REQUEST FOR PROPOSALS ANNOUNCEMENT
RFP No. 2024-06-27
Issue Date: 06/27/2024

County of Bandera, Texas
COUNTY JUDGE
500 Main Street, Bandera, TX 78003
Phone: (830) 796-3765

Title:	Project 25 Public Safety Radio Network
Proposals Due:	August 30, 2024, at 2:00 p.m., local time.
Project Overview: The purpose of this Request for Proposals (RFP) by the County of Bandera, Texas (County) is to solicit sealed proposals from qualified vendors (Offerors) for the provision of an Association of Public-Safety Communications Officials (APCO) International Project 25 (P25) radio communications system to support mission-critical public safety communications within the county.	

The County of Bandera, Texas (the "County") is seeking proposals from qualified firms (the "Offeror" or "Contractor") to furnish the goods and/or services described herein and proposals will be received by (Bandera County Judge), 500 Main Street Bandera, Texas, 78003, through the due date and hour shown above (local prevailing time).

Pre-proposal Conference: A mandatory Pre-proposal Conference has been scheduled for July 15, 2024, at 9:00 a.m., local time, at the Bandera County Sheriff's Office, 3360 State Hwy. 173 North, Bandera, Texas, 78003.

Site Visits: Site visits will begin following the Pre-proposal Conference on July 15, 2024. Bandera County will conduct additional site visits on July 16, 2024, for review by interested vendors. The schedule for site visits will be provided during the Pre-proposal Conference. Vendors will be responsible for providing their own transportation to the tower sites.

Questions: All inquiries and technical questions or comments related to this solicitation shall be directed to Judy Lefevers, Bandera County Emergency Management Coordinator, no later than 2:00 p.m. on August 12, 2024. All questions shall be submitted in writing (email is preferred). Telephone inquiries will not be accepted.

RFP Contact Information:	Judy Lefevers Bandera County Emergency Management Coordinator Email: emc@banderacounty.org

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1 PROJECT OVERVIEW

1.1 INTRODUCTION

A. The purpose of this Request for Proposals (RFP) by the County of Bandera, Texas (County) is to solicit sealed proposals from qualified vendors (Offerors) for the provision of an Association of Public-Safety Communications Officials (APCO) International Project 25 (P25) radio communications system to support mission-critical public safety communications within Bandera County (county geographically). The proposed communications system shall provide enhanced, two-way wireless communications capabilities to all public safety users. Proposals are requested for the following:

1. A new 5-channel very high frequency (VHF), 7-site P25 Phase 1 conventional simulcast radio system with consoles

2. New radio dispatch consoles at the County's Department of Public Safety Communications (911 center)

3. Mobile and portable subscriber radios for the County's first responders

4. Civil work to support upgrades to existing radio sites, and tower upgrades to support the aforementioned communications subsystems

B. In addition to the above, Offerors should address in their proposals system installation and commissioning and ongoing maintenance support to ensure a state-of-the-art system.

C. The proposed system will be owned by Bandera County.

D. The system procurement process is being administered by Bandera County.

1.2 BANDERA COUNTY BACKGROUND

Bandera County, known as the "Cowboy Capital of the World, is in Texas Hill Country, a geographic region of central and south Texas. The county, which encompasses 791 square miles and has a population of about 20,850, is located northwest of the city of San Antoinio and is considered part of the New Braunfels-San Antoinio metropolitan area. The county seat is Bandera. The county is on the Edwards Plateau and home to the Lost Maples State Natural Area, the Hill Country State Natural area, and the Love Creek Preserve. Approximately 80% of the county's land is dedicated to ranching and farming industries.

Public safety agencies within the county operate from various sites primarily on VHF in conventional analog and P25 Phase 1 modes.

Various elements of the County's radio system were installed over the last 20 years. To further complicate performance issues, law enforcement, fire, and emergency medical services (EMS) have radios manufactured by multiple vendors and many are at or near the end of their service life. The radio feature sets and capabilities vary between agencies. Some agencies have radios that are P25-capable while others are capable of analog-only operation.

Today, fire, EMS, and law enforcement have an assortment of portable radios, the majority of which are single-band VHF radios that have been discontinued. The Sheriff's Office has multiband P25-capable mobile radios but does not have multiband portable radios. Thus, Offerors shall provide pricing for multiband radios as an OPTION.

1.3 REQUEST FOR PROPOSAL OVERVIEW

A. This section provides a high-level overview of this RFP.

1. Section 1, Project Overview – Provides background information and a general overview of the requirements contained in the RFP.

2. Section 2, Instructions to Offerors – Provides instructions to Offerors, including, but not limited to, proposal due date, pre-proposal conference information, and evaluation criteria.

3. Section 3, Radio Communications System Requirements – Provides requirements for the desired communications systems including system configuration, site selection, radio frequency (RF) coverage, and site equipment. Subsections address the need for new radio dispatch consoles and a network management system (NMS). The County requires a P25 radio system.

4. Section 4, Backhaul Network – Provides requirements for using commercial fiber-optic networks.

5. Section 5, Site Development – Provides requirements for site development work including site compound preparation, site grounding, tower deployment, shelter deployment, and electrical and generator systems.

6. Section 6, Dispatch Consoles – Provides requirements for the provision of a new dispatch console system and related equipment.

7. Section 7, Warranty, Maintenance, and Support – Provides requirements for the warranty, extended warranty, maintenance, and support of the proposed system and subsystems.

8. Section 8, System Implementation, Testing, and Acceptance – Provides requirements for system cutover, staging, installation, fleet mapping, coverage testing, and final acceptance.

9. Section 9, Subscriber Equipment – Provides requirements for subscriber equipment, including mobiles, portables, and control stations, as well as subscriber warranty and maintenance.

10. Glossary of Terms and Acronyms – Key acronyms and terms contained in the RFP.

11. Appendices

- Appendix A: Tower Sites
- Appendix B: Coverage Requirements Map
- Appendix C: Compliance Matrix
- Appendix D: Proposal Pricing Instructions
- Appendix E: County Schools Location Information and Map

- Appendix F: Bandera County Terms and Conditions

12. Attachment A: Proposal Form

1.4 PROJECT DELIVERY TIMELINE AND COUNTY FINANCIAL TERMS

The County has needed a new radio system for many years. Being close to the border, but not on the border, and having only a transient population enjoying the Hill Country scenery does not provide the County a boost in tax revenue from its already sparsely populated tax base. As such, the County has developed a healthy sense of fiscal responsibility to its taxpayers. The County has identified an initial first year allocation of little more than $1 million. The County also recognizes that the project will cost more than what is currently encumbered. Vendors are expected to provide a multi-phase multi-year approach to fulfilling the County's needs. As the County can identify future funds, it will encumber funds for the next phase. Each phase is not guaranteed until the funds are encumbered. This is a required condition for the procurement of this radio system.

Vendors are expected to provide multi-phase, multi-year projects that will allow for beneficial use as layers of the system are implemented and others can be encumbered. The top priorities for the project are:

- Replacing the Bandera County 911 radio dispatch console system
- Implementing countywide digital P25 simulcast channels for dispatching public safety personnel

1.5 PROJECT SUMMARY

A. The successful Offeror (Contractor) shall provide the following project components:

1. Furnish and install system equipment and ancillary facilities
2. Engineering, system design
3. Project management
4. Software installation and programming
5. Training
6. Acceptance testing, including coverage testing
7. Cutover plan and execution
8. Warranty and maintenance

B. The Contractor shall furnish the following complete, highly redundant, and/or fully functional systems and equipment:

1. P25 land mobile radio (LMR) communications system, including the guarantee of system coverage and reliability

2. Infrastructure facilities (e.g., towers, grounding, surge protection, power systems, shelters, fencing)

3. Network management system (NMS)

4. Subscriber mobile and portable radio equipment

C. All equipment shall be provided in new condition and be covered by a full factory and/or manufacturer's warranty of not less than one year beginning at the time of system acceptance.

D. Appendix A, Tower Sites, lists the current site locations. Offerors are to identify radio site locations to best meet the County's coverage requirements and provide the greatest overall operational benefit. Greenfield sites should not be considered for this project. Leased tower locations must meet the facility requirements identified in Section 5, Site Development. The long-term cost effectiveness of using new leased tower sites versus using towers where the County already has infrastructure will be an evaluation factor.

E. Existing towers may require structural modifications to support the proposed new system and transitional loading. Offerors should account for the time required to remediate these towers, including the time required for engineering, design, procurement, and implementation of any required modifications.

F. In the event additional or alternate tower sites are proposed to meet an Offeror's coverage guarantee, the response must include letters of commitment from those site and tower owners indicating the availability of tower space to accommodate the proposed facilities and antennas. Such letters also must indicate a commitment to enter negotiations with the County for tower space.

G. Work shall be planned, coordinated, and conducted with minimal interruption of service to existing critical systems.

H. Proposals shall completely describe the equipment and methods that will be used to implement the system. The intent of this document is to allow the Offeror to propose the best equipment, technology, and methods available to provide state-of-the-art public safety communications systems of the highest quality and performance.

I. Proposals shall not be accepted that include systems or equipment within five years of the end of their respective lifecycles at the time of system acceptance.

J. Proposals shall not be accepted that include systems or equipment that will no longer be supported for software, spare parts, and repair by the Offeror or manufacturer within 15 years of system acceptance. Product roadmaps must be provided.

K. If a product or feature included in an Offeror's proposal is no longer offered, supported, or being sold at the time of system acceptance, the Contractor shall offer the equivalent product or service at no additional up-front or recurring cost.

L. If requirements are stated in more than one section and appear to conflict, the more stringent requirement shall apply.

1.6 PROPOSALS DESIRED

A. The County desires a complete solution addressing all project systems, subsystems, and components.

B. Any requirements placed on the County throughout the project must be specifically identified in the Offeror's proposal. Any requirements required for project completion that have not been identified as a County responsibility will be the responsibility of the Offeror at no additional cost to the County.

1.6.1 Systems Technical Requirements

A. This RFP seeks proposals for the construction of a countywide radio system that will include:

1. VHF P25 Phase 1 conventional system that will support first responders within the county.

2. Simulcast system to meet the County's capacity and coverage requirements

3. P25 dispatch consoles

4. P25 subscriber units (mobiles, portables, and control stations)

5. Wireline Internet Protocol (IP) network connectivity from all repeater sites back to the 911 center using commercial fiber-optic networks

6. Site construction/improvements

1.6.2 Services

A. Design and engineer the P25 radio system to provide radio coverage for the area defined in Appendix B, Coverage Requirements Map. This includes mobile coverage areas and portable coverage areas with the radio carried on the user's belt with a radio-mounted antenna and a wired speaker/microphone.

B. Interface to at least two commercial fiber-optic networks (Bandera Electric and Southwest Texas Communications) to provide radio system backhaul for P25 traffic at each repeater site and the 911 center.

C. Conduct a structural analysis of all towers proposed for use in the system and mitigate any structural shortfalls to meet the current Telecommunications Industry Association (TIA) 222-H, *Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures*, Class III standard.

1.7 QUALITY ASSURANCE AND COORDINATION

1.7.1 Standards and Guidelines

A. The Contractor shall comply with the latest applicable standards, rules, regulations, and industry guidelines from the following entities:

1. American National Standards Institute (ANSI)
2. National Electrical Manufacturers Association (NEMA)
3. Electronics Industry Association (EIA)
4. Telecommunications Industry Association (TIA)
5. Telecommunications Distribution Methods Manual (TDMM)
6. National Electrical Code (NEC)
7. Institute of Electrical and Electronics Engineers (IEEE)
8. Federal Communications Commission (FCC)
9. UL LLC
10. American Society of Testing Materials (ASTM)
11. National Fire Protection Association (NFPA)
12. Other contractor/industry standards

B. The International Building Code (IBC) (unless superseded by local code) and National Electrical Code (NFPA 70) shall be followed in all instances.

C. The Contractor shall comply with industry best practices for system installation, grounding, bonding, and transient voltage surge suppression (TVSS), as outlined in the following standards:

1. Motorola R56®, *Standards and Guidelines for Communication Sites* (latest revision)
2. Harris AE/LTZ 123 4618/1, *Grounding Guidelines*
3. Equivalent (Offerors must provide details of the standard they will hold themselves responsible for)

D. Governing codes and conflicts: If the requirements of this specifications document conflict with those of the governing codes and regulations, then the more stringent shall apply.

E. If an Offeror cannot meet any applicable standards or guidelines, the Offeror shall list in its proposal any deviations for approval by the County.

F. The Contractor shall identify and coordinate all necessary codes, permitting, etc., including building permits. The Contractor shall notify the County of any issues.

G. The Contractor shall be responsible for performing a structural analysis for all proposed towers, and for advising the County where remediation will be required and the cost for proposed modifications.

1.7.2 P25 Standard Compliance

A. The proposed radio system shall comply with the latest applicable P25 suite of standards adopted as TIA and/or ANSI documents at the time of proposal submission.

B. The system shall be delivered in accordance with the P25 Phase 1 standards outlined in this RFP. If these standards change or are updated for final release, the Contractor shall implement the final standards at no additional charge to the County.

C. The proposed system shall not include proprietary features that prohibit or impede the use of P25-compliant subscriber equipment provided by any equipment vendor. Any proprietary features that would be available as an option should be clearly explained.

1.7.3 Frequency Coordination and Licensing

A. The VHF band will be used for the P25 conventional simulcast radio system. The County has applied for five VHF transmit/receive channel pairs at all seven tower sites.

B. The Contractor shall be responsible for the preparation of all final license acquisitions to support the new system.

C. The County shall be responsible for coordination and licensing fees, if any, and signatures, as applicable.

D. Following approval of the preliminary design phase, the Contractor shall provide all license modifications and applicable forms to the County for review and approval.

E. Any proposed designs shall align with the associated restrictions of the frequency band proposed by the Offeror.

F. Frequencies licensed by the County for the new VHF simulcast system are available on the FCC web site under callsigns WSCL928 and WSCL929. Five VHF transmit/receive channel pairs have been licensed for simulcast operations at each tower site used by the County.

