Statement of Objective

Shaw AFB

Construct New Poinsett Tower

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1 SCOPE:

The AF requires a new 120ft tower at Shaw AFB, Poinsett Range. The new tower is required to replace an existing structure and is expected to increase coverage to the range by reducing dead spots. This project will include a new tower, antennas, antenna cables, ice bridge between the shelter and antenna, and ground ring tied into the shelter ground.

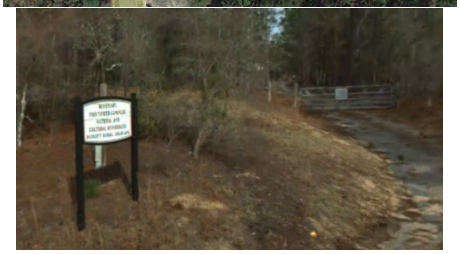
The contractor shall provide all personnel, equipment, installation, configuration management, labor, material, documentation, and services in support of the program. Services include project management and systems engineering services in support of the design, site preparation and development, equipment installation and optimization, acceptance testing, and warranty. The contractor shall perform all necessary efforts in the completion of this project to receive site acceptance.

2 Background:

The following information is provided to assist the contractor in preparing responses to this solicitation and is for reference only. The contractor is responsible for verifying information during the pre-proposal conference.

Shaw AFB is located along I378 west of Sumter South Carolina. The tower at Poinsett range is located approximately 10 miles south of Shaw and east of Highway 261 (S. Kings Hwy) on Christmas Mill Rd. Terrain is wooded rolling hills with a short gravel road to the site.

Poinsett range consists of bombing and shooting areas regulated by a control tower, electronic warfare capabilities, and 12,500 acres used for navigation and survival, evasion, resistance, escape training.



Current tower: 33°48'5.24"N 080°30'14.36"W

Frequencies

The contractor may assume that the new antenna system will operate in the VHF range. Channels are provided in the following table. Current system uses two transmit and one receive antenna.

Channel	Tx	Rx
01	165.4125	173.5625
02	164.7000	173.9250
03	164.1000	173.9500
04	163.5875	169.8875
05	164.1750	171.3875

Existing Shelter

Existing shelter is a pad mounted PEPRO enclosure approximately 63in H, 59in W, and 9ft 10in D. Power is provided by an existing 200A meter and 100A disconnect attached to the adjoining tower leg.

3. TECHNICAL REQUIREMENTS:

3.1. Tower/Antenna:

The site requires a new 120ft self-supporting tower with ice bridge. Tower loading shall assume three VHF antennas and associated RF cable for the existing system. Receive antenna shall be mounted at tower top with transmit antennas a high as possible without causing interference. Low PIM antennas shall be used. Collinear antennas are acceptable. Tower design shall meet TIA-222g criteria.

The vendor shall provide and install all ice-bridge, cable conduit, and all material required to connect the shelter and shelter ground ring to the new tower.

The new tower is expected to be located east of the shelter. Final site location will be determined based on contractors' solution as coordinated though Shaw AFB.

- Tower shall be free standing in design and must have design drawings that have a Professional Engineering seal affixed by an engineer licensed within the state of South Carolina. The seal must certify the design meets the TIA-222/G wind load standard and applicable safety climb and structural requirements for the installed location. Tower foundation design shall be based on contractor performed soil pressure test.
- Pier style foundations are preferred to embedment base foundations to reduce the tower foundation footprint.
- Contractor shall conduct a geotechnical evaluation for all foundation designs.
- Cables shall be secured to tower cable-bridge and tower using cable guides and stainless steel bands, or via cable guides affixed to tower provided mounting locations. Plastic ty-wraps are not acceptable.

