

**VTS Facility New Fiber Optic Cable & Electrical Circuit Upgrades  
Project #\_\_\_\_\_**

**7 December 2017**

**Performance Work Statement (PWS)**

Name:	
Organization:	
Address:	

**EXECUTIVE SUMMARY**

**This Performance Work Statement (PWS) defines the requirements for the Contractor to Engineer, Construct, Install, and Test a new fiber optic cable between Vandenberg Tracking Station (VTS), Bldg. and Bldg., and the electrical circuit upgrades within Bldgs. and. The Contractor shall procure items identified in this PWS, and perform additional OCX AMCS facility upgrades as specified. All new fiber optic cable ends shall be terminated in new fiber optic patch panels.**

## Performance Work Statement (PWS)

1. GENERAL REQUIREMENT: The Contractor shall provide all necessary supervision, labor, transportation, tools, machinery, vehicles, test equipment, specified materials and equipment necessary to Engineer, Construct, Install & Test the new duct cabling system and install procured items requested for the successful completion of this PWS. The Contractor shall provide a full-time, on-site Project Manager to oversee all facets of the entire project.
2. FIBER OPTIC CABLE INSTALLATION: The Contractor shall install one Single Mode (SM) 144 strand fiber optic cable in existing duct and fiber optic patch panels, and terminate and test each fiber strand as identified in narrative below. Provide a 100' maintenance loop in each end. All fiber strands shall be tested as described in paragraph 8. The cable shall have label affixed at each Maintenance hole entry/exit location. Label/mark all cable IAW 31W3 series Technical Orders and IAW 30 Space Communications Squadron (SCS) Project Manager's assignment.
  - a. Procure and install 144 SM fibers (72 pair) from Building 23225 to Building 23229. Terminate using ST-type Connectors on both ends.

The Cable identification numbers assigned by the 30 SCS shall be reflected in all as-built and test result deliverables as outlined in paragraphs 8 & 10 of this PWS.

3. ELECTRICAL CIRCUIT UPGRADES: Any cabling/electrical wiring that will be run under the raised floors in either 23229 or 23225 must be plenum rated.
  - a. Electrical Circuit Upgrade Procurement Items:
    - i. Four (4) 60 amp receptacles (IEC 60309) and Four (4) 3 phase circuit breakers for Racks 2A2 & 2A3 (2 each) in Building 23229, Room 28. (Please refer to drawing of Room 28 for exact rack location, drawing titled AMCS\_as\_built\_with\_cable trays). Identify ground point for OCX rack ground cable.
    - ii. Four (4) 30 amp single phase receptacles (L6-30) and Four (4) 30 amp 2 phase circuit breakers at the GGA Rack location in Bldg. 23229, Room 28. (Please refer to drawings of Room 28 for exact rack location, drawing titled AMCS\_as\_built\_with\_cable trays).
    - iii. Two (2) 30 amp single phase receptacles (L6-30) and Two (2) 30 amp 2 phase circuit breakers at Racks 2A20 in Bldg. 23229, Room 28 (Please refer to drawings of Room 28 for exact rack location, drawing titled AMCS\_as\_built\_with\_cable trays).

- iv. Two (2) 30 amp single phase receptacles (L6-30) and Two (2) 30 amp single phase circuit breakers at Rack 1A7 in Bldg. 23229, Room 210 (Please refer to drawing, titled 210 merged cable trays and racks, for exact rack location).
4. COMPONENT REVIEW: Prior to component requisition, provide List of Material specifications to the 30 SCS for review/approval prior to procurement and installation. Installed components shall be fully compatible with the Vandenberg AFB fiber optic infrastructure. The 30 SCS will validate List of Materials IAW with the PWS and stated policy specifications.
- a. Fiber Optic Cable Procurement Items:
    - i. One (1) 36 Port Standard Tip Connector (ST) Type COMM Patch Panel in Rack 2.3 Elevation A2 in Building 23229, Room 24.
    - ii. One (1) 36 Port ST-Type COMM Patch Panel in New Rack (see item v.) Elevation TBD in Building 23225, Room 160.
    - iii. Eighteen (18) SM COMM patch panel jumpers (All fiber jumpers to be ST to Lucent Connector (LC)), Building 23229, Room 24, Rack 2.3 Building to Building Fiber P/P to Rack 2.3 Raytheon Patch Panel A1 (Raytheon provided). Note: Raytheon Fiber Patch Panel is LC. Use ports J1-18 on the OCX P/P. See VAFB B23225-B23229 System\_Block Diagram drawing for details.
    - iv. Six (6) SM COMM patch panel jumpers (ST to LC), Building 23229, Room 24, (COMM Room) Rack 1.2 (DISA Demark in Building 23229) to Rack 2.3 RTN Patch Panel. Note: Raytheon Fiber Patch Panel is LC. Use Ports J19-24 on the OCX P/P. See VAFB B23225-B23229 System\_Block Diagram drawing for details.
    - v. One (1) Communication COMM rack IAW VTS standard in Building 23225, Room 160. At this time no power is required for this rack as it is only going to be containing fiber patch panels. (Please refer to drawings of Room 160 for exact rack location).
  - b. Timing Antenna Mount and Conduit Procurement Items:
    - i. The Contractor shall install a penetration point 1.5" in diameter into room 24 in Bldg. 23229 approximately where shown on the provided drawing, External Wall Room 24, in green.
    - ii. One (1) 6" x 6" stainless steel junction box on exterior wall of Bldg. 23229 near Room 24 where shown on the provided drawing, External

