otherwise stated in the SOO. 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.

2.1.1.4 Work Area (s).

At day's end, the Contractor shall remove all debris and surplus materials from the work place. Safety barriers shall be in place to protect unfinished work site 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 work day. 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.

2.1.1.5 Traffic Control.

In the event base vehicular traffic is to be disrupted by trenching or horizontal directional boring, the Contractor shall notify the 17 CS/SCXP PM NLT 10 calendar 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.

2.1.2 Security Requirements.

2.1.2.1 Security Clearances.

The Contractor shall be required to work in secure/controlled areas. The Contractor shall process a Site Access Letter (17 CS/SCXP PM). This letter shall identify the names, social security numbers, driver's license numbers and state of issue, and birth date of the personnel who will performing on this SOO for required background check by Goodfellow AFB Security Forces. During project implementation, the Contractor shall coordinate access to secure areas at least 24 hours in advance with the 17 CS/SCXP PM.

2.1.2.2 Operational Security (OPSEC).

Network infrastructure drawings (MHDS, MH/HH locations, fiber paths, etc.) are on the 17 CS Critical Information List and must be protected. The Contractor shall take appropriate measures to protect detailed information pertaining to the EFI&T effort, to include appropriate marking of documents as "For Official Use Only (FOUO)," and ensuring limited distribution of documents and schematics/drawings to only those individuals with a valid need to know. IAW AFI 10-701, OPSEC Considerations, the contractor shall develop an OPSEC plan to ensure the protection of FOUO data either furnished by the government or produced by the contractor.

2.1.3 Environmental Management.

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 Goodfellow AFB, TX. The Contractor shall ensure their Sub-contractors comply with these specifications.

2.1.4 Permits.

The Contractor shall complete and process all permits as required to complete the installation. For example:

- Digging permit, AF Form 103 shall be submitted through base civil engineer 21 calendar days in advance of digging activities.
- Confined space entry permit, AF Form 1024 shall be coordinated through base safety office 5 calendar days in advance. The Contractor shall be prepared to provide proof of their Confined Space Entry Safety training program, along with the AF Form 1024, to base safety.
- The Contractor shall obtain an approved Base Civil Engineering Work Request, AF Form 332, prior to any facility or maintenance modification.
- The Contractor shall trench, excavate, and mark and barricade open trenches IAW OSHA Standards.

2.1.5 Integrated Product Team (IPT).

The Contractor shall chair a weekly IPT meeting that includes Contractor representatives, the 38 ES Cyberspace Integrator-Base (CSI-B), the 17 CS/SCXP PM, and other base personnel as requested. The Contractor shall provide an agenda and a worldwide "Meet Me" teleconference capability for the duration of the project. The purpose of the IPT meeting is to discuss project progress, problems being encountered, and other information necessary/beneficial to ensure success and timely completion of contract requirements.

2.1.6 Quality Assurance.

The Contractor shall provide a Quality Control Plan for the life of the project. The Contractor's quality assurance evaluator shall assist the Government representative in performing random spot checks and system acceptance tests. The Contractor shall be responsible for identifying system and outside plant deficiencies and/or discrepancies throughout the life of the project. A weekly report (soft copy) shall be submitted indicating progress/status and listing any deficiencies/discrepancies found and actions to correct them.

2.1.7 Contractor Personnel.

2.1.7.1 Project Management.

The Contractor shall provide a Project Manager (PM) and alternate(s) responsible for contract performance and continuity. The Contractor shall identify the Project Manager's or alternate's range of authority to act for the Contractor relating to daily contract operation.

2.1.7.2 Site Point of Contact (POC).

The Contractor shall designate the Contractor's on-site team leader and alternate(s) as the Site POC for individual projects in their Site Visit Request Letter. 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.

2.1.7.3 Personnel Requirements.

The Project Manager, Site POC, and respective alternate(s) shall be able to read, write, speak, and understand English.

2.1.7.4 Enterprise Wide Contractor Manpower Reporting Application (ECMRA).

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract for the Goodfellow AFB via a secure data collection site. The contractor is required to completely fill in all required data fields using the following web address http://www.ecmra.mil

Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors may direct questions to the ECMRA help desk.

2.1.8 Warranty.

The Contractor shall provide a one year warranty or manufacturer's standard commercial warranty, whichever is longer. This warranty shall include a one year workmanship 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 site acceptance.

2.1.9 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 should be provided to 17 CS/SCXP PM.