1.7.4 Permitting

A. The Contractor shall be responsible for all permitting activities required to complete site construction and system implementation including building and electrical permits.

B. The Contractor is responsible for identifying the Authority Having Jurisdiction (AHJ) for each proposed location.

C. The Contractor shall propose designs that fall within the zoning requirements of each AHJ.

D. The Contractor shall research all requisite exhibits required by each AHJ and be responsible for preparing those exhibits.

E. The Contractor shall track the progress of all permit applications and seek expedited processing when possible.

F. The Contractor shall respond to any comments received in response to comments from the AHJ within one week of receipt.

G. The Contractor is responsible for any required certifications of permitting submittals, including engineer-sealed drawings by a professional engineer (P.E.) registered in the state of Texas.

H. The Contractor shall be available to represent the County at any meetings for site approval including local government or public outreach meetings.

I. The Contractor shall be responsible for preparing any exhibits required in support of zoning variances.

1.8 PROJECT MANAGEMENT

A. Offerors shall provide a project management plan (PMP) in their proposals that provides detail on the following: project scope, deliverables, schedule, quality assurance/quality control (QA/QC) processes, and risk management.

B. The PMP shall describe how the Contractor intends to monitor and control the installation and deployment of the proposed system and mitigate risks to ensure that the system meets the design specifications and is delivered on time.

C. Regularly scheduled status meetings shall be established between the County's project team and the Contractor. The Contractor shall provide a schedule for these meetings subject to the County's approval.

1.8.1 Scheduling

A. The Contractor shall develop and maintain a project schedule including tasks, milestones, start and end dates, task precursors and task owners.

B. The schedule shall represent tasks associated with completing work and shall be updated with actual dates as tasks are completed.

C. The updated schedule shall be provided as an agenda item for all County/Contractor status meetings.

D. The schedule shall address the following at a minimum:

1. Site surveys
2. Detailed design review
3. Site preparation
4. Equipment manufacturing
5. Factory acceptance test
6. Equipment delivery
7. System installation
8. System configuration
9. System optimization
10. Acceptance testing
11. Coverage testing
12. User training
13. Fleet map development
14. System cutover
15. System documentation development and delivery
16. System and equipment warranty

1.8.2 Project Punch List

A. The Contractor shall establish and maintain a punch list, as mutually agreed to with the County, for site facilities, equipment, and acceptance tests.

B. The punch list shall be maintained in real time and published weekly. The punch list shall include the following at a minimum:

1. Sequential punch-list item numbers
2. Date identified
3. Item description
4. Party responsible for resolution
5. Expected resolution date
6. Resolution date
7. Details about how each punch-list item was resolved and tested
8. Notes about the item

C. The Contractor shall be responsible for reviewing each punch-list item and advising the County of any changes. The status of punch-list items shall be updated during each status meeting.

1.8.3 Project Meetings

A. A project kickoff meeting shall be scheduled prior to the beginning of the project.

B. Regular project status meetings shall be scheduled following contract award and the initial kickoff meeting.

C. The Contractor shall be responsible for scheduling the meetings, as well as preparing meeting agendas and minutes. In addition to those identified in Section 1.8.1 Scheduling, above, meeting agenda items shall include, at a minimum, the following items:

1. Schedule review
2. Status of deliverables
3. Risk items
4. Changes
5. Action-item assignments

1.8.4 Project Staffing

A. Project staffing shall be managed by the Contractor based on workload and the level of effort required throughout the implementation/installation process; however, the positions identified below shall be staffed throughout the duration of the project and shall not be changed without prior approval of the County.

B. Project Manager

1. The Contractor's project manager shall be the primary point of contact between the County and the Contractor.

2. The project manager shall: bear full responsibility for supervising and coordinating the installation and deployment of the communications system; be responsible for development and acceptance of the PMP; manage the execution of the project against that plan; and oversee the day-to-day project activities, deliverables, and milestone completions.

3. The project manager shall be responsible for coordinating the regular project status meetings.

C. Project Engineer

1. The Contractor's project engineer shall have the primary responsibility for managing the system design and ensuring that the system is installed in accordance with the approved system design.

2. Any deviation from the system design shall be subject to project change control procedures and shall not be undertaken until approved by the County.

3. The project engineer shall ensure the development of block diagrams, system-level diagrams, and rack diagrams to assist the installation team in completing the system installation.

4. The project engineer also shall supervise the development and execution of the acceptance test plan (ATP) and coverage acceptance test plan (CATP), as well as guide the County's project team through the processes and procedures necessary to prove that the system performs as specified in the contract. No test plan shall be executed until approved by the County.

1.8.5 Quality Assurance/Quality Control Program

A. The Contractor shall submit a QA/QC plan for review during preliminary design as described in this section. The plan shall address all stages of the project, including at a minimum:

1. Procurement
2. System design
3. Installation
4. Implementation
5. Testing
6. Cutover

B. The QA/QC plan shall specifically describe the plans and procedures that ensure the proposed system is designed in accordance with the standards and requirements described in this specifications document.

C. The QA/QC plan shall be included as part of the PMP developed by the project manager.

D. The QA/QC plan shall be an integral part of the project and include County personnel as part of the review-and-approval process for all deliverables and submittals.

E. The proposed QA/QC plan shall address the following project tasks at a minimum:

1. Design analysis and verification
2. RF coverage analysis and verification
3. Design changes and document control
4. Material shipping, receiving, and storage
5. Site preparation (if required)
6. Field installation and inspection
7. Equipment inventory and tracking
8. System testing and validation
9. Software regression testing
10. Deficiency reporting and correction
11. Implementation and cutover
12. Training and certification

1.9 DELIVERY, STORAGE, AND HANDLING

A. The Contractor shall be responsible for the storage of equipment following shipment from staging. All costs associated with the storage shall be the responsibility of the Contractor. The County shall not be liable for equipment or material stored onsite prior to system acceptance.

1.10 PROJECT SUBMITTALS

A. Key project deliverables and submittals are outlined below and are described in further detail throughout this specifications document.

B. All project submittals shall be subject to review and approval by the County and its engineer/consultant.

C. All submittals shall be provided in hard copy, properly bound, and in electronic format on a universal serial bus (USB) flash drive. The quantity of hard copies required shall vary for each type of submittal and shall be determined by the County prior to submission.

D. All submittals shall include a cover letter or letter of transmittal, signed, dated, and fully describing the contents of the submittal.

E. For the duration of the project, the Contractor shall provide a web-based portal or File Transfer Protocol (FTP) site for sharing and exchanging project documents.

1.10.1 Preliminary Design (45 days after notice to proceed)

A. The Contractor shall submit the preliminary design package 45 days after receiving the notice to proceed. The preliminary design package shall include the following:

1. QA/QC plan
2. Detailed project schedule
3. System-level block diagrams

4. Patching schedules and termination details for all cabling necessary for a complete record of the installation
5. Radio channel plans
6. Leased fiber-optic network backhaul plan, report(s)
7. Equipment room overview drawings
8. Equipment rack/cabinet elevation drawings
9. Tower profile drawings indicating antenna-mounting locations
10. Detailed lists of materials for each site
11. 30-day operational test plan
12. CATP

1.10.2 Final Design (90 days after notice to proceed)

A. The contract design review (CDR) shall occur no sooner than 90 days after the Contractor receives the notice to proceed, unless the County agrees to an earlier date, or before the proposed sites can be validated and the County provides confirmation.

B. The CDR shall be delayed until proposed sites in the Offeror's design can be validated.

C. The Contractor shall submit the final design package no earlier than 90 days after receiving notice to proceed, which shall include the following:

1. Any updates to previously submitted design information
2. Cutover plan
3. System operation and maintenance manuals for all equipment
4. Site installation drawings
5. Structural analyses and results
6. A detailed preliminary staging acceptance test plan (SATP) outlining a comprehensive series of tests that will demonstrate proof of performance and readiness for shipment

D. Each phase's SATP shall be submitted no later than 15 business days before the testing begins and shall be approved no later than five business days before the testing begins. The final planned SATP should be submitted with the response. The intent is to understand what features are being delivered in each phase. Any system feature that was inadvertently omitted from the test plan also may be tested either at the factory and/or in the field.

1.10.3 System Staging, Delivery, and Installation

A. System staging shall not occur earlier than the final CDR approval or site validation and acquisition unless agreed to by the County.

B. System staging must be performed in the United States.

C. The Contractor shall submit a bill of materials/packing list with two copies for each shipment of equipment. The packing list shall include the following information at a minimum for each component included in the packaging:

1. Manufacturer

2. Model
3. Serial number
4. Unique identification of the package containing the item

D. All items shipped by the Contractor or its suppliers will include the above information in a barcode format.

1.10.4 Final System Acceptance

A. The Contractor shall submit a detailed final acceptance test plan (FATP) that outlines a comprehensive series of tests that will demonstrate proof of performance and readiness for each phase of the system implementation.

B. The final FATP shall be submitted no later than 15 business days before the testing begins and shall be approved by the County before it is considered finalized. A preliminary FATP shall be submitted with the Offeror's proposal. Any system feature that was inadvertently omitted from the test plan also may be tested in the field.

C. The Contractor shall submit three final and complete sets of as-built documentation for each phase. As each phase progresses, the documentation will be updated. This includes the following:

1. Documentation index
2. Field test reports, with dates and actual readings
3. Coverage test reports
4. Warranty documentation
5. Detailed list of materials for each site
6. A copy of all red-line documents for each site prior to issuance of the as-built documentation
7. As-built system-level block diagrams
8. As-built site drawings, including all cabling and terminations
9. Site layout drawings, as appropriate
10. Tower drawings showing any new installations

2 INSTRUCTIONS TO OFFERORS

2.1 OVERVIEW

A. Proposals must be received by 2:00 p.m. Central Time (CST) on August 30, 2024.

B. Offerors shall submit a bound original and nine bound copies of the proposal to the County. Each package also shall include a copy of the proposal in electronic format on a USB flash drive. The front of the package shall be marked "Proposal for County of Bandera P25 Public Safety Radio Network." Proposals shall be addressed to:

BANDERA COUNTY P25 PUBLIC SAFETY RADIO NETWORK PROPOSAL
Attention: Bandera County Judge
500 Main Street
Bandera, TX 78003

C. Offerors may submit questions to the County in either written or electronic format (email). The County will provide answers to any questions received. Oral responses shall not be binding on the County.

D. The County's contact for submission of technical questions is:

Judy Lefevers, Bandera County Emergency Management Coordinator
emc@banderacounty.org

E. Offerors shall submit questions by 2:00 p.m. CST on August 12, 2024.

2.2 MANDATORY PRE-PROPOSAL CONFERENCE

A. A mandatory pre-proposal conference will be held on July 15, 2024, at 9:00 a.m. CST. Vendors interested in participating must provide email addresses to the County contact listed in Section 2.1.D. no later than 5:00 p.m. on July 11, 2024, to receive an invitation to the pre-proposal conference.

B. Offerors may submit questions to the County in either written or electronic format (email). Email is preferred. During the conference, the County shall provide answers to any questions received and hold an open discussion regarding the project. Oral responses during the conference shall not be binding on the County.

C. The County contact for submission of technical questions is the same as listed above.

D. The County's intent is to conduct site visits for interested parties following the pre-proposal conference on July 15, 2024. Additional site visits will be conducted the following day, July 16, 2024. The logistics for this process will be discussed during the pre-proposal conference.

2.3 SCHEDULE OF EVENTS

A. While the County is not obligated to comply with the following timeline, it intends to comply with the following schedule, which may be changed in the County's sole discretion.

Table 1: Schedule of Events

Event	Date and Time
Solicitation Issued	June 27, 2024
Request Pre-proposal Conference Invite Due	July 11, 2024
Pre-proposal Conference	July 15, 2024, from 9:00 a.m. – 10:00 a.m. CST
Site Walks	To be scheduled as soon as possible following the pre-proposal conference on July 15 and 16 2024
Written Questions Due	August 12, 2024, at 2:00 p.m. CST
Response/Addendum Issued	As required, no later than August 19, 2024
Proposal Due	August 30, at 2:00 p.m. CST
Evaluation of Proposals	September 3, 2024, through October 15, 2024 Oral interviews may be scheduled for the week of September 19, 2024
Negotiation and Contract Award	Negotiations with the selected Offeror are anticipated to occur October – November 14, 2024

2.4 PROPOSAL FORMAT

A. Offerors shall complete the compliance matrix provided in Appendix C. Failure to respond to any item in the compliance matrix may cause the proposal to be rejected.

B. Offerors shall adhere to the proposal format provided below, organized by section.

1. Attachment A – Proposal Form

   The Proposal Form should act as the cover pages of the proposal, followed by the sections below.

2. Section 1 – Cover Letter

3. Section 2 – Table of Contents

4. Section 3 – Executive Summary

5. Section 4 – Qualifications

All Offerors shall provide in their proposals, and upon request by the County, information that describes their experience and qualifications concerning similar projects, including at a minimum:

a. Descriptions of the Offeror's qualifications
b. Resumes of key personnel and subcontractors
c. Supplementary information
d. A list of five systems/solutions of similar size and complexity, successfully completed by the Offeror, including:

    i. Name of the system/solution
    ii. Location
    iii. Contact person
    iv. Contact telephone number

    Note: These references will be contacted. Failure of a reference to respond may count against an Offeror's final score. Offerors are urged to contact references and request their prompt response.

6. Section 5 – Description of the system/solution, including equipment, software, design, and services to be provided by each phase

    a. Radio communications system, including RF coverage predictions
    b. Dispatch console
    c. Proposed plan for conducting structural analyses and remediation for existing towers where necessary
    d. System management systems
    e. System event-monitoring systems
    f. Additional subsystems (if applicable)
    g. Detailed equipment specification sheets for all proposed equipment
    h. System design information including a complete detailed description, block diagrams, equipment layouts, and equipment lists necessary to provide a complete and comprehensive description

7. Section 6 – Dispatch console system

8. Section 7 – Preliminary project phase schedule with detailed Gantt chart for each phase

9. Section 8 – Training programs and additional information not covered in other sections

10. Section 9 – Point-by-point compliance matrix

    Offerors shall provide compliance statements in the spreadsheet found in Appendix C, Compliance Matrix, for each outline level of this RFP. Offerors shall provide a written response to every section with which they do not comply. Compliance statements are limited to three choices:

a. COMPLY: The proposal meets or exceeds the specified requirement. When using this statement, an Offeror is confirming that it is providing the equipment and/or service associated with that paragraph.

b. COMPLY WITH CLARIFICATION: The proposal does not meet the exact stated requirement; however, it meets a substantial portion, or meets the intent, of the requirement. Offerors must provide a detailed explanation when using this statement.

c. EXCEPTION: The proposal does not meet the specified requirements. Offerors must provide a detailed explanation when using this statement.