3.2 System Requirements:

3.2.1 Coverage:

The Government understands requiring reuse of existing sites will affect coverage. The goal is:

- 95% portable in-street, talk-in and talk-out
- 90% portable in-building, talk-in and talk-out (where a medium sized building with an average 16 dB loss shall be considered)

RF Coverage analysis shall be predicated on a Covered Area Reliability of 95 percent, Delivered Audio Quality (DAQ) of 3.4, and Bit Error Rate (BER) of two percent. Predicted RF coverage shall be based on the characteristics of the installations subscriber units and RF equipment. Offerors may assume the portable radio is at waist height (1-meter) for both talk-in and talk out. Offerors may assume that the mobile radio antenna is mounted on the roof of a typical car (2-meters) for both talk-in and talk-out. Transmitter power and receiver sensitivities used shall reflect the published specifications of the proposed equipment and subscribers; these values shall be documented in equipment specifications.

Coverage area of concern is the area inside the Poinsett range. Range perimeter is shown in section 2.

3.2.2 Demarcation Points:

The contractor shall furnish the required cable and equipment to connect to the Government's designated circuit demarcation point. The contractor shall identify by location all demarcation points and responsibilities for both contractor and base. At a minimum the contractor shall address

a) Civil Engineering Support Requirements

Identify the support requirements required by the host civil engineering activity and those provided by the contractor. Such as, but not limited to: generators, UPS, transfer switches, load centers, HVAC (Heating Ventilation and Air Conditioning) work, and any GFE equipment identified for reuse.

- Power demarcation
- Circuit breaker/Outlet reservation
- Required power by rack location
- Modifications to or relocation of existing equipment
- New equipment installation (space and rack reservation)

b) Communications-Computer Systems Support Requirements

Identify support requirements to be provided by the host communications-computer systems activity and those provided by the contractor. Such as, but not limited to: fiber and copper demarcation and count, network support, and any GFE equipment identified for reuse.

- Fiber demarcation, count, and termination type
- Copper demarcation and count
- Rack location
- Cable ladder and cable management

3.3. Applicable Standards:

The system shall comply with the following standards: In the event the standard has been updated, the contractor shall comply with the most current version of the published standards.

3.3.1 Site Preparation Standards:

Site preparation is anticipated to be required in support of this system. All civil work shall be performed in accordance with the following documents and standards given in ANNEX A (Site Preparation Standards). Note: Specific vendor installation criteria is given as reference.

All site preparation/development and equipment installation will be conducted in accordance with R-56, industry standards, local, state, and federal/country codes. Work sites will be neat and maintained daily to prevent unsafe or hazardous conditions from developing.

Components that are no longer needed, or superseded, due to system upgrades will be removed and relocated to an on-site storage facility as determined by the base communications squadron program manager. All associated cables/connectors will also be removed from cable racks and system trays.

The contractor shall provide rack diagrams, rack labeling, cable labeling, and floor plan layouts, and document any changes to the planned system installation and any issues that occur, along with their resolution. The contractor shall update any drawings, diagrams, and floor plans of provided GFE that is altered due to equipment installation.

4 Site Preparation Guidelines:

Unless otherwise identified in Demarcation, the contractor shall be responsible for all necessary site preparation/development. Site preparation includes all site work, building modifications, electrical wiring, AC Power, and grounding systems.

4.1 General Guidelines:

The contractor shall meet the following minimum Government guidelines:

4.1.1 Grounding Guidelines:

If required by the proposed technical solution, the contractor shall meet the following minimum Government guidelines: In the event of a conflict between the following and National/State code, National/State code shall supersede.

- The contractor shall ensure that all equipment is electrically bonded, grounded, and protected in accordance with the National Electric Code.
- The contractor shall provide all grounding and lightning protection equipment, including surge arrestors, to comply with the requirements of all equipment being installed and connected as part of the system.
- A single point ground system shall be used, whenever possible, and approved by the site manager, on all equipment installed as part of the system. The single point ground system installed within equipment shelters or buildings shall be connected to the exterior building/tower ground system.
- The antenna support structure/tower must be bonded to the external ground system using an exothermic weld, if permitted by the tower manufacturer.
- All grounding conductors that compose the external ground system shall be connected using exothermic welding and where connected to grounding rods shall be a minimum of 1/0.
- Transmission lines shall be grounded with proper sized ground kits connected to the tower ground and building entry bus.
- The external ground system shall provide a ground resistance of 5 ohms or less. If the soil conditions at a site are such that the contractor cannot reasonably design a ground system that meets this requirement, the contractor shall design a ground system that meets the best possible value as agreed to by the Government.
- New grounding systems shall be installed in accordance with the National Electrical Code and applicable best industry practices and standards. All external ground rings, copper ground rods, chemical ground rods, and interconnecting copper conductors must be buried to a minimum depth of 30 inches, or 6 inches below the freeze line for the area, whichever is greater.