2.2 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 SOO. The Contractor shall comply with the current TIA (Telecommunications Industry Association) telecommunication installation and testing commercial standard and base installation standards.

2.2.1 Outside Plant Requirements.

2.2.1.1 Existing Maintenance Holes.

The Contractor shall be responsible for pumping out maintenance holes/handholes. Water from maintenance holes/handholes shall be pumped into the storm drain system unless it is not available; then it may be pumped out onto the surrounding ground, as long as there is no impact to roads, driveways, or vehicle traffic. Mud and debris shall be disposed of IAW base requirements.

2.2.1.2 Measurements.

Any distances provided in this SOO are approximations and should NOT be used for ordering materials (cable, innerduct, etc.) or determining duct lengths.

2.2.1.3 Cable Racks and Cable Rack Supports.

Cable racks shall be installed in maintenance holes as required. Splices shall not be supported by the cables that enter each end of the splice case. The splices shall be supported by cable hooks 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.

2.2.1.4 Labeling.

The Contractor shall label all equipment and cables they install in accordance with (IAW) TIA-606 and as directed by 17 CS/SCXP.

2.2.1.4.1 Cable Tags.

All tags shall be permanently labeled, easily visible and corrosion resistant. Cable tags shall be installed in all maintenance hole/handhole and Fiber Optic Distribution Panel

(FODP) locations. When cables pass through maintenance holes/handholes, 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 by size, type, cable number and count. The same information shall appear on the Contractor's completed as-built-drawings.

For example: 36L8.3F
FO 241-100, 1-12 +
FO 241-101, 13-24 +
FO 241-121, 25-36

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. "241-100" stands for From Building Number 241 - To Building Number 100. "1 – 12" stands for Cable/Strand Count. "+" stands for additional strands follow.

2.2.1.4.2 FODP Marking.

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), cable number, and count.

FODP: For example: FODP-241
FO 241-100, 1-12
FO 241-101, 13-24
FO 241-121, 25-36

2.2.1.4.3 New Ducts.

New ducts shall be permanently labeled on the wall of each building/maintenance hole (MH)/handhole (HH) indicating the connecting building/maintenance hole/handhole at the other end of the duct (for example, "To MH-306H"). The same information shall appear on the Contractor's completed as-built-drawings.

2.2.1.5 FOC Terminations and Splicing.

Fiber optic cables shall be terminated (SC connector) at the FODP by direct connection (install connector directly onto the incoming optical fiber) using fan-out kits. The Contractor shall determine whether or not there is some practical reason for an intermediate splice in the cable at some MH/HH between the cable end points, and consist of fusion splices in a high quality re-enterable splice case like Coyote fiber optic closure or equivalent. A coil of 25 feet of cable shall be provided on each cable entering or leaving a splice case in a MH or HH.

2.2.1.6 FOC Maintenance Loop.

Minimum of 50 feet of fiber optic cable at every third MH/HH location, starting/ending in the first maintenance hole outside each end building (i.e. the first maintenance hole outside of each building will contain a 50 feet maintenance loop). All maintenance loops installed within maintenance holes must be supported by two 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. The maintenance loop shall have a cable tag. The same information shall appear on the Contractor's completed as-built-drawings.

2.2.1.7 Outside Plant Installation.

The Contractor shall design and install Customer-Owned Outside Plant Telecommunications Infrastructure IAW TIA-758. Each cable installation and cut-over shall be coordinated with the 17 CS/SCXP. The sequence of installation is at the Contractor's discretion. See Attachment 1 for reference and estimated distances of existing and proposed cables routes.

2.2.1.7.1 Conduit Systems and Inner-ducts Installation.

The Contractor shall install the following:

2.2.1.7.1.1 Manhole/Handhole and Conduit System.

- Install two (2) 4" inside diameter conduits between MH-10 and MH-11; approx 180'. See Sketch (sheets 1 of 7).
- Install two (2) 4" inside diameter conduits between MH-11 and MH-20; approx 290'. See Sketch (sheets 1 of 7).
- Install two (2) 4" inside diameter conduits between MH-50 and MH-61; approx 320'. See Sketch (sheets 4 of 7).
- Install two (2) 4" inside diameter conduits between MH-70 and MH-80; approx 280'. See Sketch (sheets 6 of 7).
- Install two (2) 4" inside diameter conduits between MH-300 and MH-301; approx 310'. See Sketch (sheets 7 of 7).
- Install three (3) 3"x3cell geo-textile flexible type inner-duct (one shall be detectable type) in one of the new 4" PVC conduit from MH-10 to MH-20; approx 500'.
- Install three (3) 3"x3cell geo-textile flexible type inner-duct (one shall be detectable type) in one of the new 4" PVC conduit between MH-50 and MH-61; approx 360'.
- Install three (3) 3"x3cell geo-textile flexible type inner-duct (one shall be detectable type) in one of the new 4" PVC conduit between MH-70 and MH-80; approx 280'.
- Install three (3) 3"x3cell geo-textile flexible type inner-duct (one shall be detectable type) in one the new 4" PVC conduit between MH-300 and MH-301; approx 310'.
- Install two (2) 3"x3cell geo-textile flexible type inner-duct in one of the partial filled conduit from MH-20 to MH-50; approx 1600'.

- One (1) 1” corrugated innerduct inside each of the buildings (ITB 146, ITB 3311, EB 3321, EB 3323) point of cable entry to the FODP area.

2.2.1.7.1.2 Composition.

The ducts shall be corrosion resistant and 4-inch inside diameter (I.D.) round or metric equivalent. The ducts shall be made of EPC-40 Polyvinyl Chloride (PVC) (Schedule 40) IAW NEMA TC-2; or high density polyethylene (HDPE) SIDR 11.5. Rollpipe shall be made of high density polyethylene (HDPE) SIDR 11.5. The ducts shall be appropriately labeled indicating the composition material. Ducts shall have a sleeve or bell end type coupling and shall be watertight when assembled.

2.2.1.7.1.3 Installation.

Installation of underground conduits/ducts shall be IAW RUS Bulletin 1751F-643 and RUS Bulletin 1753F-151. Ducts installed beneath roads, sidewalks, parking areas, other paved surfaces or areas to be paved, etc. shall be installed a minimum of 36" below grade. It is understood that in some locations, especially at paved surface crossings, the Contractor may bore and substitute 4-inch I.D. HDPE conduit (rollpipe, suitable for the application) for 4-inch PVC conduit. This substitution is acceptable. However, do not terminate the HDPE in a manhole but instead install 4-inch I.D. PVC stubout(s), approximately 5-10 feet long out of the manhole and couple the HDPE to the PVC. Also, if HDPE is used, it shall be SIDR 11.5 so that the inside diameter of the HDPE will match the inside diameter of the PVC. All ducts not installed across roads, sidewalks, parking areas, or areas to be paved, etc. shall have a minimum of 36 inches ground cover, where possible. The Contractor shall provide other protective measures, concrete cap, etc., in those areas where the minimum ground cover cannot be achieved. Drain slope of ducts shall be accomplished IAW BICSI Outside Plant Design Reference Manual (OSPDRM).

2.2.1.7.1.4 Paved Surface Crossings.

The Contractor shall use the method of horizontal directional drilling (HDD) on all 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 base civil engineer (BCE).

2.2.1.7.1.5 Conduit Protection.

The Contactor shall install the appropriate physical protection required [(concrete encasement, steel tube (casing)] for buried PVC conduits or HDPE rollpipe, consistent with commonly accepted telecommunications industry practices relative to the task and to the environment in which they are installed and the loads (H-5, H-10, H-20, railroads, flightline, etc.) to which they are expected to be exposed. Type of protection may be dependent upon the specific application and shall be IAW applicable federal, state or local (Goodfellow AFB Civil Engineering construction requirements) procedures. However, at a minimum, nonmetallic conduits shall be encased in concrete of minimum 3000 lb/in^2 compressive strength where vehicular traffic is above the pathway. The encasement shall be concrete of a wet type mix and shall be placed in such a manner as to ensure the concrete completely surrounds all conduits and no air voids are trapped in the mix.

2.2.1.7.1.6 Conduit Bends, Sealing and Mandreling.

All bends between maintenance holes shall be a minimum 40-foot radius with the sum of bends in all directions not exceeding a total of 90 degrees. Only one 90-degree bend shall be allowed between maintenance holes. Where a bend or sweep is placed in PVC nonmetallic duct bank between maintenance holes, the duct bank must be encased in concrete with a minimum compressive strength of 3000 lb/in^2. Ducts shall have bell ends and enter a maintenance hole perpendicular to the surface of the wall through which it is entering. All ducts/inner ducts entering maintenance holes must be sealed. Universal duct plugs or removable putty sealants may be used. Upon completion of conduit sections, a test mandrel ¼" (6.4mm) smaller than the inside diameter of the conduit shall be pulled through two diagonally opposite ducts to ensure proper alignment. In addition, all ducts shall be cleared of loose materials such as concrete, mud, dirt, stones, etc.