Capable/Enabled versus Capable/Extra Cost: Any time an Offeror uses the word “capable,” it must use one of the following to distinguish if the feature or function is “capable/enabled” (at no additional cost) or “capable/extra cost” (cost should be provided in the pricing workbook).

11. Section 10 – System and subsystem warranty information including financial plan to reimburse County for warranty work, a list of maintenance plans and alternate tiers available, spare parts list, and 15-year cost-of-ownership information

12. Section 11 – Total proposal cost and detailed pricing breakdown

    a. Offerors shall provide the total proposal cost and itemized pricing for both equipment and services using the pricing workbook, which is a separate document; instructions are provided in Appendix D, Proposal Pricing Instructions. Costs for optional items shall be provided in the workbook. Each line item shall indicate the Offeror’s list cost and discount offered. Costs for services must include the hourly rate and the total number of hours. Costs for OPTIONAL items shall be provided. If an alternate proposal is submitted (refer to Section 2.7), it shall be provided with a separate set of proposal pricing forms.

    b. The cost utilized for proposal evaluation purposes shall include up-front capital costs and the 15-year cost-of-ownership including maintenance costs, system update costs, and tower lease costs.

    c. Pricing shall be valid for a period of not less than 12 months from the date of submittal.

13. Section 12 – Documentation of financial responsibility and stability

14. Section 13 – Required attachments

2.5 EVALUATION

A. The County and its evaluation committee shall evaluate proposals based on numerous criteria, including:

1. RFP compliance and willingness to accept the County’s contract terms
2. Vendor experience and demonstrated ability to perform the services described
3. Cost of equipment and lifecycle costs
4. Capability, features, and functionality
5. System design

6. Warranty, maintenance, and support
7. Quality of work as verified by references
8. Demonstrated history of providing similar services to comparable entities
9. Any other factors the evaluation committee deems relevant

B. The evaluation committee will consist of technical, management, and end-user personnel and others designated by the County.

C. Each proposal will be evaluated in the major categories listed below. The categories have been listed with weights to indicate the relative order of importance to the County.

Table 2: Proposal Weighting

A. Price/Value to the County	25%
B. Radio system coverage	30%
C. Overall content and quality of the proposal and adherence to the requirements of the RFP	20%
D. Overall system architecture, features and functionality, and the benefits to be derived by the County	20%
E. PMP and history of delivering equipment, systems and services in a timely manner	5%
TOTAL	100%

D. As part of the evaluation process, the County may interview Offerors regarding specific areas of their proposals as well as their references.

2.6 PROPOSAL OPTIONS

Requirements described as an “OPTION” or “OPTIONAL” refer to features or equipment that may or may not be purchased by the County, or items whose quantities are not determined yet. It is not the Offeror’s option to respond to these requirements; therefore, an Offeror is required to respond to all OPTIONAL requirements to the greatest extent possible.

2.7 ALTERNATE PROPOSALS

While this RFP anticipates the proposal of a simulcast system, alternative proposal designs also could include a multisite system design, if an Offeror deemed it to be viable and desirable. Any such alternative proposal would be reviewed using the same general performance requirements as outlined in the RFP. Alternate proposals of this type should include a business case analysis of the potential merits of such a design, to include, but not be limited to, any anticipated one-time or long-term cost savings. Alternate proposals should also include a validation statement that the owners of the other system are aware of the alternate proposal and that they would be willing to collaborate with the County and the Offeror to optimize any such design and shared use agreement. It is important to note that an alternate proposal will only be considered if the Offeror also submits a primary proposal for a standalone system solution that complies with this RFP.

A. If an Offeror has a technological solution that does not meet the exact requirements in this specifications document, the Offeror may offer more than one proposal, as long as each proposal fully addresses the intent of the requirements set forth in this document.

B. Alternate proposals shall be submitted separately under a different cover from the base proposal and clearly marked “ALTERNATE PROPOSAL.”

C. The Offeror shall comply with the same submittal instructions in Section 2.4, Proposal Format.

2.8 ADDENDA

During the proposal period, the County may issue written addenda to change or correct the specifications as issued. Such changes or corrections shall be included in the work and/or materials covered by the proposal, and such addenda shall become part of the specifications and contract.

2.9 AWARD OF CONTRACT

The County intends to award a contract(s) that includes each identified system component. However, the County specifically reserves the following rights, consistent with procuring a system that best meets the needs of the County and system users:

A. The County reserves the right to accept or reject any proposal, or any portion thereof, to waive any informalities or irregularities, and to award this bid, in whole or in part, in the best interest of the County.

B. The County reserves the right to accept all or part of any proposal, depending solely upon the requirements and needs of the County.

C. The County reserves the right to seek clarifications regarding any proposal submitted, or specific aspects of any proposal, prior to contract award. After seeking such clarifications, the County shall allow the Offeror an opportunity to provide the requested clarification.

D. The County reserves the right to adjust item quantities and/or reconfigure the communications system in the best interest of the County after contract award.

E. The County may request an interview with and/or oral presentation from any vendor that submits a proposal. These meetings provide an opportunity for the County to ask questions and for the Offeror to clarify its proposal or demonstrate its product/solution.

F. The County reserves the right to delay evaluation and award for up to 12 months following the receipt of proposals. All proposals must be valid for a period of not-less-than one year following submittal.

3 RADIO COMMUNICATIONS SYSTEM REQUIREMENTS

3.1 OVERVIEW

A. Offerors shall propose complete systems as described below. Requirements for each system are described herein and are delineated throughout this specifications document according to trunked system requirements.

1. Primary Simulcast System – VHF P25: The digital simulcast system should consider the radio sites detailed in Appendix A, Tower Sites, along with any other radio site locations identified by the Offeror and integrate them into a standalone system with a controller owned and operated by the County. The system must seamlessly integrate all sites such that end users can roam freely throughout the service area without service interruption or the need to manually select sites. The system must utilize the latest system platform at the time of system acceptance. The system must meet the County's coverage and capacity needs and must be expandable to allow for additional coverage, capacity, and features.

2. Bandera County intends to implement a P25-compliant radio system in a phased approach as funding allows. This multi-phased approach would allow for an initial deployment of a new dispatch console system and a P25 Phase 1 conventional simulcast system and provide a migration path to add repeater sites, add channels, and migrate to a P25 Phase 2 (time division multiple access [TDMA]) trunked system.

3.2 INTEROPERABILITY/P25 STATEMENT OF REQUIREMENTS

A. The proposed radio system shall comply with the latest applicable P25 suite of standards adopted as TIA, ANSI, and/or EIA documents at the time of proposal submission. These standards establish technical parameters that allow compatibility and interoperability of digital radio equipment from different manufacturers.

B. By stating compliance with a level-two heading in the Statement of Requirements (SoR), an Offeror claims compliance with all applicable level-three requirements in the SoR. If an Offeror is not compliant with a requirement, the Offeror shall identify the requirement by number and name and provide a detailed explanation of why the proposed system does not meet the requirement.

3.3 SYSTEM CONFIGURATION

3.3.1 Redundancy and Survivability

A. The proposed radio communications systems are intended to support mission-critical operations; therefore, a high degree of redundancy and survivability is required. A backhaul network topology utilizing fault tolerance shall be incorporated to the greatest extent possible through a distributed and/or redundant architecture.

B. Geographic redundancy is required for all system elements in which failure would result in a major failure of the system; single points of failure are not acceptable. Such elements include, but are not limited to, the following:

1. System controllers and fixed site equipment
    a. System servers
    b. Simulcast controllers
    c. Network components, switches, and routers, modems

2. Simulcast controllers and voting equipment
3. Power systems
4. Network management and fault reporting systems

C. The system shall include several modes of degraded operation, known as failure modes. The system shall maintain communications in the event of a system failure. Additionally, the system shall switch to a failure mode gracefully. Failure modes shall include the following scenarios, at a minimum:

1. Loss of single site
2. Loss of multiple sites
3. Loss of system/console controller
4. Loss of simulcast controller
5. Loss of a frequency channel due to interference
6. Loss of multiple channels due to wideband interference
7. Loss of a repeater station due to an equipment failure

D. Offerors shall provide a description of each failure mode and describe how communications are affected by the failure.

E. Equipment shall be proposed with redundant power supplies and network interfaces.

F. Network routers and switches shall have sufficient spare ports to accommodate all equipment connected to a failed network router or switch.

3.3.2 Expansion

A. The systems shall be expandable by adding additional hardware and/or software to increase coverage, capacity, or features. Where possible, Offerors shall propose P25 Phase 1 equipment that is upgradeable to P25 Phase 1 trunking, and P25 Phase 2 trunking, and provide all the implementation and other associated costs of such an upgrade in their proposals.

3.4 SITE SELECTION

A. Offerors shall determine the number and location of sites needed to provide the required coverage. Offerors shall determine the radio sites that provide the best combination of coverage and value for the County. Offerors shall perform mandatory site visits prior to submitting their proposals to ensure a full understanding of each site’s condition.

B. The number and location of sites within an Offeror’s design are the Offeror’s responsibility.

C. Government, utility, and/or commercial sites for lease may be proposed; greenfield sites should not be considered for this project. However, it is the County's desire to consider the long-term cost/value factor when evaluating designs.

D. It will be an Offeror's responsibility to ensure that the identified frequencies are licensable at all proposed locations. It is also an Offeror's responsibility to perform due diligence with the tower or landowner to determine availability of the site to accommodate the proposed antennas (lease) and shelter, as well as associated costs, zoning, and planning restrictions. Availability and associated costs related to these sites must be documented and included in the Offeror's proposal.

E. For any leased locations other than listed, the County shall assume a cost of $3,000 per month over the expected life cycle of the system. The lease cost will be factored into the evaluation. A lower monthly payment will be considered if an Offeror can guarantee a lease cost less than $3,000 per month with written confirmation from the tower owner.

3.5 COVERAGE

A. The radio system shall be designed to provide highly reliable coverage within the geographical boundaries of the county while meeting licensing restrictions and requirements for VHF systems regarding out-of-county signal propagation.

B. Coverage design, implementation, and testing for the system shall adhere to TIA Telecommunications Systems Bulletin (TSB)-88-D, *Wireless Communications Systems Performance in Noise-Limited Situations*, latest version. In the event of differing interpretations, the specific testing requirements and protocols outlined in this RFP will be the controlling approach to testing.

C. Channel Performance Criteria (CPC)

1. RF coverage is defined as the digital bit error rate (BER) that provides an audio signal that delivers a minimum delivered audio quality (DAQ) score of 3.4 for both outbound (talk-out) and inbound (talk-in) communications.

2. TIA defines DAQ 3.4 as "speech understandable with repetition only rarely required," which is the minimum acceptable level for public safety communications.

D. The radio system must provide coverage as described below. All coverage at the designated levels shall be provided to the greatest extent possible within the county boundary with 95% reliability.

1. County border-to-border mobile coverage

2. Head-level outdoor coverage for the area noted on the coverage map in Appendix B.

a. Trunk-mounted antennas should be assumed for all mobile coverage calculations.

b. Portable configuration is with the radio at head level while in transmit mode and belt level in receive mode using a wired speaker microphone with a radio-mounted antenna.

3. System coverage should be at DAQ 3.4 or better, per TIA TSB-88-D definitions of DAQ. The County will not allow grid re-testing in the case of a single failed grid. Grid retesting (re-try) will only be allowed in the case of human error or test equipment failure.

E. Coverage Predictions for County School Locations

1. Appendix E, County Schools Location Information and Map, provides information regarding the county school campuses. The County is interested in having Offerors estimate the level of coverage that their designs will provide at the various school locations. Offerors shall provide an estimated outdoor signal strength level for each school location. Offerors also shall provide the receive sensitivity threshold for its public safety portable radios and proposed antenna(s) for the coverage design requirements requested in this proposal. A separate chart can be provided or the current location chart can be modified to include the estimated signal strength information in an additional column.

2. While this data will be informational in nature, the County is interested in system designs that consider the desire to have strong coverage on the campuses.

3.5.1 Coverage Maps

A. Offerors shall include a detailed description of the propagation models used and the assumptions made in preparation of the maps. A brief description of the methodology the software used to calculate coverage also shall be included in the proposal narrative.

B. Offerors shall submit both talk-out and talk-in system composite coverage maps for all proposed design configurations. The maps shall be clearly labeled and shall show link budget calculations for each of the following:

1. Mobile radios – Standard power, dash- or trunk-mount, with antenna mounted on the trunk

   a. Talk-out to a mobile radio
   b. Talk-in from a mobile radio

2. Portable radios – Standard portable radio outdoors with VHF helical whip antenna

   a. Talk-out to a portable radio on hip with a swivel belt clip
   b. Talk-in from a portable radio at head level

3. Portable radios – Standard portable radio indoors

   a. Talk-out to a portable radio on hip with a swivel belt clip, with 12 decibels (dB) of building loss
   b. Talk-in from a portable radio at head level, with 12 dB of building loss

C. Coverage maps shall be clearly labeled to indicate what percentage of the county is covered for each scenario listed above without retries and what guarantee the Offeror will provide for each scenario.

D. Coverage shall be depicted using a light transparent color or cross-hatching for those areas that meet or exceed the minimum coverage reliability threshold.

E. All maps must clearly delineate the difference between areas with coverage predicted to be equal to or greater than DAQ 3.4 and areas that do not meet this coverage requirement. Offerors shall include the effects of simulcast interference (time delay and integration [TDI]) in all coverage maps.