4.1.2 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 Contractors are responsible to know and follow all applicable Federal, State, Local and Air Force regulations for environmental protection, including waste disposal, sewer discharge, air emissions, and storm water requirements. The contractor shall maintain an awareness of changing environmental regulatory requirements to avoid environmental deficiencies for activities on the installation. The Prime Contractor shall ensure that their subcontractors (if any) comply with these specifications.

4.1.3 Permits:

The Contractor shall be responsible to coordinate, complete and process all permits required to complete the installation prior to any construction, digging, drilling, or modifications to a facility, Maintenance Hole (MH) or Hand-Hole (HH). For example:

- Total Period of Performance shall be 240 Calendar days from the issue of the NTP.
- Digging permit, AF Form 103 shall be submitted through BCE 14 calendar days in advance of digging activities. The Contractor is responsible for maintaining all markings and for ensuring AF Form 103 remains current.
- Base Civil Engineering Work Clearance Request, AF Form 332 shall be submitted through BCE 14 calendar days in advance of planned work.
- The Contractor shall trench, excavate, and mark and barricade open trenches IAW OSHA Standards.

All utility markings, flags, etc. shall be maintained by the contractor after the responsible work center/shop identifies/locates them and ensure that the AF Form 103 remains current. The contractor shall take precautions to protect existing infrastructure. If a 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 back to the same condition it was in prior to the damage.

4.2 Lightning Protection Guidelines:

If required by the proposed technical solution, the contractor shall meet the following minimum Government guidelines:

- Lightning protection shall be provided for the shelter, new tower and all significant metallic structures IAW the NFPA 780 Standard for Installation of Lightning Protection Devices.

5 Implementation Services:

5.1 Schedule:

The offeror shall provide a detailed working schedule for accomplishing the requirements of this SOO in MS Project format which includes all Government activities. The schedule shall identify all critical milestones and deliverables for the final design, integration, installation, and testing of the system. The milestones and schedule shall be described with reference to days after receipt of notice to proceed.

5.2 Program Management:

Program Management shall be provided throughout the design and implementation of the system

5.3 System Engineering:

Systems engineering services shall be provided from the preliminary system design through the completion of system implementation, security evaluation, and functional testing. As a minimum, system engineering services shall include the following:

- System/tower design

- Coverage analysis
- Installation
- Acceptance testing, to include coverage testing
- Final (as-built) system documentation

5.4 Project Status Review (PSR) Meetings:

The contractor shall participate in weekly (or as decided by the IPT) PSR meetings. The contractor shall include any existing action items for both the Government and contractor.

5.5 Transportation of System Equipment:

The Government will provide a "Ship-to" address and temporary outside staging area. The contractor shall be responsible for inventory and reconciliation of all shipments, which will be coordinated with and verified by a Government representative. The contractor shall transport all equipment from the temporary storage area to the final destination.

5.6 Site Access Information and Visitor Control Requirements:

The contractor shall coordinate all site visits through the LMR Project Leader. The contractor shall provide all necessary site visit information at least 10 days prior to any site visit by any contractor or subcontractor. The contractor shall coordinate all deliveries with the LMR Project Leader at least 10 days prior to delivery and provide any site visit information required for the delivery. This will ensure visit clearances can be obtained from the local Security/Visitor Control Office.

5.7 Optimization:

The contractor shall optimize all RF equipment after system installation is completed to ensure optimal performance and reliability.