2.2.1.7.1.7 Pull Boxes and NEMA 4 Enclosures. N/A

2.2.1.7.1.8 Entrance Conduits into Existing Maintenance holes.

When new entrance conduits/ducts or sleeves are required, the Contractor shall bore and install the necessary holes and install the ducts or sleeves, if knockout doesn't 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 18 inches from either the MH/HH floor or ceiling, if practical. 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.

2.2.1.7.1.9 Pull Tape.

All newly installed ducts left vacant shall be provided with a pull tape with a waterproof, corrosion resistant, pre-lubricated flat woven polyester pull tape with sequential footage markings, (1250 lb pulling strength) for future cable installations. The pull tape shall extend into the maintenance holes/handholes and be secured to a cable rack or pulling iron, etc.

2.2.1.7.1.10 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 two 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.

2.2.1.7.1.11 Spacers and Tracer Wire.

Along the length of the duct run, if the ducts are installed by trenching, spacers shall be placed at an interval of four (4) spacers per 20 feet and cable warning tape shall be buried one (1) foot below the surface and shall follow the duct route. The tape shall be a minimum of three inches wide and orange in color with the appropriate warning message. 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 maintenance hole or handhole neck to a point where maintenance personnel may access the wire without having to

enter the maintenance hole/handhole, and tagged with a label so 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.

2.2.1.7.2 Closure for Underground Optical Fiber Cables.

The closure shall be sealed and suitable for enclosing a splice organizer in a protective housing. The splice organizer shall consist of splice trays and protective sleeves, shield bond connectors, and ancillary hardware necessary to house fiber optic splices. The splice organizer shall house a minimum of 72 fiber optic fusion splices in a neat and orderly fashion. The splice organizer shall provide individual support for each splice. The organizer shall allow for one meter of fiber to be stored without kinks, twists, or micro-bends. The organizer shall be suitable for reentry, for future maintenance or modification, without damage to the fiber or splices. The closure shall be Pre-formed high quality re-enterable splice case or equivalent for making a straight, butt, or branch splice and shall protect the splice and maintain cable shield electrical continuity in a manhole, or handhole environment and suitable for pressure testing. The number of cable ports in and out of the closure, along with any necessary washers or any plugs for unused ports, shall be suitable for the particular application.

2.2.1.7.3 Fiber Optic Distribution Panel (FODP).

The Contractor shall install one (1) 48 port FODP in ITB 146; one (1) 48 port FODP and one (1) 24 port FODP in ITB 3311; one (1) 24 port FODP in EB 3321; and one (1) 24 port FODP in EB 3323. The locations of FODPs will be provided at the walk-thru.

2.2.1.7.4 Fiber Optic Cable Installation.

The Contractor shall install outside plant (all-dielectric, loose buffer tube, single mode, water blocked) optical fiber 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 meet RUS 7 CFR 1755.900 criteria; shall comply with industry standards with regard to manufacturers' cable marking, jacket, rip cords, water blocking, fiber color coding, jacketing materials, etc. In addition, the fibers shall comply with industry standards with regard to mode field diameter, core cladding concentricity, attenuation, and dispersion characteristics at 1310 nm and 1550nm. The cable shall be installed along the recommended paths from ITB 146 to ITB 3311; and from ITB 3311 to EB 3321, and to EB 3323.

2.2.1.7.4.1 Between ITB 146 and ITB 3311.

The Contractor shall install approximately 3200' of 36 strands of SM FOC from ITB 146 equipment room via MH-10, MH-11, MH-20, MH-30, MH-40, MH-50, MH-61, MH-74, MH-75 and ITB 3311 equipment room. Terminate the new 36 strands FOC in the new 48 port FODP at each ITBs equipment room.

2.2.1.7.4.2 Between ITB 3311 and MH-300.

The Contractor shall install approximately 950' of 24 strands of SM FOC from ITB 3311 via MH-75, MH-71, MH-70, MH-80 and MH-300. Terminate the new 24 strands FOC in the new 48- port FODP in equipment room of ITB 3311.