F. Coverage maps must include sufficient detail to allow another party to duplicate the predicted coverage using propagation software. This information must include a complete link budget calculating the minimum signal threshold (in decibel-milliwatts [dBm]) required to obtain the performance depicted.

G. At least one set of maps depicting mobile and portable radio coverage shall be provided showing coverage extending outside the service area, although the County acknowledges this is not guaranteed coverage. These maps will show the extent of interoperability coverage outside the service area.

H. Coverage maps shall be provided in the proposal in three formats:

1. 11-inch x 17-inch (minimum), full-color, hardcopy format
2. In PDF file format on USB flash drive
3. Google Earth KMZ files on a flash drive

3.5.2 Map Criteria

A. All maps shall include a background layer suitable for County reference (e.g., topographic map, roads, rivers). Link budgets shall be provided, clearly defining the following minimum information relating to each map and each site:

1. Base station/repeater RF power output
2. Antenna gain
3. Antenna model
4. Antenna mounting height and azimuth
5. Antenna down tilt (if applicable)
6. Transmit power and effective radiated power (ERP)
7. Receiver sensitivity
8. Transmit and receive antenna heights
9. Combiner/multicouplers/tower-top amplifier (TTA) gains/losses of each
10. Transmission line lengths and line loss
11. Mobile and portable antenna height for talk-out and talk-in
12. Mobile and portable RF output power
13. Configuration of field units (e.g., talk-out to portable inside 12 dB-loss buildings)
14. Simulcast timing parameters (if applicable)
15. Signal strength thresholds (in decibels referenced to dBm)
16. Offeror stated percentage of the county covered for each scenario at DAQ 3.4

B. Thirty-meter U.S. Geological Survey (USGS), National American Datum (NAD)-83 terrain elevation data shall be used for coverage simulations. Alternatively, three arc-second data may be used where 30-meter data is not available.

3.5.3 Coverage Model

A. Offerors shall employ a suitable coverage prediction model using appropriate terrain and land-cover data for the county environment. (Reference TIA TSB-88, latest revision, for guidelines.)

3.5.4 TIA TSB-88 – User Choices

A. User Choices

1. VHF system
   a. Minimum of five voice paths

2. P25 compliance

B. Service Area

1. The service area is the defined geographical area of Bandera County identified in Appendix B

2. The target device, usage, and location are:

   a. Mobile radios: Standard power, dash- or trunk-mount, with antenna mounted in the center of the trunk

   b. Portable radios: Standard portable radio

      i. Outbound (talk-out) from the transmitter to a portable radio on hip
      ii. Inbound (talk-in) to the transmitter from a portable radio at head level

   c. Basic network coverage for mobile radios shall be designed to accommodate vehicles traveling at speeds up to 75 miles per hour (mph)

      i. This criterion is to be applied to the coverage areas defined in this Section, 3.5, Coverage, and to the coverage maps as defined in Section 3.5.2, Map Criteria, above

C. CPC: Minimum CPC – BER that provides a minimum DAQ 3.4

D. Reliability Design Target: The CPC reliability design target is a service area probability of 95%

E. Terrain Profile Extraction Method: Map-to-grid method

F. Interference Calculation Method: Monte Carlo Simulation method

G. Metaphors to Describe the Plane of the Service Area: Tiled method

H. Required Service Area Reliability: 95%

I. Willingness to Accept a Lower Area Reliability to Obtain a Frequency: The County is not willing to accept lower area reliability to obtain a frequency

J. Adjacent Channel Drift Confidence Factor: Confidence that combined drift due to desired and adjacent channel stations will not cause degradation: 95%

K. Conformance Test Confidence Level: 99%

L. Sampling Error Allowance:

1. True value error: ±1%
2. Number of subsamples: 50

M. Pass/Fail Criterion: “Greater than” test

N. Treatment of Inaccessible Grids: All inaccessible grids will be eliminated from the calculation

3.6 SITE EQUIPMENT

3.6.1 Overview

A. All site equipment supplied shall be new, of high quality, designed to provide high reliability to support mission-critical communications, and in current production. The site equipment, or RF infrastructure, consists of the following components:

1. System and site control equipment
2. Simulcast equipment
3. Receiver voting
4. Transmitters
5. Receivers
6. Combiners/multicouplers
7. Antenna systems

3.6.2 System and Site Control Equipment

A. The system and site control equipment shall be capable of controlling all voice and data channels in the proposed system. The control equipment may use a distributed or centralized architecture.

B. The control equipment shall fully support P25 functional requirements, features, and performance objectives as outlined in Section 3.2, Interoperability/P25 Statement of Requirements, above, including the common air interface (CAI).

C. Offerors shall fully describe the manner in which the proposed system and site controllers function and operate (if used).

D. Because the system and site control equipment are critical to the network, placement of the equipment at a secure, highly stable location is of the utmost importance. Offerors shall carefully consider the location for this equipment.

E. Offerors shall define backhaul bandwidth requirements for each backhaul link within the network.

3.6.3 Simulcast Equipment

A. The Contractor shall provide all necessary simulcast components and signal-processing elements that are required to optimize voice quality in coverage overlap areas.

B. Non-captured overlap areas with delay spreads exceeding those required to meet the DAQ objective shall be minimized inside the service area.

C. Simulcast systems shall operate without the need for frequent manual optimization and system/subsystem alignment. All alignments and adjustments shall be automated where possible (e.g., signal-conditioning adjustments for channel banks, signal launch times at sites).

3.6.4 Receiver Voting

A. Receiver voting equipment shall monitor all receivers in the simulcast system and select the best signal for processing and rebroadcast through the network.

3.6.5 Base Station Equipment

A. General:

1. Base station equipment shall be solid state in design and function with standard site conditions for temperature, altitude, and humidity.

2. Equipment shall have alarm contact interfaces to provide the status to a separate alarm system.

3. The units shall be as compact as possible, with mounting configurations for standard relay racks or cabinets.

B. Prior to implementation, the Contractor shall perform the following studies at each site:

1. Intermodulation analysis – The Contractor shall consider equipment from all tenants located at the proposed site. The Offeror will be responsible for gathering the required information from the tower owner and/or any co-located tenants.

2. Maximum Permissible Exposure (MPE) study (per latest revision of Office of Engineering & Technology [OET] Bulletin 65) – The Contractor shall consider equipment from all tenants located at the proposed site, per FCC license information.

3. The Contractor shall gather the site data needed for these studies.

C. The Contractor shall resolve all issues predicted during the intermodulation analysis and MPE studies. If an intermodulation problem is identified following implementation and within 12 months after final acceptance, the Contractor shall resolve the issue without degrading system coverage or performance, at no cost to the County.

D. Offerors shall include detailed specification sheets for all proposed equipment in their proposals.

E. All base stations shall be installed with all available modes of operation and software options, including those modes of operation that are not otherwise required for system operation as designed. For example, base stations shall include the ability to dynamically operate in the frequency division multiple access (FDMA) or time division multiple access (TDMA) modes, and support frequency modulation (FM) operation.

3.6.6 Antenna Systems

A. Offerors shall propose all antenna system equipment necessary for a complete design.

B. Antennas shall be appropriate to provide the required coverage and meet applicable FCC rules and regulations.

C. Transmission line type and length shall be constructed of copper and appropriate to provide the required coverage. Antenna line shall be of the type to withstand at least 20 years of prolonged exposure to the environment in Bandera County without degradation.

D. Offerors shall fully describe the expansion capacity for combiner and multicoupler systems.

E. Offerors shall include detailed specification sheets in their proposals for all proposed equipment including, at a minimum, antennas, receiver multicouplers, and transmitter combiners.

F. Both transmit and receive antennas shall be equipped with power monitors that automatically report antenna or line faults.

3.6.7 Antenna Installation

A. Antennas and cable shall be provided and installed by the Contractor. Antennas shall be fed with the coaxial cable specified below.

B. The Contractor shall supply, install, and make operational the antennas specified.

C. The Contractor shall install antennas at the appropriate height and direction specified by the County or County’s representative and the Contractor’s engineer.

D. Vertical transmission lines shall be supported by an appropriate system designed to securely attach antenna transmission lines when installed on tower structures.

E. Antennas shall be installed in accordance with the manufacturer’s requirements.

F. Tower lighting cables shall not be bundled along with transmission lines or other conductors anywhere within cable ladders or the building interior.

G. Each transmission line run shall have entry port boots (inside and/or outside), lightning protectors and associated mounting brackets, and any additional jumpers required by the site-specific RF

configuration. Some manufacturers provide transmission line kits, which include the main line connectors, top and bottom jumpers, line grounding kits (typically three per line), hoist grips, and weatherproofing materials.

H. Transmission lines shall be anchored to the tower using hardware recommended by the transmission line manufacturer for that type of tower.

1. Spacing of anchoring hardware is determined by the line manufacturer and is dependent on the type and size of the line.

2. Hangers and/or angle adapters typically are provided for every three feet of line, including any ice bridge paths. No snap-on style hanger kits shall be utilized.

3. Clamps and hardware shall be corrosion resistant.

I. Cables shall be secured to the tower with the appropriate cable hangers and hardware. The Contractor shall not use tie wraps, wire wraps, pieces of wire, tape, or similar temporary material to secure cables on the tower.

J. Cables shall be secured to the tower using hanger kits supplied by the contractor. Such hangers shall be used at the specified intervals and attached in the manner specified by the manufacturer's installation documents.

K. An ice bridge with a cable support system may be utilized at the communications shelter point of entry.

L. The transmission line support system shall run to the highest-mounted antenna and allow for two times the identified cable requirements in the contract drawings.

M. The Contractor shall install and run RF jumpers from the RF surge protectors to the radio equipment.

N. Transmission lines shall be identified in a permanent manner using metal tags (or equivalent method) located at the antenna, at the bottom of the tower, at the shelter cable entrance, and inside the shelter or building.

3.6.8 Removal of Existing Infrastructure and Equipment

A. The Contractor shall be responsible for the decommissioning, removal, and disposal of legacy equipment from existing County sites. This shall occur no earlier than the completion of system cutover and acceptance of a fully operational system.

3.7 NETWORK MANAGEMENT SYSTEM

A. This section provides specifications and requirements for an integrated monitoring-and-control system for local and remote site facilities and equipment. The NMS is used to provide remote indication of statuses, alarms, and analog values, and to provide remote control relay operations.

Some terminals may be required to manage or provision different subsystems in the network. Offerors shall describe their NMS including its capabilities and available options.

B. System Alarms: The NMS shall acquire, process, and display information in an integrated and uniform fashion for a variety of critical systems. Alarms on major components that allow for Simple Network Management Protocol (SNMP) will be displayed via the NMS. Devices that have an option for SNMP must be properly configured to allow for transport back to the NMS. The following devices shall be monitored:

1. Simulcast radio system
2. Local and remote site facilities
3. Primary and backup power systems to include generator
4. Leased lines, data networks, and microwave

C. Site Alarms: Any change in the state of site equipment shall induce an alarmed state. Equipment monitored shall include, at a minimum:

1. Surge arrestors
2. Transfer switch (normal or bypass state)
3. Power fail
4. Heating, ventilation, and air conditioning (HVAC)
5. Smoke detector
6. Intrusion detection
7. High temperature
8. Low temperature
9. High humidity
10. Uninterruptible power supply (UPS)/direct current (DC) power fail
11. UPS/DC power state (normal or bypass)
12. Generator (including generator run, low fuel, high temperature, fail, etc.)
13. Generator not in automatic mode
14. Floor water/flood alarm

To reduce false alarms, all alarm contacts normally shall be closed when no alarm is present. Any device that can send alarms via IP methods should be provided instead of contact closures.

D. NMS components include network management terminals (NMTs) and remote terminal units (RTUs).

E. Historical Reports: Offerors shall describe their system’s ability to generate historical reports that contain the following search fields for user-specific date ranges:

1. System capacity/grade of service (GoS)
2. Number of busies
3. Number of affiliated users
4. Affiliated subscriber IDs
5. Affiliation history of individual subscriber IDs
6. Subscriber registrations/de-registrations
7. Denied registration attempts

3.7.1 Network Management Terminal

A. The NMT shall provide primary processing, display, and control of information to and from a variety of RTU locations. System status and alarm conditions shall be displayed. The system shall provide the ability to remotely access the system to check the operational status of the system and to view alarms.

B. The NMT shall be installed at a “to be determined” location of the County’s choosing.

C. The NMT shall meet the following general requirements:

1. Expandable software and hardware architecture shall be easily updated by adding software modules and hardware boards.

2. Hardware and software platforms shall be personal computer (PC)-based using current versions of hardware and software.

3. Both graphic and tabular displays shall provide instantaneous and comprehensive network status information.

4. The NMT shall provide full archiving and control functions.

5. Multiple alarm protocols for higher-level NMSs shall be mediated by the NMT.

6. The NMT shall be designed to monitor a large cross section of equipment so that it can consolidate multiple alarm systems, rather than just poll alarms from RTU locations.

7. The NMT must perform full management functions with a local terminal (i.e., each hardware terminal must have its own active license without having to share a specific number of system licenses for NMT use).

8. The NMT shall provide email notification of alarms.

9. The NMT shall provide alarm filtration and consolidation.

10. A web browser interface shall be provided for common management functions. Functions that cannot be displayed for remote access shall be listed in the proposal response.

11. A secure web browser interface shall be provided to monitor alarms and perform control and management functions via intranet or internet.