Wall Room 24, in green.

- iii. Two (2) liquid tight flex conduit in Bldg. 23229, Room 24 where shown on the provided drawing, External Wall Room 24, in green.
  - iv. 4 (4) U-Channel to be installed onto the roof of Bldg. 23229, Room 24 where shown on the provided drawing, External Wall Room 24, in green.
  - v. One (1) Cable Tray from the penetration point in Bldg. 23229, Room 24 to the existing cable tray system as shown on the provided drawing, Room 24, in green.
  - vi. Provide ground point near timing antennas for antenna surge protector ground.
5. FIBER OPTIC CIRCUIT CUTOVERS: There will be NO circuit cutovers required for this project.
6. ENVIRONMENTAL MANAGEMENT: The Contractor and their subcontractors shall comply with all environmental Federal, State, and Local laws and regulations; and Air Force policies, instructions, and plans. This includes Division 01 - General Requirements Section 01 57 20 Environmental Protection (20 Feb 2016). The Contractor shall maintain an awareness of changing environmental regulatory requirements to avoid environmental deficiencies for activities on Vandenberg AFB. The Prime Contractor shall ensure their subcontractors comply with these specifications.
- a. Project Residue & Disposition: The Contractor shall properly disposition of all unneeded materials and soils IAW Defense Logistics Agency Disposition Services guidance <http://www.dispositionservices.dla.mil/drmo/vandenberg.shtml> and with the Environmental Protection Agency guidance <http://www.epa.gov/cpg/products.htm>. Contractor shall complete and process the Recovered Materials Determination Form (RMDF) to be provided at initial site survey.
  - b. The Contractor shall ensure the project conforms to all applicable Federal, State and local laws, regulations and base-specific standards and applicable Unified Facilities Criteria (UFC). Where there is a conflict between the referenced standards, the most stringent shall take precedence. All work accomplished by the Contractor shall comply with this criteria unless a waiver is obtained from the Air Force when conditions warrant such consideration.

- c. Do NOT use Class 1 Ozone-Depleting Chemicals in performance of the entire work effort. This is IAW AF Acquisition Circular 92-29.
  - d. Pumping Water from Existing Maintenance Holes: If needed, the Contractor shall be responsible for coordinating with 30 CES for testing and pumping standing water from maintenance holes. The Contractor may be required to pump out maintenance holes and retain the water in an appropriate container for testing by CE. Coordinate all maintenance hole pumping through 30 SCS Cable Affairs office.
  - e. At the end of each work day, the Contractor shall leave the work environment cleaned and in good order. All excavated diggings shall be either covered or protected by brightly marked fencing to ensure pedestrians do not accidentally fall into work areas. Holes or trenches left open overnight must be properly covered to prevent the entrapment of animals. No road or walk ways shall be un-passable overnight and weekends.
7. **INSTALLER QUALIFICATIONS:** The maintenance hole and duct installing Contractor shall have a minimum of 5 years verifiable experience successfully installing cabling systems, COMM equipment/antenna mount and/or be State certified to install/integrate electrical components for system operational use. The cable installing Contractor shall be Building Industry Consulting Service International (BICSI) Certified and have a BICSI Information Technology Systems (ITS) Installer 2, Optical Fiber Certification. Additionally, the Contractor shall have a minimum of 5 years fiber optic fusion splicing for critical communication systems for Department of Defense and/or critical DoD Launch-related systems. Technicians entering maintenance holes must be Confined Space Training (CST) certified. Contractor will provide their own gas detector metering equipment IAW with the Occupational Safety and Health Administration (OSHA) Standards. The Contractor shall provide a minimum of two (2) persons with a JPAS-validated DoD SECRET Clearance such that the Contractor can be escorted into the VTS facilities for performing all cabling work in the secured compound and buildings.
8. **TESTING and TEST RESULTS:** Following successful installation, and prior to any circuit cutovers, the Contractor shall test each cable pair IAW with Telecommunications Industry Association/Electronics Industries Alliance (TIA/EIA) – specifically TIA 758-A Outside Plant Telecommunications Infrastructure Standard and Air Force Technical Order 31W3-10-15 Technical Order series. All strands of all fiber optic cables shall be tested end-to-end IAW TIA 526-7-(2002) Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant and 31W3-10-15 Technical Order Series. Optical Time Domain Reflectometer (OTDR), Optical Power Meter (OPM) tests, and Chromatic Dispersion testing will be used for all end-to-end circuits. Circuit

cutovers will not be performed until the 30 SCS Project Manager receives and/or validates the acceptable test results.