2.2.1.7.4.3 Between MH-300 and EB 3321.

The Contractor shall install approximately 350' of 12 strands of SM FOC. Splice the 12 strands FOC into the 24 strands FOC in MH-300. Terminate the new 12 strands FOC in the new 24 port FODP in EB 3321. The 17 CS/SCO will determine what strand counts will be.

2.2.1.7.4.4 Between MH-300 and EB 3323.

The Contractor shall install approximately 600' of 12 strands of SM FOC. Splice the 12 strands FOC into the 24 strands FOC in MH-300. Terminate the new 12 strands FOC in the new 24 port FODP in EB 3323. The 17 CS/SCO will determine what strand counts will be.

2.2.1.8 Testing.

The Contractor shall furnish 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 17 CS/SCXP representative as tests are completed. The Contractor shall notify the 17 CS/SCXP at least 5 calendar days prior to any testing. All testing will be IAW accepted telecommunications industry standards for the type of test being conducted. The Contractor shall provide test reports to the government within 10 calendar days of completing the testing. Contractor is required to locate/repair any testing irregularities if caused by the installation.

Any splicer's errors detected shall be corrected in the splice in which they were made. It is assumed that the cable is delivered fault free from the manufacturer. No cable faults or splicer's errors are allowed in the new cable. Contractor is required to locate and repair cable faults or splicer's errors if caused by the installation.

2.2.1.8.1 Fiber Optic Cable Tests.

All strands of all fiber optic cables shall be tested IAW TIA 526-7 Measurement of Optical Power Loss of Installed Single-mode Fiber Cable Plant, or equivalent. As a minimum, the following tests shall be performed. Both Optical Time Domain Reflectometer (OTDR) 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. For incomplete circuits that end in manholes, only 1 way OTDR testing is required. NOTE: Testing of the Fiber Optic Cables on the reel shall be provided to the 17 CS/SCXP prior to installation.

2.2.1.8.1.1 Optical Attenuation.

End to end attenuation tests shall be conducted on all fiber optic cable strands. Tests shall be accomplished to ensure the installed cable is within the specified parameters

2.2.1.8.1.2 Distance.

Test to determine the installed cable length between optical patch panels. All strands of all fiber optic cables shall be tested.

2.2.2 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 Base Civil Engineer (BCE) IAW guidelines set forth by the BCE.

The Contractor shall dispose of all residues from this project off base and in accordance with (IAW) local and 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 grounds restoration, if that location is not up to its original condition due to surface settling or lack of turf germination or seeding.

The Contractor shall be responsible for restoration of asphalt, concrete, brick, paving stone, etc. at locations, which were damaged due to activities by the Contractor. Any asphalt, concrete, street, curb or sidewalk replacement shall be IAW with guidelines set forth by the BCE. At a minimum, the restoration shall be restored to match existing strength, color (to the extent practical) and type of material. The Contractor shall perform follow-up restoration if that location is not up to its original condition due to surface settling.

2.2.3 Service Outages.

The Contractor shall be responsible for preventing any unscheduled (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 site POC at least 10 calendar days in advance of the outage if the implementation necessitates disruption of service, (e.g., communications, electrical, or other utilities).

2.2.4 National Pollution Discharge Elimination System (NPDES).

If required by Base Civil Engineer (BCE), the Contractor shall obtain approvals for NPDES at State and/or Federal level [in some locations this may be called the Storm Water Pollution Prevention Plan (SWPPP)]. 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; this is a compulsory item in the SOO and contract. The Contractor shall implement storm water controls/BMPs to ensure sediment, as a result of storm water runoff, does not enter storm drainage channels and/or inlets.

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

The Contractor shall review the NPDES requirements applicable to the base; develop a plan to comply with the NPDES; obtain approval of the NPDES plan from all appropriate government agencies; and comply with any other applicable state requirements for construction.

The Contractor shall implement, monitor and manage the NPDES Plan.

2.2.5 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 will take precautions to protect existing infrastructure. Contractor shall be responsible for costs associated with repair of any damages caused during installation when the infrastructure is clearly marked. The AF Form 103 (digging permit) shall be submitted through Civil Engineering 21 calendar days in advance of digging activities. Contractor is responsible for maintaining all markings.

2.2.6 Identification/Marking.

The Contractor shall clearly mark all Contractor-Furnished Property and Equipment (CFP/CFE) with their company's name. The Contractor shall place an easily read, very visible, sign (minimum 8.5" x 11") on large containers, construction equipment, or un-manned rental vehicles while on the Government installation indicating the company name and both the Contractor and Site POC's names and local telephone numbers.