D. NMTs/RTUs Communications Protocol(s)

1. Offerors shall fully describe all protocols used or supported.

2. Offerors shall identify which of the following protocols are supported, either standard or as an option:

a. American Standard Code for Information Interchange (ASCII)

b. SNMP and version

3. Proprietary protocols may be acceptable, provided that all requirements are met.

E. Standard Features: An Offeror's solution shall include the following features:

1. Offerors shall provide programmable display screens including the following:

a. System Summary: High-level screen summary window with links to other screens
b. Change of State: Summary of points that have changed state from alarm to normal or normal to alarm
c. Standing Alarms: Summary of all points in alarm condition
d. Programmable Alarm Windows: Allowing logical grouping of alarms, such as by type or site

2. Offerors shall provide for the graphic depiction of the network allowing annunciation and point selection via icons:

a. Nested-tree depiction of the network with drill-down capability
b. Capability to drive external display devices

3. Programmable console environment, including:

a. Database definition
b. Screen colors
c. Alarm summary formats
d. Blink attributes
e. Pager alarm formats
f. Audible alert formats

4. Status Points – The following status types shall be supported:

a. Simple status: Contact open or closed
b. Change detect: Simple status plus change detect since last scan

5. Control Points – The following relay control types shall be supported:

a. Direct control
b. Select before operate
c. Batch: Control multiple relays with a single operation

6. Analog points – Display the value of a monitored quantity such as temperature, fuel level, voltage standing wave ratio (VSWR), etc.

7. Time stamp indicating date and time of message within 0.5 seconds.

8. Conditional assignable text messages (minimum 256 characters) for each point to be issued on a change of state or alarm.

9. Alarm qualification – On a point basis, programmable delay before alarm is issued.

10. Alarm deactivation – On a point basis, the ability for the operator to deactivate an alarm to inhibit additional annunciation.

11. Alarm history:

    a. Logging of all alarms to disk and printer (selectable)
    b. Minimum history log of 500,000 entries

12. Email support – Text message of alarm sent to email lists.

13. Ping interrogator – To confirm that servers, routers, and IP-based equipment are physically present on the network.

14. Editor – Providing point configuration utilities to create and edit point databases.

15. Security – Multiple levels of username and password protection to all for flexible system management.

16. Reports – Offerors shall define the reports that are available. Offerors shall describe how trend analysis is supported and how the current system status is reported. The system shall be able to provide comprehensive planning and analysis and shall have a flexible user interface.

3.7.2 Remote Terminal Units

A. RTUs shall be provided in sufficient quantities to monitor the entire network, including:

1. Conventional radio network components
2. Site facilities including shelter, tower, lighting, power, and generator
3. Microwave radios, channel banks, etc.
4. Transmitters
5. Data network equipment including routers, switches, etc.
6. Remote access to all data and provisioning aspects of the system
7. Other miscellaneous equipment

B. RTUs shall be fully compatible with the NMTs supplied and provide complementary functionality wherever necessary to provide a complete working system.

C. RTUs shall support the following points:

1. Status/alarms – 48 minimum, expandable to 256
2. Control outputs – 8 minimum, expandable to 32
3. Analog inputs – 8 minimum, expandable to 16

D. RTUs shall support time stamp and system time synchronization.

E. Terminations for all points shall be provided on suitable terminal blocks providing ease of installation, testing, and maintenance.

F. Offerors will submit as a part of their proposal a cloud diagram showing each NMS server and terminal in the system. This diagram will show how to remotely access each terminal for any NMS including a proposed IP scheme.

3.8 INTEGRATED VOICE AND DATA

A. Offerors should include the ability to utilize the P25 backbone to support third-party data applications including, at a minimum, such applications as mobile data, subscriber unit global positioning system (GPS), over-the-air programming (OTAP), over-the-air rekeying (OTAR), and fire station alerting.

3.9 BACKUP CONSOLETTES

A. Offerors shall provide backup consolettes for each console position. Offerors will provide details regarding the interface between the consolettes and the consoles.

B. The design of the consolette system shall include all necessary cabling, surge protection, and antennas.

3.10 SHARED EQUIPMENT – OPTION

A. Offerors may provide an optional design leveraging a regional network control infrastructure in addition to the required design submission. Detailed costs of the common regional switch design shall be provided along with maintenance and warranty costs. Any present and future requirements or restrictions for the County infrastructure to operate on a regional wide area switch shall be explained. The use of shared equipment shall not relieve an Offeror from meeting any other County requirements, including the requirement for geographic redundancy.

4 BACKHAUL NETWORK

4.1 OVERVIEW

The County intends to use leased fiber-optic networks to connect radio sites to the County's 911 center. Currently, only the Utopia tower site has fiber-optic service, which is provided by Southwest Texas Communications (STC). The second fiber-optic provider is Bandera Electric Cooperative (BEC).

Most tower sites used by the County will be served by BEC. The Vanderpool site will be served by STC. The following table summarizes the fiber-optic information and BEC's estimated proximity of the tower sites to its nearest connection point.

Table 3: Fiber-optic Information

Tower Name	Provider	Distance From Fiber (in feet)
Bandera (Peacock) Mtn	Bandera Electric Cooperative	500
Tarpley	Bandera Electric Cooperative	13,500
Vanderpool	Southwest Texas Communications	TBD
Medina Tower	Bandera Electric Cooperative	3,000
MICO	Bandera Electric Cooperative	6,500
Fire/EMS	Bandera Electric Cooperative	300
Utopia	Southwest Texas Communications	Onsite

A. The County will be responsible for acquiring fiber-optic service to the shelter interior demarcation point.

B. The County will be responsible for acquiring the fiber-optic modem required by the service provider.

C. The County will pay for all installation costs and recurring service fees.

D. Offerors shall clearly specify their required backhaul bandwidth, latency requirements, and all other network requirements for connectivity to each repeater site and the Bandera County 911 center.

E. The Contractor will work with the fiber providers to verify the interface requirements and the respective network's ability to support the P25 radio system.

5 SITE DEVELOPMENT

5.1 GENERAL

A. Offerors shall consider reuse of existing County sites, sites from the candidate site list in Appendix A, and leased sites as they develop a design. Site selection that will support the required system performance while minimizing costs is desired. Proposals shall include items such as a tower, shelter, generator, and site development to support the radio site as appropriate to the sites being recommended.

B. Offerors shall perform due diligence in verifying all proposed site data for inclusion in the proposed radio system. An Offeror is responsible for all work and costs associated with the locations proposed, except for tower structural remediation costs.

C. Offerors shall be responsible for providing the costs associated with ensuring all radio sites are compliant with the latest revision of Motorola R56 or equivalent. Offerors must identify any specific enhancements required to existing radio sites during the mandatory site visits. If Offerors identify leased tower locations, the cost for any associated work required to upgrade those sites to Motorola R56, or equivalent, must be included.

D. Offerors shall identify, propose, and estimate the cost of any additional work necessary to bring proposed or existing radio sites to the latest revision of Motorola R56, or equivalent, including, at a minimum:

1. Towers
2. Shelters
3. Backup power
4. Grounding
5. Surge suppression
6. Site preparation
7. Fencing

E. For the 45-day design, the Contractor shall provide detailed drawings, including all structures and foundations, sealed by a P.E. registered in the state of Texas.

1. Detailed drawings containing dimensions shall be provided that show all system components and locations.

2. Drawings and/or specifications shall describe any auxiliary equipment.

3. Manufacturer slick sheets of all equipment used shall be provided.

F. Code Compliance

1. Installation of all electrical equipment, power distribution, lighting assemblies, and associated wiring shall comply with the most recent edition of the *National Electrical Code* and Occupational Safety and Health Administration (OSHA) regulations.

2. All electrical equipment shall be listed or approved by UL.

3. The Contractor, and any subcontractor employed by the Offeror, shall comply with all local codes and industry best practices and guidelines from the entities listed in Section 1.7.1, Standards and Guidelines.

G. The Contractor shall assume total responsibility for maintaining liability insurance covering the following items:

1. Project design
2. Implementation

3. Licenses
4. Shipping
5. Receiving
6. All required site work
7. Any items required for the Contractor or any required subcontractors

H. Prior to any excavations, the Contractor or its subcontractor(s) shall follow appropriate procedures outlined at the following website: www.call811.com.

I. The Contractor shall coordinate with utility companies for all utility-related items, such as electrical service hookups and disconnects.

J. Concrete

1. For all foundations and concrete work, the Contractor or its subcontractor(s) shall provide to the project engineer a test sample of each mix of concrete demonstrating that it has been tested for compliance with the foundation specifications set forth by the requisite site engineer. Written reports certifying the strength of the concrete shall accompany each test cylinder.

2. If any concrete used in the foundation does not meet specifications, the Contractor or its subcontractor(s) shall remove the foundation and pour a new foundation using compliant materials, at no expense to the County/Owner.

K. The Contractor shall ensure any proposed leased locations meet the following standards:

1. Tower, shelter, and generator rated for sustained and Vult wind loading consistent with International Building Code (IBC) 2021 edition for group U with an occupancy Category IV structure, and ANSI/TIA-222 Rev H for a Class III tower.

2. Dedicated 8-foot x 12-foot (minimum) equipment shelter compliant with Section 5.3, Shelters. The use of an existing shared shelter or used shelter will be permitted.

3. New, dedicated, propane generator with associated automatic transfer switch (ATS) and tank appropriately sized for the proposed system and future growth of up to five channels. The generator shall have a minimum 72-hour runtime compliant with Section 5.4, Generator and Automatic Transfer Switch.

4. Upgrade of sites to meet Motorola R56, or equivalent, including the subterranean grounding system (if required).

5. Modifications to compound to accommodate the shelter, generator, and fuel tank as described above.

6. Coordination of power delivery with a dedicated utility meter.

7. DC power system as described in Section 5.5, DC Power.

L. The Contractor is responsible for all regulatory approvals, permitting, and zoning requirements with the proposed locations, including the preparation of all exhibits required to obtain such approvals.

5.2 TOWERS

A. General:

1. If the Offeror determines that additional towers are required, or existing towers must be replaced or modified, the Offeror shall propose required solutions.

2. Any tower manufacturer supplying a tower(s) for this system shall guarantee structural integrity of the tower for a period of not less than 20 years from the date of acceptance.

3. The Offeror shall propose tower heights to achieve the required coverage levels and achieve microwave path requirements.

B. Tower Loading:

1. The tower and foundation shall be designed for all proposed equipment, legacy equipment, appurtenances, ancillary equipment, and initial antenna loading, plus 50% future antenna system growth, without addition to or modification of the finished tower or foundation.

2. The proposed tower structure shall be designed and installed in accordance with ANSI/TIA-222 Rev H standard for a Class III structure.

3. The tower shall be rated for sustained and Vult wind loading consistent with the IBC requirements for a Risk Category IV structure.

C. Towers proposed for use shall include the following:

1. Ice Bridge – A 24-inch, open mesh-type, horizontal transmission-line ice bridge, extending from the tower cable ladder to the equipment building, including six 4-inch-diameter line entry ports, shall be provided.

2. Transmission Line Support – A vertical transmission line support system shall be provided to securely attach the antenna transmission lines. Holes shall be provided in the tower support members, tower hanger adapter plates, or separate ladder structures to allow installation of cable hangers and bolt-in cable hangers at a maximum of three-foot intervals. The mounting holes shall be precision punched or drilled, and sufficiently separated to accommodate the snap-in or bolt-in hangers.

3. Climbing Access – A ladder, beginning at a point at least ten feet off the ground, shall be provided as an integral part of the tower to permit access by authorized personnel. The tower shall be equipped with an OSHA-approved anti-fall safety device in accordance with the latest revision of ANSI/TIA-222. This device must not interfere with the climber's ease of reach by hand or foot from one rung of the ladder to the next, either going up or coming down. One safety climbing belt shall be supplied with each new tower.

4. Lighting (as applicable):

    a. Tower lighting shall be supplied, as required, by the applicable determination as issued by the Federal Aviation Administration (FAA) for this project and shall be fully compliant with FAA AC 70/7460-1K, latest revision.

    b. The system control circuitry shall provide synchronization and intensity control of the obstruction lighting system and shall monitor the overall integrity of the lighting system for component failure or improper operation.

    c. The Contractor shall provide Type 66 blocks and the contractor or subcontractor(s) shall wire all alarms to the provided Type 66 block located in the communications shelter or equipment room. All alarms shall be clearly labeled.

5. A lightning ground rod shall be installed at the very top of the tower to extend at least two feet above the top of the tower or lighting fixture.

6. Labeling shall be clearly provided near the base of all new towers for the following:

    a. Make
    b. Model
    c. Serial number
    d. Tower height
    e. Latitude and longitude
    f. FAA and FCC identification numbers (if applicable)

D. Construction:

1. All welding must be done in the factory prior to the galvanizing process. Field welding is not acceptable.

2. The tower shall be constructed of high-strength steel. All components and hardware shall be hot-dip galvanized with a zinc coating after fabrication, in accordance with latest revision of the ANSI/TIA-222 standards. A zinc coating shall be permanently fused to the steel, both inside and outside, so that all surfaces are protected, and no painting is required for rust protection.

3. Prior to galvanization, each piece of steel and every weld must be deburred and smooth-finished.

E. Final Testing and Acceptance: Upon completion of the work, documentation detailing final inspection and testing shall be submitted, documenting the following:

1. Steel structure

    a. Vertical alignment and plumbness
    b. All bolts tight and torqued to specification
    c. No damaged or missing structural members
    d. All surface scratches and damage to the galvanization repaired
    e. No signs of stress or vibration

f. All climbing ladders and other devices installed correctly
g. Labels and tags

2. Foundation

   a. Concrete finish shall exhibit no cracks or blemishes
   b. Grouting, if used, shall have drain holes if the tower uses hollow leg construction or monopole design
   c. Backfilling and grading shall be conducted

3. Grounding shall meet applicable standards such as Motorola R56; items include the following, at a minimum:

   a. Verify lugs and exothermic welds
   b. Test and record ground resistance
   c. Install lightning ground rod at top of tower

4. Ice Bridge – Installed per tower manufacturer specifications

5. Lighting and controls

   a. Inspect conduit and wiring installation
   b. Verify proper lamp operation
   c. Verify alarm contact operation
   d. Verify labeling

6. Photographs

   a. Overall structure from north, east, south, and west
   b. Footers
   c. Grounding

5.3 SHELTERS

A. General

1. Offerors shall propose a new or used equipment shelter at new site locations and where existing shelters are deemed inadequate. If used shelters are proposed, the Offeror shall ensure that the used shelters meet the same specifications as a new shelter, as specified within this RFP.

2. The shelter shall be a prefabricated, preassembled shelter. The shelter can be constructed from concrete and/or aggregate materials.