5.9 Quality Assurance (QA) and Testing:

5.9.1 Quality Assurance:

The contractor shall provide a Quality Assurance Evaluator (QAE) for the entire life of the project. The QAE shall assist the government representative in performing random spot checks and in performing the system acceptance tests. The QAE shall be responsible for identifying system and outside plant deficiencies and/or discrepancies throughout the life of the project. A Status Report will be submitted, indicating project progress/statuses and listings any deficiencies/discrepancies found and actions to correct them.

5.9.2 System Acceptance Test:

The Contractor shall provide the Acceptance Test Plan for the system.

System Acceptance Test shall include:

- Operational testing of the repeater site to confirm proper operation.
- All equipment installed by the prime contractor or its sub-contractors

The contractor shall have 15 days after completion of the System Acceptance Testing to research, develop, and document the resolution of all discrepancies. The contractor shall provide in writing a

detailed explanation to the Government engineer/LMR Project Leader/QA representative of how the discrepancy will be resolved including any changes to the radio programming or the system data bases. Upon direction of the LMR Project Leader, the contractor shall implement the proposed resolution and shall repeat the System Acceptance Test.

5.9.4 RF Coverage Test:

The contractor shall conduct the RF Coverage Testing in conjunction with the System Acceptance testing and shall be conducted in accordance with the approved coverage test plan and procedures. RF Coverage testing shall minimally include test-drive results on perimeter base roads and within a sample of structures such as hangers and offices. Coverage testing is intended to verify coverage prediction done under 3.2.1 Coverage section of this document and to ensure installed repeater is functioning properly.

5.10 As-Built Documentation:

The Contractor shall provide full documentation on the installed system. This documentation shall contain user and maintainer documentation for newly installed equipment.

5.11 System Acceptance:

Formal system acceptance shall be granted after completion of the acceptance test. Final acceptance shall require at a minimum:

- Completion of all facility work, system, component, hardware delivery, installation, testing, optimization, and as built documentation.
- Acceptance of system facilities, individual systems, and equipment by Communications Squadron LMR and management personnel. Correction of any operational, performance, or workmanship defects shall be at the sole expense of the contractor.
- Successful completion of System Acceptance Testing.
- Successful completion of the RF Coverage testing.

5.12 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.

6 LOGISTICS REQUIREMENTS:

6.1 Spares:

The contractor shall propose as separate line-items, all necessary spares for their system.

6.2 Warranty:

The contractor shall provide a one-year or manufacturer’s standard commercial warranty whichever is greater. The warranty shall commence at the date of final system acceptance.

7 DELIVERABLE REQUIREMENTS:

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. All drawings shall be provided in PDF and AutoCAD format. The contractor shall also fill out and provide the DD1354, Interim, and Final. The Interim shall be provided at the 50% completion mark of the project. The Final DD1354 shall be submitted with the project AS built drawings.

ANNEX A (Site Preparation Standards)

- The contractor shall be required to purchase and provide a PDF copy to 20th CONs after the award of this contract. The contractor shall also maintain their own PDF version of the listed standard below. The Shaw design and CAD are already included as attachments.
- American National Standards Institute (TIA-222g, Structural Standards for Steel Antenna Towers & Antenna Supporting Structures
- National Fire Protection Association (NFPA) 780, Standard for Installation of Lightning Protection Devices
- NFPA 70 National Electrical Code (NEC)
- FAA Advisory Circular 70/7460-2k, Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace
- FAA Advisory Circular 70/7460-1K, Obstruction Marking and Lighting
- FAA Advisory Circular150/5345-43F, Specification for Obstruction Lighting Equipment
- Motorola R56 Standard, “Standards and Guidelines for Communications Sites”
- Shaw AFB Design Constr Change 2 dated 21 Aug 2018 - See attachment 01
- A_E_C CAD Standard_Release 6.1_(Dec 2019) - See Attachment 02

Hours of Operation/Scheduled Events

Normal hours of operation 07:30 – 16:30 M-F