2.2.7 Installation Schedules.

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.

2.2.8 Weekly Status Reports.

The Contractor shall prepare a Weekly Status Report and distribute to IPT members. The purpose of the report is to inform IPT members of project progress, problems being encountered, and other topics necessary/beneficial to ensure success and timely completion of the contract requirements. The Status Report and meeting agenda may be combined as long as the resulting report contains all the required elements and contains sufficient detail to serve as project record.

2.2.9 As-Built Drawings.

The government shall supply existing system drawings, and the Contractor shall provide updated drawings in Visio for building and rack elevation; Visio and .pdf for OSP. These drawings shall depict the entire pathway and details of the installation, including but not limited to: labeling, cables, innerducts and maintenance holes/handholes, conduits, maintenance loops, distances, bores, trenches, 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 as well as, add the components used in this project. The Contractor shall record/deliver geospatial data of new outside plant distribution system.

2.2.10 Installation Test Plan.

The Contractor shall provide a test plan as to 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. The Contractor shall test the system to demonstrate its proper performance to the Government quality assurance representative. These tests shall be accomplished prior to the system being placed into service.

2.2.11 Acceptance/Installation Test Report.

The Contractor shall provide an installation test report of the results of the testing accomplished under the installation test plan. The Test Report(s) shall be provided to the Government no later than 10 calendar days after test(s) have been completed.

2.2.12 Final Acceptance.

The Contractor shall schedule a final project walk-through with the Base POC. This should be scheduled 10 calendar days prior to acceptance.

2.2.13 Deliverable Summary.

All deliverables are subject to Government acceptance and approval. They shall meet professional standards and the requirements set forth in this Task Order. All deliverables shall be produced using recommended software tools/versions as accepted by the Government.

3.0 GENERAL INFORMATION.

3.1 Period of Performance.

The period of performance for the project shall be determined based on the proposed schedule and actual contract award date.

3.2 Place of Performance.

The place of performance is Goodfellow AFB, TX.

3.3 Hours of Operation.

The Contractor shall routinely work during normal duty hours. However, mission requirements may necessitate approximately 15% of the work outside normal hours (nights and/or weekends), especially if existing service must be interrupted. Any site work requested by the Contractor to be performed outside of normal duty hours shall be coordinated with the Base POC at least 10 calendar days in advance.

3.4 Holidays/Down Days.

The Contractor shall not perform under this contract on federal holidays or site-unique down-days unless expressly authorized by the CO and coordinated with the base POC.

3.5 Base Support.

On-base laydown are available but the Contractor shall identify the size of the laydown area in the proposal.