B. Size

1. Shelter dimensions shall be determined by the Contractor dependent upon final design. Legacy and proposed systems shall use up to 70% of the floor space, leaving a minimum of 30% for future expansion.

2. The minimum shelter size shall be 8-foot x 12-foot, with a minimum interior height of nine feet.

C. Foundation: The foundation for the shelter shall consist of concrete piers or a poured concrete slab constructed by the Contractor or subcontractor that will properly support and secure the shelter. Foundation drawings recommended by the shelter manufacturer shall be the criteria by which the foundation is constructed.

D. Flooring:

1. Offerors shall propose a structure where the floor or solid foundation features a minimum uniform load rating of 200 pounds per square foot with no more than 3,000 pounds over any four-square-foot area unless additional load rating is required for batteries. This rating shall be increased in sections as necessary to support heavyweight equipment. If the shelter is delivered with the floor already assembled, the floor shall exhibit a minimum 90 pounds per square foot uniform live load capacity while the building is being lifted.

2. Floors shall be insulated to a minimum R-11 rating. Insulation shall be secured in place to prevent shifting during construction and transportation.

3. Exterior covering of the floor shall be included to prevent rodent penetration.

4. The floor shall be covered by a high-quality, industrial/commercial-grade asphalt or vinyl tile. All edges shall be covered by wall molding.

E. Walls:

1. The shelter shall be rated for sustained and Vult wind loading consistent with the IBC requirements for a Risk Category IV structure.

2. Walls shall withstand the effects of bullets or other projectiles equivalent to a 30.06 high-power rifle load fired from 50 feet, with no penetration to the inner cavity of the wall. No interior damage to insulation, interior walls, etc. shall be sustained.

3. The outside walls shall be finished concrete or an aggregate composition.

4. A wall feed-through with six 4-inch openings shall be provided on the tower side of the building to accommodate elliptical waveguide and coaxial transmission lines. The openings shall be properly booted to provide a good weather seal. The wall feed-through shall be bonded to the site ground system per guidelines specified in Section 1.7.1, Standards and Guidelines.

5. The inside walls shall be finished with a minimum of $^{5}/_{8}$-inch plywood (or equivalent) to allow mounting of panels, blocks, etc., and trimmed with coordinated molding.

6. High-performance insulation shall provide a minimum insulation factor of R-11.

F. Roof:

1. The building roof shall support a minimum 100-pounds-per-square-foot uniform live load.

2. The roof is to be pitched to facilitate water runoff.

3. The shelter roof shall withstand the impact of ice falling from the adjacent tower without suffering any damage or shall otherwise be protected from such damage. Offerors are to describe in their proposals how this requirement will be met.

4. High-performance insulation shall provide a minimum insulation factor of R-19.

G. Doors:

1. Shelters shall have one 42-inch by 84-inch insulated door, with three stainless steel tamper-proof hinges, passage-style lever handle, deadbolt lockset, and fiberglass weather hood or awning. The door shall be equipped with a hydraulic door closer.

2. The exterior door shall be of aluminum or steel (stainless or galvanized) construction with a finish to match the building finish.

3. The door sill shall be of stepped construction to prevent rainwater from entering the shelter at the bottom of the door or from around the door frame. The door frame shall have a weather seal around the door to limit air and water intrusion.

4. Locks shall be constructed of non-corroding materials, and shelter locks shall be keyed alike for shelters. Four keys shall be provided to the County/Owner.

H. Finishing:

1. Offerors shall describe the interior and exterior finishes. Color and finishes shall be selected by the County from samples provided by the Contractor or its subcontractor.

2. All joints shall be sealed with a compressible, resilient sealant.

I. Alternating Current (AC) Power System:

1. The Contractor shall deliver the building complete with a 200-ampere-capacity, 240-volt, single-phase electrical panel box with a ground bar.

2. This panel shall be equipped with a 200-ampere-capacity main circuit breaker used to supply power for all electrical functions related to the site.

3. Overall panel size shall be determined by the need to provide the number of individual breakers required, plus a reserve of at least six 240-volt slots.

4. Breakers for shelter air conditioning will be of the bolt-down, not snap-in, type.

5. Receptacles:

    a. Each radio equipment unit (or rack) shall be supplied with two 20-ampere circuits, each terminated at a typical NEMA 5-20 receptacle. Receptacles shall be mounted to Unistrut suspended below the overhead cable tray.

    b. Service receptacles shall be mounted on the walls at 6-foot intervals or less.

    c. One weatherproof ground fault interrupter (GFI) exterior power receptacle shall be provided with each shelter, to be mounted near air-conditioning units.

    d. Each receptacle shall be fed from an individual breaker. The feeding breaker shall be identified at the receptacle and the receptacle shall be identified at the breaker. All breakers or circuits shall be rated at 20 amperes, unless otherwise noted.

J. Power Line Surge Suppression:

1. An AC surge protector shall be provided and installed inside the shelter.

2. An acceptable unit shall be an in-line type such as the AC Data Systems “integrated load center.” An alternate unit must meet or exceed all capabilities of this model unit.

3. Minimum surge protector requirements:

    a. Built-in redundancy of dual stages per phase with filtering
    b. Surge energy shunted to ground, not to neutral
    c. Front panel indicator lamps
    d. Remote/local status contacts
    e. Fusible link protected so as not to interrupt power
    f. Field replacement protection blocks or fuses, if needed
    g. UL-listed components
    h. 45 kiloamperes (kA)-per-phase ANSI C62.1 8/20 waveform
    i. Electromagnetic interference/radio frequency interference (EMI/RFI) filtering per MIL-STD-220
    j. Capable of handling the full 240-volt, 200-ampere capacity of the electrical system

K. Wiring Methods:

1. All wiring noted on the site drawings or otherwise included by the Contractor shall be installed in conduit or ductwork. Where no protection method is specified, conduit shall be used.

2. All conduits and ducts shall be securely surface-mounted and supported by approved clamps, brackets, or straps as applicable, and held in place with properly selected screws. No wiring shall be embedded inside any walls, floor, or ceiling. Entrance power, outside light, air-conditioning outlet, and telecommunications are the only wiring that may penetrate shelter walls or floor.

3. All wire raceways, conduits, etc. are to be mechanically joined and secured.

4. Flexible steel conduit or armored cable shall protect wiring connected to motors, fans, etc., and other short runs where rigid conduit is not practical.

5. Unless otherwise specified, all power wiring shall be a minimum #12 American wire gauge (AWG)-size solid copper conductors with insulation rated for 600 volts AC (VAC).

6. All conduit adapters and fittings shall be the compression type, screw clamp types are not acceptable.

L. Portable Generator Support:

1. The shelter shall have an external generator power connector for portable generator support. The Contractor shall provide an Appleton connector, or equivalent, on the outside of the shelter on the short wall closest to the shelter door, or where possible.

M. Light Fixtures:

1. Ceiling-mounted 4-foot light emitting diode (LED) light fixtures (two 40-watt [W] bulbs per fixture). Enough light fixtures shall be supplied to provide a uniform light level throughout the building of 150-foot candles at four feet above the floor.

2. Light fixtures shall be fed as a gang from a common breaker and controlled by an on/off switch near the door.

N. Outdoor Lighting:

1. An exterior 100-W LED wall-mounted motion-controlled light shall be mounted on the front entrance of the shelter.

2. The exterior lighting system shall be fed from a separate, appropriately rated breaker and light switch by the door.

O. HVAC:

1. Offerors shall provide an HVAC system for each shelter proposed. Offerors shall propose dual air-conditioning units with a lead-lag controller. Each air-conditioning unit shall be sized for 100% of the building’s required cooling capacity as determined by British thermal unit (BTU) analysis.

2. The Contractor shall perform BTU analysis (heat-load calculations) for all shelter equipment during preliminary design to verify the HVAC system size. All calculations shall include a 50% expansion factor, and all assumptions regarding power consumption, duty factor, and heat loading shall be thoroughly explained.

3. Each unit shall be capable of maintaining an inside ambient temperature range between 65 and 85 degrees (°) Fahrenheit (F). Each unit shall be sized to maintain temperatures inside the shelter at 70° F when exterior temperatures go as high as 110° F.

4. The HVAC system shall be controlled by a wall-mounted thermostat. The thermostat shall turn the heater on when the temperature inside the shelter drops to 65° F and off when it rises to 68° F. It shall turn on the air-conditioner when the interior temperature reaches 78° F and off when the temperature drops below 75° F. Thermostat control shall be adjustable within the range of 45° to 85° F.

P. Antenna Cable Conduit Entry: A bulkhead panel shall be supplied to accommodate coaxial transmission lines between ½-inch and $1^5/_8$-inch diameter elliptical waveguides. A minimum of six transmission lines shall be accommodated with six 4-inch openings. The building manufacturer shall seal the conduits into the wall to assure that they are watertight.

Q. Cable Tray: All shelters shall be equipped with cable trays. The Contractor shall install a minimum 18-inch-wide cable-tray system above the equipment.

R. Shelters shall be supplied with at least one 10-pound carbon-dioxide (CO_2) fire extinguisher and a first-aid kit.

5.4 GENERATOR AND AUTOMATIC TRANSFER SWITCH

This section provides specifications and requirements for standby power systems to supply electrical power if the normal supply fails. Standby power systems shall consist of a liquid-cooled engine, an AC alternator, and system controls with all necessary accessories for a complete operating system including, at a minimum, the items as specified.

A. Offerors shall provide an emergency generator system at each new radio communications site for backup power, sized appropriately for the system and future growth up to ten channels. For existing sites where a generator may be reused, an assessment of sufficiency should be completed, and any recommended enhancements proposed.

B. Offerors shall perform electrical-loading analysis for shelter equipment, including HVAC subsystems, during preliminary design to verify generator size and fuel-tank capacity. All electrical-loading calculations shall include a 50% expansion factor, and all assumptions regarding power consumption and duty factor shall be thoroughly explained.

   For the proposal, Offerors shall assume the following:

   1. Single phase
   2. 60 Hertz (Hz) operating frequency
   3. 0.8 power factor
   4. Propane fuel
   5. Minimum 72-hour runtime

C. In the event of a commercial power outage, the emergency generator shall provide power to the entire shelter without a system outage.

D. Quality Assurance: The system shall be supplied by a manufacturer that has been regularly engaged in the production of engine-alternator sets, ATSs, and associated controls for a minimum of ten years, thereby identifying one source of supply and responsibility.

E. The generator system and all accessories and ancillary equipment shall comply with the following standards:

1. NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*

2. NFPA 55, *Compressed Gases and Cryogenic Fluids Code*

3. NFPA 70, *National Electrical Code*, with particular attention to Article 700, “Emergency Systems”

4. NFPA 110, *Standard for Emergency and Standby Power Systems,* requirements for Level 1 Emergency Power Supply System

5. NFPA 101, *Life Safety Code®*

6. ANSI/NEMA MG 1, *Motors and Generators*

7. ANSI/NEMA 250-2018, *Enclosures for Electrical Equipment (1000 Volts Maximum)*

F. Labeling and Identification: All wiring harnesses and connectors shall be clearly identified by number and function according to the associated schematic diagrams and documentation provided by the Offeror.

G. Factory Testing:

1. Before shipment of the equipment, the generator set shall be tested under rated load for performance and proper functioning of control and interfacing circuits. Tests shall include:

   a. Verification that all safety shutdowns are functioning properly
   b. Verification of single-step load pick-up, per NFPA 110-1996, paragraph 5-13.2.6
   c. Verification of transient and voltage-dip responses and steady-state voltage and speed (frequency) checks
   d. Full load test for a minimum of one hour

2. The Contractor shall provide complete report(s) of all testing performed.

H. Startup and Checkout:

1. The supplier of the electricity-generating plant and associated items covered herein shall provide factory-trained technicians to check the completed installation and to perform an initial startup inspection to include:

   a. Ensuring that the engine starts (both hot and cold) within the specified timeframe
   b. Verifying that engine parameters are within specification
   c. Verification of no-load frequency and voltage adjustment (if required)
   d. Testing of all generator automatic shutdowns
   e. Performing a simulation of power failure to test generator startup and the ability of the ATS to pick up building load correctly

f. Returning to commercial power and testing the generator and ATS to demonstrate correct cycling to normal commercial power
g. Performing a load test, for a minimum of one hour, of the generator, to ensure full-load frequency and voltage is within specification when using building load
h. Testing and verifying all remote indicators and controls

2. The Contractor shall provide complete report(s) of all testing performed.

5.4.1 Propane Generator

A. The prime mover shall be a liquid propane gas (LPG) engine.

B. The engine shall have a sufficient horsepower rating to drive the generator to full output power without a gear box between the engine and generator.

C. The engine shall have a battery-charging DC alternator with a solid-state voltage regulator.

D. The generator shall meet temperature-rise standards for Class H insulation, operating within Class F standards for extended life.

E. The alternator shall have internal thermal-overload protection and an automatic-reset field circuit breaker.

F. One-step load acceptance shall be 100% of the generator set nameplate rating, and shall meet the requirements of NFPA 110, paragraph 5-13.2.6.

G. The electricity-generating plant shall be mounted with vibration isolators on a welded-steel base that shall permit suitable mounting to any level surface.

H. A main-line-output circuit breaker carrying the UL mark shall be factory installed.

1. Form C auxiliary contacts rated at 250-volt AC/10 amperes shall be provided to allow remote sensing of the breaker status.

2. A system utilizing manual-reset field circuit breakers and current transformers is unacceptable.

I. An alternator strip heater shall be installed to prevent moisture condensation from forming on the alternator windings.

J. Controls:

1. All engine alternator controls and instrumentation shall be designed, built, wired, tested, and shock-mounted in a NEMA 1 enclosure mounted to the generator set by the manufacturer. It shall contain panel lighting, a fused DC circuit to protect the controls and a +/- 5% voltage-adjusting control.

2. The generator set shall contain a complete two-wire automatic engine start-stop control that starts the engine on closing contacts and stops the engine on opening contacts.