- a. The Contractor shall furnish all test equipment and personnel required to conduct all required testing. The Contractor shall document all test results in a "Test Report(s)" and submit to the 30 SCS Project Manager. During any testing phase, the Government reserves the right to perform any of the Contractor performed inspections and tests to assure solutions conform to prescribed requirements. The Contractor shall provide on-site support during the acceptance testing. The Test Report(s) shall be provided to the Government no later than ten (10) calendar days after test(s) have been completed.
  - b. In the event test results are unacceptable, the Contractor shall perform necessary repair actions until test results are satisfactory. After the Contractor has taken appropriate corrective action, all tests, including those previously completed and related to the failed test/corrective action, shall be repeated until successfully completed.
9. **INDUSTRY STANDARDS IMPLEMENTATION:** The Contractor is expected to perform all work using industry standards, to include ANSI, TIA/EIA, NEC, MIL-HDBKS, STDS, Unified Facility Guide Specifications (UFGS), Unified Facilities Criteria (UFC), Caltrans Standard Specifications and Caltrans Standard Drawings. This must include installation consideration for Seismic Zone-4 requirements. The Contractor is expected to perform all inside and outside plant cable work to include underground buried cable installation IAW Air Force Technical Order Series 31-10 and 31W3 TOs. The Contractor shall follow OSHA Safety Standards throughout the entire project implementation. The Contractor shall follow Division 01 – General Requirements Section 01 57 20 Environmental Protection (20 Feb 2016).
10. **AS-BUILT DOCUMENTATION/ DELIVERABLES:** The Contractor shall complete and provide all Fiber/Maintenance Hole Request forms and Cable Number Assignment Form (Microsoft Word format). These completed forms will enable the Contractor to provide the necessary cable labeling (as identified para 4).
- a. The Contractor shall provide Redline drawings showing the "as-built" configuration. The drawings shall show the location of all cable terminations, splices, maintenance holes, duct system, and the location and routing of all cables. The Contractor provide Maintenance Hole Butterfly Drawings, and the identifier for each termination and cable shall appear on the drawings. Drawings shall be in PDF and DXF format (compatible with AutoCAD). The Contractor shall label all cables and as-built drawings IAW 31W3 guidance and the Cable Number Identifiers provided by 30 SCS.

- b. The Contractor shall provide all fiber optic strand test results in a “Test Record” and submit to the 30 SCS Project Manager IAW with this PWS para 10. Use a Test Report template provided by 30 SCS Program Manager at initial site visit. The Test Records shall be provided to the 30 SCS Project Manager no later than 10 calendar days after test(s) have been completed.
  - c. GEOSPATIAL INFORMATION (GIS) DATA REQUIREMENTS: The Contractor shall deliver GIS and GPS data IAW with the 30 Space Wing GeoBase Spatial Data Submittal Standards, and Vandenberg PGS Data Collect and Delivery Standards (standards available upon request).
11. The Contractor shall be prepared to stop all work when directed by the Government during launch operations per current base “FRAME LIGHT” policy. A notice of “No Digging” will be issued during these times. This includes work in communication rooms, maintenance holes, trenches, and other associated ground work below grade. The Contractor shall plan for approximately three to six full duty days of down time per month. The 30 SCS Project Manager will advise Contractor of upcoming FRAME LIGHT activity.
12. Final Inspection: The Contractor shall schedule a final project walk-through of all work completed prior to contract completion with the Government representatives from 30 SCS/SCXP. This should be scheduled at least two weeks prior to the event. In the event corrections are required, a punch list of the corrections will be listed and a subsequent re-inspection shall be scheduled until the work is in compliance with this PWS and specified policies written in this PWS. Deliverables must be provided prior to final acceptance. Upon completion of project milestones, an AFTO Form 747, Cyber Infrastructure System Acceptance with all exceptions cleared and signed by the Communications Systems Officer (CSO) will be processed. Upon final CSO signature, this document will be used to notify 30 CONS of contract completion and be used for certification for DD Form 250 processing and closure.