4.0 APPENDICES.

4.1 Appendix A. APPLICABLE STANDARDS.

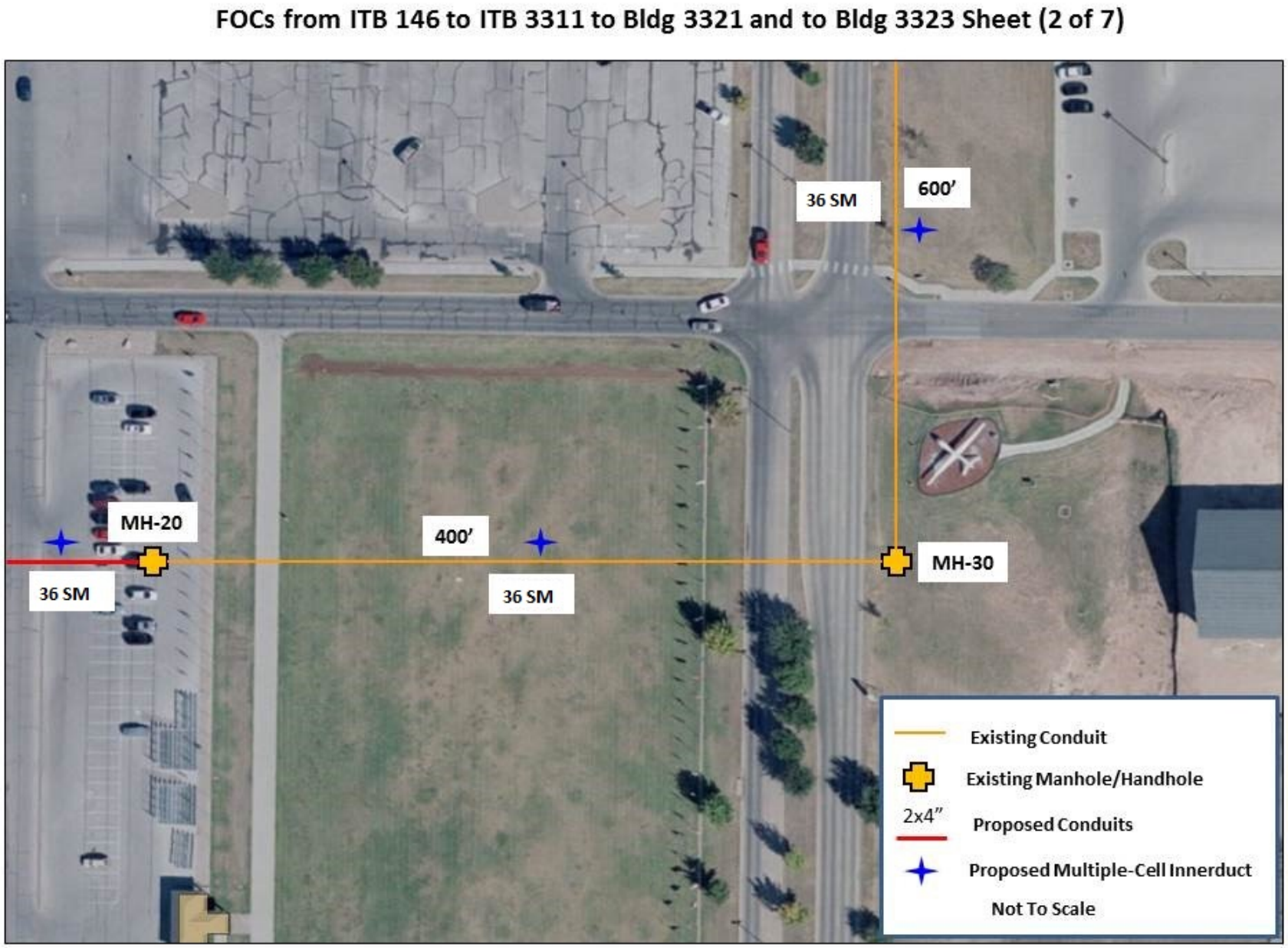
AFI 91-203 – Air Force Consolidated Occupational Safety Instruction
OSHA CFR 29 Part 1910-268 – Telecommunications
TIA-606-B - Administration Standard for Telecommunications Infrastructure

TIA-568-C.0 - Generic Telecommunications Cabling for Customer Premises
TIA-568-C.1 - Commercial Building Telecommunications Cabling Standard
TIA-568-C.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standard
TIA-568-C.3 - Optical Fiber Cabling Components Standard
TIA 942 - Telecommunications Infrastructure Standard for Data Centers
TIA-607-B - Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
TIA-526-7- Measurement of Optical Power Loss of Installed Single-mode Fiber Cable Plant
TIA-526-14-B Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant
TIA-569-C - Commercial Building Standard for Telecommunications Pathways and Spaces
TIA-570-C –Residential Telecommunications Infrastructure Standard
TIA-598-C - Optical Fiber Cable Color Coding
TIA-758-B Customer-owned Outside Plant Telecommunication Infrastructure Standard
RUS Bulletin 1735F-401, Standards for Splicing Copper and Fiber Cable
RUS Bulletin 1751F-643 - Underground Plant Design
RUS Bulletin 1751F-801 – Electrical Protection Fundamentals
RUS Bulletin 1753F-151 (515b) - Specifications and Drawings for Underground Cable Installation
RUS Bulletin 1753F-201 (PC-4) – RUS Standard for Acceptance Tests and Measurements of Telecommunications Plant
RUS Bulletin 1753F-207 (PE-87) – REA Specification for Terminating Cables
NFPA 70 - National Electric Code