3. A programmable cyclic cranking limiter shall be provided to open the starting circuit after four attempts if the engine has not started within that time. Engine control modules must be solid-state plug-in type for high reliability and easy service.

4. The panel shall include:

    a. Analog meters to monitor:

        i. AC voltage
        ii. AC current
        iii. AC frequency

    b. Phase selector switch
    c. Emergency stop switch
    d. Audible alarm
    e. Battery charger fuse
    f. Programmable engine control
    g. Monitoring module

5. The programmable module shall include:

    a. Manual on/off/auto switch
    b. Four LED status lights to indicate:

        i. Not in Automatic Mode
        ii. Alarm Active
        iii. Generator Running
        iv. Generator Ready

6. The module shall display all pertinent unit parameters including:

    a. Generator Status – on/off/auto
    b. Instrumentation – Real-time readouts of the following engine and alternator analog values:

        i. Oil pressure
        ii. Coolant temperature
        iii. Fuel level
        iv. DC battery voltage
        v. Run-time hours

    c. Alarm Status

        i. High or low AC voltage
        ii. High or low battery voltage
        iii. High or low frequency
        iv. High or low oil pressure
        v. Low water level
        vi. High or low water temperature
        vii. High and pre-high engine temperature

viii. High, low, and critical-low fuel levels (where applicable)
ix. Over crank
x. Over speed
xi. Unit not in automatic mode

K. Unit Accessories:

1. Weather-protective enclosure:

a. The generator set shall be factory enclosed in a heavy-gauge steel enclosure constructed with 12-gauge corner posts, uprights, and headers.

b. The enclosure shall be coated with electrostatically applied powder paint, baked, and finished to manufacturer's specifications.

c. The enclosure shall have large, hinged doors to allow access to the engine, alternator, and control panel.

2. The exhaust silencer(s) shall be provided of the size recommended by the manufacturer and shall be of critical grade.

3. The generator set shall include an automatic dual-rate battery charger manufactured by the generator set supplier. The battery charger shall be factory installed on the generator set. Due to line-voltage-drop concerns, a battery charger mounted in the transfer switch is unacceptable.

4. A heavy-duty, lead-acid, 12-volt DC battery shall be provided by the generator set manufacturer. The generator set shall have a frame suitable for mounting the battery and shall include all connecting battery cables.

5.4.2 Automatic Transfer Switch

A. The ATS shall be compatible with the generator set to maintain system compatibility and local service responsibility for the complete emergency power system.

B. Representative production samples of the ATS supplied shall have demonstrated through tests the ability to withstand at least 10,000 mechanical operation cycles. One operation cycle is defined as the electrically operated transfer from normal to emergency and back to normal.

C. Wiring must comply with NEC table 373-6(b). The manufacturer shall furnish schematic and wiring diagrams for the ATS proposed and a typical wiring diagram for the entire system.

D. Ratings and Performance:

1. The ATS shall be adequately sized to match the generator and shelter electrical systems.

2. The ATS shall be a two-pole design rated for 600-VAC, 200-amperes continuous operation in ambient temperatures of -20° F (-29° Celsius [C]) to +140 degrees F (+60° C).

3. The operating mechanism shall be a single operating coil design, electrically operated, and mechanically held in position.

4. A provision shall be supplied to be able to manually operate the switch in the event of logic or electrical coil failure.

E. Controls:

1. A solid-state under-voltage sensor shall monitor all phases of the normal source and provide adjustable ranges for field adjustments for specific application needs.

   a. Pick-up and drop-out settings shall be adjustable from a minimum of 70% to a maximum of 95% of nominal voltage.

   b. A utility-sensing interface shall be used, stepping down system voltage of 120/240 VAC single phase to 24 VAC, helping to protect the printed circuit board from voltage spikes and increasing personnel safety when troubleshooting.

2. Controls shall signal the generator set to start in the event of a power interruption.

   a. A solid-state time-delay start, adjustable from 0.1 to 10 seconds, shall delay this signal to avoid nuisance start-ups on momentary voltage dips or power outages.

3. Controls shall transfer the load to the generator set after it reaches proper voltage.

   a. Adjustable from 70% to 90% of system voltage.

   b. Adjustable from 80% to 90% of system frequency.

   c. A solid-state time delay, adjustable from 5 seconds to 3 minutes, shall delay this transfer to allow the generator to warm up before application of load.

   d. There shall be a switch to bypass this warm-up timer when immediate transfer is required.

4. Controls shall retransfer the load to the line after normal power restoration.

   a. A return-to-utility timer, adjustable from 1 minute to 30 minutes, shall delay this transfer to avoid short-term normal power restoration.

5. The operating power for transfer and retransfer shall be obtained from the source to which the load is being transferred.

6. Controls shall signal the generator to stop after the load retransfers to normal.

   a. A solid-state engine cool-down timer, adjustable from 1 minute to 30 minutes, shall permit the engine to run unloaded to cool down before shutdown.

   b. Should the utility power fail during this time, the switch shall immediately transfer back to the generator.

7. The transfer switch shall have a time-delay-neutral feature to provide a time delay, adjustable from 0.1 second to 10 seconds, during the transfer in either direction, during which time the load is isolated from both power sources. This allows residual voltage components of motors or other inductive loads (such as transformers) to decay before completing the switching cycle.

8. A switch shall be provided to bypass all transition features when immediate transfer is required.

9. The transfer switch shall have an in-phase monitor, which allows the switch to transfer between live sources if their voltage waveforms become synchronous within 20 electrical degrees within 10 seconds of the transfer-initiation signal.

    a. If the in-phase monitor will not allow such a transfer, the control must default to time-delay-neutral operation.

10. Front-mounted controls shall include a selector switch to provide for a NORMAL TEST mode with full use of time delays; FAST TEST mode that bypasses all time delays to allow for testing the entire system in less than one minute; or AUTOMATIC mode to set the system for normal operation.

    a. The controls shall provide bright lamps to indicate the transfer switch position in either UTILITY (white) or EMERGENCY (red). A third lamp is needed to indicate STANDBY OPERATING (amber). These lights must be energized from the utility source or the generator set.

    b. The controls shall provide a manually operated handle to allow for manual transfer. This handle must be mounted inside the lockable enclosure and be accessible only to authorized personnel.

    c. The controls shall provide a safety disconnect switch to prevent load transfer and automatic engine start while performing maintenance. This switch also shall be used for manual transfer switch operation.

    d. The controls shall provide LED status lights to give a visual readout of the operating sequence including:

        i. Utility on
        ii. Engine warmup
        iii. Standby ready
        iv. Transfer to standby
        v. In-phase monitor
        vi. Time-delay neutral
        vii. Return to utility
        viii. Engine cool down
        ix. Engine minimum run

5.4.3 Propane Fuel System

A. Offerors shall provide a complete fuel system including tank(s), concrete pads, and all associated piping, valves, controls, etc.

B. Above-ground tanks shall be installed securely in a protected manner.

C. Tank and fuel system components shall be sized to provide a minimum of 72 hours of run time at full load.

D. The propane tank shall be located per site drawings or as determined onsite with the County/Owner and the utility.

E. Clear access shall be provided for refueling.

F. Controls and Monitoring Equipment:

1. Fuel capacity gauge with low-fuel-level alarm contact closure

G. The Contractor shall install the fuel line between the fuel tank and generator.

1. The fuel line shall be buried per governing regulations and codes.
2. All necessary valves and reducing valves shall be furnished and installed.
3. The fuel line shall be grounded per Motorola R56 or within the specifications of this document.

5.5 DC POWER

A. Offerors shall provide a DC power system to support P25 equipment, and ancillary site equipment at existing and proposed sites used in the Offeror’s system design.

B. Offerors shall provide dedicated 220-VAC/30-ampere circuits for each pair of rectifiers on the DC plant and provide electrical connections and grounding to the DC plant.

C. The Contractor shall perform electrical-loading analysis for shelter equipment, radio system equipment, and microwave equipment, excluding HVAC subsystems, during preliminary design to verify the DC system size required. All assumptions regarding power consumption and duty factor shall be thoroughly explained.

D. Offerors shall appropriate distribution breakers and circuits for DC power to each designated row of equipment racks. Equipment installed within those racks shall be immediately accessible to the DC power source.

E. The DC power system shall utilize a modular fault tolerant design with N+1 redundancy of rectifiers. The system shall include no single points of failure.

F. Quality Assurance:

1. Electrical components, devices, and accessories shall be listed and labeled, as defined in NEC, by a qualified testing agency, and marked for its intended location and application.

2. UL compliance shall be listed and labeled under UL 1778 by a nationally recognized testing laboratory (NRTL).

3. NFPA compliance shall identify UPS components as suitable for installation in computer rooms according to NFPA 75, *Standard for the Fire Protection of Information Technology Equipment*.

G. Performance Requirements:

1. Input:

   a. Single-phase, three-wire
   b. Voltage: 120/240 V nominal
   c. Frequency: 50/60 Hz +/- 3 Hz

2. Output:

   a. Capacity: Assumed at 1,000 amperes, to be finalized during the design phase
   b. Voltage: -24/-48 VDC, 12 VDC, and 120 VAC

3. Minimum Duration of Supply – If the DC power system is the sole backup energy source, duration of the supply is eight hours. Offerors shall assume 50% average base station/repeater usage (transmit and receive) for 8-hour runtime calculations. Offerors also shall ensure four hours of DC runtime under 100% load.

4. EMI Emissions – Comply with FCC Rules and Regulations and with Title 47 of the Code of Federal Regulations (CFR), Part 15 for Class A equipment.

5. Electronic Equipment – Solid-state devices using hermetically-sealed semiconductor elements. Devices include rectifier-charger, inverter, and system controls.

6. Surge Suppression – Protect internal DC components from surges that enter at each AC power input connection and protect controls and output components.

H. Tests and Inspections:

1. Comply with manufacturer's written instructions.

2. Inspect interiors of enclosures, including the following:

   a. Integrity of mechanical and electrical connections
   b. Component type and labeling verification
   c. Ratings of installed components

3. Test manual and automatic operational features, as well as system-protection and alarm functions.

4. Provide inspection reports.

I. Demonstration: Train County's maintenance personnel to adjust, operate, and maintain the DC power system.

J. Offerors shall supply an inverter system to supply AC-only equipment housed within the shelter. The inverter system shall meet the following requirements:

1. Output:

a. Capacity: Assumed at 100 amperes, to be finalized during the design phase
b. Voltage: 120 VAC

2. Fully redundant modular design with N+1 redundancy and no single points of failure

3. Electrical wiring to wall-mounted AC distribution panel

5.6 SITE PREPARATION

A. The Contractor shall perform all preparations for site improvements as necessary. Work includes the following at a minimum:

1. Protecting existing plants and grass to remain
2. Removing existing plants and grass as necessary
3. Clearing and grubbing
4. Stripping and stockpiling topsoil
5. Removing above- and below-grade site improvements
6. Disconnecting, capping or sealing, and removing site utilities
7. Temporary erosion and sedimentation control measures

B. The following Construction Specifications Institute (CSI) standard sections are referenced, but are not included in this specifications document:

1. Division 1 Section, *Temporary Facilities and Controls* – for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and temporary erosion and sedimentation control procedures.

2. Division 1 Section, *Execution Requirements* – for verifying utility locations and for recording field measurements.

3. Division 1 Section, *Selective Demolition* – for partial demolition of buildings or structures undergoing alterations.

4. Division 2 Section, *Building Demolition* – for demolition of buildings, structures, and site improvements.

5. Division 2 Section, *Tree Protection and Trimming* – for protecting trees remaining onsite that are affected by site operations.

6. Division 2 Section, *Earthwork* – for soil materials, excavating, backfilling, and site grading.

7. Division 2 Section, *Lawns and Grasses* – for finish grading including preparing and placing planting soil mixes and testing of topsoil material.

C. The Contractor or its subcontractor(s) shall comply with local guidelines for erosion and sedimentation (E&S) control.

D. Offerors shall carefully examine and study existing conditions, difficulties, and utilities affecting execution of work. Later claims for additional compensation due to additional labor, equipment, or materials required due to difficulties encountered or underground water conditions will not be considered.

E. The Contractor shall verify that existing plant life to remain and clearing limits are clearly tagged, identified, and marked in such a manner as to ensure the safety of said plant life throughout construction operations.

F. Protection:

1. The Contractor shall protect and maintain benchmark, monument, property corner, and other reference points, reestablishing them by registered professional surveyor if disturbed or destroyed, at no cost to the County.

2. The Contractor shall locate and identify existing utilities that are to remain and protect them from damage, reestablishing them if disturbed or destroyed, at no cost to the County.

3. The Contractor shall protect trees, plant growth, and features to remain as final landscape. Branches or roots of any trees that are to remain shall not be disturbed. Adequate guards, fences, lighting, warning signs and similar items shall be provided and maintained as required.

4. The Contractor shall conduct operations with minimum interference to public or private accesses and facilities, maintain ingress and egress at all times, and clean or sweep any roadways daily or as required by the governing authority. At such times as deemed necessary by the County, dust control shall be provided by water-sprinkling systems or equipment provided by the Offeror or its subcontractor(s).

5. When appropriate, the Contractor shall provide traffic control as required, in accordance with contract documents, the U.S. Department of Transportation *Manual of Uniform Traffic Control Devices*, and the Texas Department of Transportation requirements.

G. Clearing:

1. The Contractor shall clear areas required for access to the site and execution of work.

2. Unless otherwise indicated, the Contractor shall remove trees, shrubs, grass, other vegetation, improvements, or obstructions interfering with the installation of new construction. Removal

includes digging out stumps, roots, and root material. Depressions caused by clearing and grubbing operations are to be filled to sub-grade elevation to avoid water pooling. Satisfactory fill material shall be placed in horizontal layers not exceeding eight inches loose depth, and thoroughly compacted per fill requirements of this section and CSI Division 2, *Site Construction*, Section 02200.

3. The Contractor shall remove grass, trees, plant life, stumps, and all other construction debris from the site to a location that is suitable for handling such material according to state laws and regulations.

H. Demolition: The Contractor shall remove existing pavement, utilities, curbing, and shrubbery as necessary for construction of improvements.