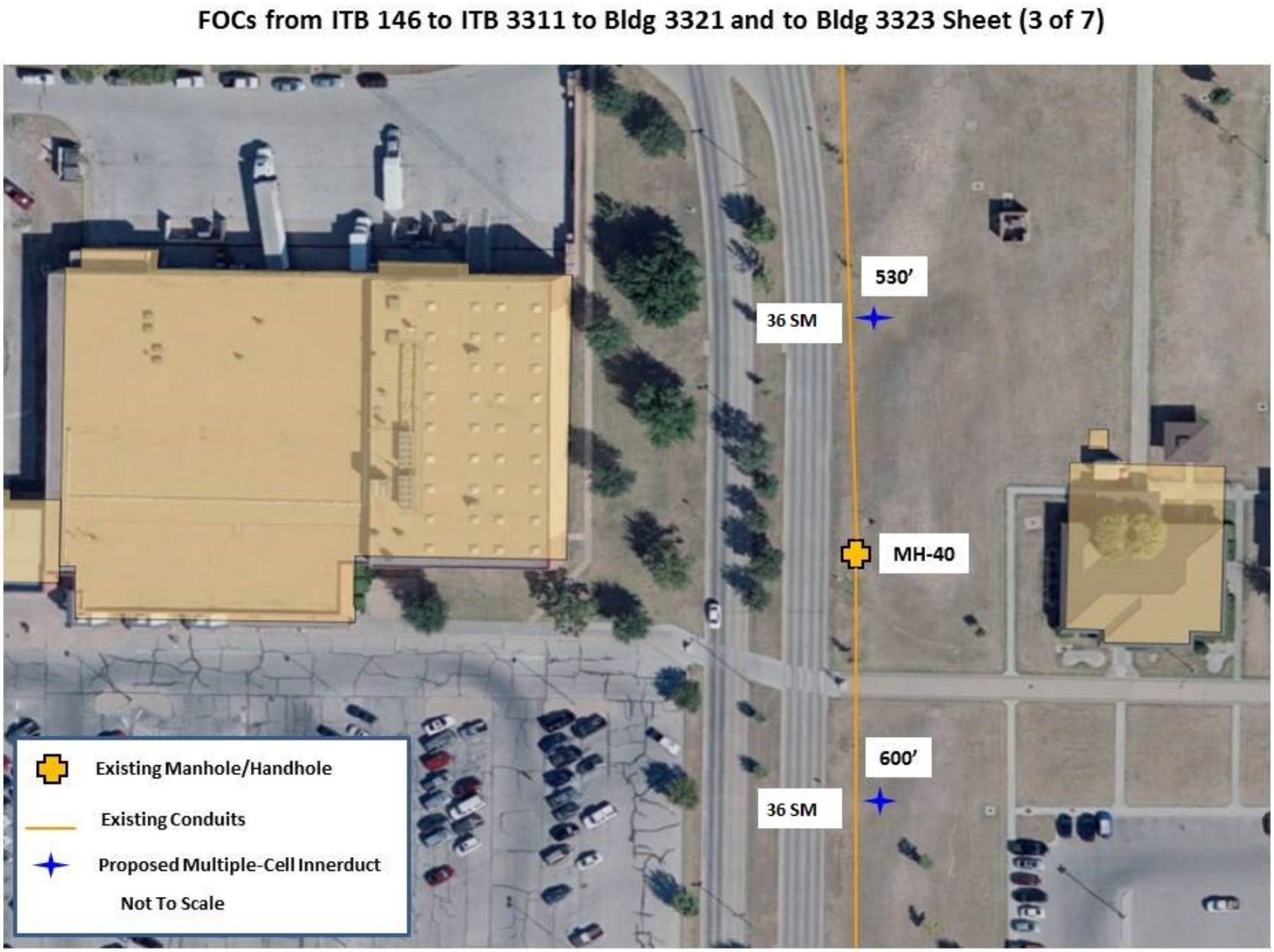
5.0 Attachment 1. Proposed Cable Diagram

FOCs from ITB 146 to ITB 3311 to Bldg 3321 and to Bldg 3323 Sheet (1 of 7)

Attachment 1. Proposed Cable Diagram



Attachment 1. Proposed Cable Diagram



Attachment 1. Proposed Cable Diagram

FOCs from ITB 146 to ITB 3311 to Bldg 3321 and to Bldg 3323 Sheet (4 of 7)

Attachment 1. Proposed Cable Diagram

Attachment 1. Proposed Cable Diagram

FOCs from ITB 146 to ITB 3311 to Bldg 3321 and to Bldg 3323 Sheet (6 of 7)

Attachment 1. Proposed Cable Diagram

FOCs from ITB 146 to ITB 3311 to Bldg 3321 and to Bldg 3323 Sheet (7 of 7)