I. Topsoil Excavation:

1. The Contractor shall strip topsoil from areas that are to be filled, excavated, landscaped, or regraded to such a depth that it prevents intermingling with underlying subsoil or questionable material.

2. The Contractor shall stockpile topsoil in storage piles in areas not scheduled for construction, job trailer location, or equipment laydown, or where directed by the project engineer. Storage piles shall be constructed to freely drain surface water. Storage piles shall be covered as required to prevent windblown dust. Unsuitable soil shall be disposed of as specified for waste material, unless otherwise desired by the County. Excess topsoil shall be removed from the site by the Contractor or its subcontractor(s).

3. Final topsoil coatings shall consist of organic soil applied in depth of not less than six inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects greater than two inches in diameter, as well as weeds, roots, and other objectionable material.

5.7 FENCING

A. The Contractor shall provide chain-link fencing around the perimeter of all new proposed sites.

B. Framework: Type I or Type II steel pipe

1. Type I – Schedule 40 steel pipe with 1.8 ounces of zinc coating per square foot of surface area conforming to ASTM F1083.

2. Type II – Pipe manufactured from steel conforming to ASTM A569. External surface triple coated per ASTM F1234. Type II pipe shall demonstrate the ability to resist 1,000 hours of exposure to salt spray with a maximum of 5% red rust in a test conducted in accordance with ASTM B117.

3. All coatings are to be applied inside and out after welding.

4. Unless otherwise noted, Type II framework shall be provided.

5. Pipe shall be straight, true to section and conform to the following weights:

Table 4: Type I and Type II Steel Pipe Specifications

Pipe Size Outside Diameter (O.D.)	Type I Weight (Lbs./Ft.)	Type II Weight (Lbs./Ft.)
1⅝"	2.27	1.84
2"	2.72	2.28
2½"	3.65	3.12
3"	5.79	4.64
3½"	7.58	5.71
4"	9.11	6.56
6⅝"	18.97	N/A

C. Fabric:

1. Aluminized fabric shall be manufactured in accordance with ASTM A491 and coated before weaving with a minimum of 0.4 ounces of aluminum per square foot of surface area. The steel wire and coating shall conform to ASTM A817. Fabric shall be nine-gauge wire woven in a two-inch diamond mesh. The top selvage shall be twisted and barbed. The bottom selvage shall be knuckled.

2. Zinc-coated fabric shall be galvanized after weaving with a minimum of 1.2 ounces of zinc per square foot of surface area, and shall conform to ASTM A392, Class I. Fabric shall be nine-gauge wire woven in a two-inch diamond mesh. The top selvage shall be twisted and barbed. The bottom selvage shall be knuckled.

D. Fence Posts:

Table 5: Fence Post Specifications

Fence Posts Type I - II		
Fabric Height	Line Post O.D.	Terminal Post O.D.
Under 6'	2"	2½"
6'-9'	2½"	3"
9'-12'	3"	4"

E. Gate Posts:

Table 6: Gate Posts Specifications

Gate Posts Type II		
Single Gate Width	Double Gate Width	Post O.D. Type II
Up to 6’	Up to 12’	3”
7’ to 12’	13’ to 25’	4”

F. Rails and Braces: $1^{5}/_{8}$-inch outside diameter (O.D.)

G. Gates: Frame assembly of two-inch O.D. pipe (Type I or Type II) with welded joints. Weld areas shall be repaired with zinc-rich coating applied per manufacturer's directions. The fence fabric shall match the fence posts, gateposts, and gates. Gate accessories, hinges, latches, center stops, keepers, and necessary hardware shall be of a quality required for industrial and commercial application. Latches shall permit padlocking. Offerors shall provide one padlock for each gate with three keys for each padlock. All padlocks shall be keyed alike.

H. Installation:

1. General – Fence installation shall conform to ASTM F567, *Standard Practice for Installation of Chain-Link Fence*.

2. Height – Fence height shall be as indicated on contract drawings. If no height is indicated, the fence shall be seven-feet high, plus one foot for barbed wire.

3. Post Spacing – Line posts shall be uniformly spaced between angle points at intervals not exceeding ten feet.

4. Bracing – Gate and terminal posts shall be braced back to adjacent line posts with horizontal brace rails and diagonal truss rods.

5. Top Rail – The top rail shall be installed through the line post loop caps, connecting sections with sleeves to form a continuous rail between terminal posts.

6. Fencing shall have a bottom rail instead of a tension wire.

7. Fabric – The fabric shall be pulled taut with the bottom selvage two inches above grade. The fabric shall be fastened to the terminal posts with tension bars threaded through mesh and secured with tension bands at maximum 15-inch intervals. The fabric shall be tied to the line posts and top rails with tie wires spaced at a maximum of 12 inches on posts and 24 inches on rails. The fabric shall be attached to the bottom rail with top rings at maximum 24-inch intervals.

8. Barbed Wire – Barbed wire shall be anchored to the terminal extension arms, pulled taut and firmly installed in the slots of the line post extension arms.

9. Valleys – Should the fence cross a ditch or drainage swell, ⅜-inch diameter aluminum alloy rods shall be driven vertically 18 inches into the ground on four-inch centers and woven through the fence fabric to provide security for these areas.

10. Vegetation stop and aggregate shall be applied to the entire compound area (the area inside the fencing) and twelve inches beyond the fencing. Vegetation stop shall be constructed with weed barrier geotextile and aggregate shall be applied three inches in depth and consist of American Association of State Highway and Transportation Officials (AASHTO) #10 coarse aggregate.

6 DISPATCH CONSOLES

6.1 GENERAL REQUIREMENTS AND FEATURES

A. Offerors shall provide pricing for four consoles with state-of-the-art, IP-controlled consoles or the reconfiguration and upgrading of the current consoles to be fully capable and compatible with the new radio system.

B. The dispatch console is a critical link for public safety personnel. It is here that the dispatch operator must relay critical information from the public to public safety personnel in the field. At times, the dispatcher may be in stressful conditions with lives at risk. It is imperative that the dispatch console be laid out in a manner that results in the operation of such consoles being second nature to the dispatch personnel. The dispatch console shall provide the operator with as much information as necessary without the screen being cluttered and shall be easily navigated to perform necessary functions. Features of the console shall include the below at a minimum.

1. Dispatch console equipment (operator positions) shall be designed to be placed on existing furniture and provide operators with an ergonomic design that permits ease of operation over extended periods, typically 8 to 12 hours for each operator.

2. Console positions shall be able to acoustically cross-mute channels to eliminate acoustic feedback between operators.

3. The screen display shall be designed so that all dispatching functions shall be operable from one display.

4. The screen display shall be very flexible, enabling authorized personnel to determine which functions are available at each operator position.

5. New features and screen configurations shall be supported through software programming and not hardware reconfiguration.

6. The capability to program, store, retrieve, and edit multiple custom operator screens and configurations for each operator position shall be provided.

7. Operator screen configurations and alias database shall be stored locally or on a centrally located server.

8. The dispatch console shall display an alias name on screen when a unit with a radio ID stored in the alias database is transmitting.

9. Operator positions shall have the ability to decrypt and encrypt secure voice communications. Channels shall have a distinctive icon if encryption is being used for that channel. All consoles shall be configured to provide end-to-end Advanced Encryption Standard (AES) encryption to personnel in the field.

10. Consoles shall have their encryption key updated via the Key Management Facility.

11. Upon activation of an emergency alarm by field units, dispatch positions shall provide an audible alert, display calling unit ID, and provide a visual alert of an emergency activation.

12. Operators shall have the ability to utilize a headset, foot pedal, or stationary gooseneck-type microphone for transmitting audio.

13. The capability to converse on the telephone utilizing the same operator headset that is used for radio conversations shall be provided.

14. Instant recall shall be provided allowing the operator to review and verify their recent traffic. Playback shall be available at the operator position.

6.2 OPERATIONAL REQUIREMENTS

A. Dispatch consoles shall be compatible with the proposed P25 radio system. Dispatch consoles shall directly interface with single and multisite channels in the system.

B. Dispatch consoles shall be equipped with an instant transmit switch for each talkgroup or channel displayed.

C. The system shall conform to the County’s radio ID scheme. The push-to-talk (PTT) ID of the unit calling shall appear as an alias in addition to a call indicator. After the call is completed, the unit’s PTT ID shall remain displayed until another call is received.

D. To aid dispatchers in a busy system, a list of the last 15 radio IDs shall be available in a “recent calls” list.

E. Dispatch equipment shall include an instant transmit switch for each conventional repeater channel and/or base station.

F. On conventional resources capable of operating on multiple frequencies/modes, a control/indicator shall be provided to select the desired transmit frequency/mode (select channel). The select-channel function shall cause the associated channel to switch frequencies/modes. Once a channel has been selected, the operator shall be able to transmit on this channel by pressing the footswitch or transmit button.

G. A transmit-audio-level meter shall be provided that indicates the level of transmitted voice. This meter also shall indicate the level of receive audio present on the selected channel.

H. Operator positions shall have the ability to independently set each channel's volume level. Minimum audio levels shall be capable of being set to avoid missed calls.

I. A control/indicator shall be provided to allow the operator to mute or unmute audio from unselected channels. Selected audio and unselected audio shall be audible from separate speakers.

J. A control/indicator shall be provided that enables the operator to select multiple channels, which in turn gives the dispatcher the ability to broadcast to several channels at once.

K. Operators shall have the ability to patch two or more conventional repeaters and/or base stations together so that users may communicate directly. Operator positions shall be equipped such that a minimum of eight simultaneous patches shall be available.

L. An operator shall have the capability of setting up (and subsequently knocking down) an emergency call from the dispatch console position.

M. It shall be possible to temporarily mute unselected talkgroups. The unselected audio will unmute automatically after a programmable preset time. Mute shall be 20 dB minimum.

N. Dispatch consoles shall have the capability to patch together two or more talkgroups so that users may communicate directly.

6.3 CONVENTIONAL REQUIREMENTS

A. Dispatch equipment shall include an instant transmit switch for each conventional repeater channel and/or base station.

B. On conventional resources capable of operating on multiple frequencies/modes, a control/indicator shall be provided to select the desired transmit frequency/mode (select channel). The select-channel function shall cause the associated channel to switch frequencies/modes. Once a channel has been selected, the operator shall be able to transmit on this channel by pressing the footswitch or transmit button.

C. A transmit-audio-level meter shall be provided that indicates the level of transmitted voice. This meter also shall indicate the level of receive audio present on the selected channel.

D. Operator positions shall have the ability to independently set each channel's volume level. Minimum audio levels shall be capable of being set to avoid missed calls.

E. A control/indicator shall be provided to allow the operator to mute or unmute audio from unselected channels. Selected audio and unselected audio shall be audible from separate speakers.

F. A control/indicator shall be provided that enables the operator to select multiple channels, which in turn gives the dispatcher the ability to broadcast to several channels at once.

G. Operators shall have the ability to patch two or more conventional repeaters and/or base stations together so that users may communicate directly. Operator positions shall be equipped such that a minimum of eight simultaneous patches shall be available.

H. To aid dispatchers in a busy system, a list of the last 15 radio IDs shall be available in a “recent calls” list.

6.4 SYSTEMS INTEGRATION

A. The console system shall integrate with an adequate number of conventional channels as utilized by the County at the 911 center.

B. The dispatch console system shall support interfaces with the computer-aided dispatch (CAD) system in use by the County to provide the ability for the CAD system to automatically select recommended stations for dispatch. Offerors shall state how their system forwards automatic vehicle location (AVL) to the vendor.

C. The dispatch console system shall support connections to both existing conventional resources and the new simulcast system.

6.5 LOGGING RECORDER

A. Offerors shall propose a logging recorder interface that will interface with the County’s existing Higher Ground recording system utilized for 911 telephony. The proposal must be consistent with the County’s current operations to include recording of telephony, consoles, and radios.

B. Offerors are required to provide both individual channel and Session Initiation Protocol (SIP) interfaces as options.

C. If a new logging recorder is proposed, the existing analog radio and telephone system must be accounted for.

6.6 OPERATOR POSITION EQUIPMENT

A. All equipment supplied for use by the dispatch operators shall be capable of withstanding the 24 hours a day, 7 days a week (24 x 7) environment of today’s dispatch centers.

B. All equipment supplied for use by the dispatch operators shall be integrated into the existing console furniture at the dispatch locations.

C. Operator position display monitors will be, at a minimum, 19-inch liquid crystal display (LCD) or LED screens, with resolution of 1920 x 1080 or better.

D. Keyboards shall be a standard 101-key keyboard.

E. Operator functions shall be executed by positioning a screen pointer (cursor) over the appropriate icon and pressing the mouse button.

F. A high-quality gooseneck-type microphone shall be provided for each operator position.

G. Headset jacks shall be provided that enable the operator to hear select audio via a headset and allow the operator to respond via a microphone attached to the headset. The headset plug inserted into the jack shall automatically disconnect the console's microphone and mute the select speakers.

H. Optional pricing for wireless headsets shall be provided by the Offerors.

I. A heavy-duty footswitch shall be provided to allow the operator to key the selected channel hands-free.

J. If PCs are supplied, they shall be capable of providing a graphical user interface (GUI) using the Microsoft® Windows 11 operating system, be capable of local area network (LAN) client-server architecture for network access, and be capable of supporting multiple Microsoft® Windows 11-compliant applications.

K. PCs supplied shall be based on present state-of-the-art PC technology.

7 WARRANTY, MAINTENANCE, AND SUPPORT

7.1 WARRANTY

A. The proposed communications system shall have a warranty period of one year. The one-year warranty period shall commence upon final acceptance.

B. All services identified in Section 7.2, Maintenance, shall be included within the warranty period.

C. Offerors shall provide a single toll-free telephone number that answers 24 x 7, 365 days a year, for service requests and warranty claims.

D. Offerors shall state in their proposals the name, address, and capabilities of the service facility(ies) providing warranty service.

E. The following procedures shall be followed during the warranty period:

1. Warranty maintenance shall be performed 24 hours a day with no additional charges for work on critical infrastructure outside of normal 8:00 a.m. to 5:00 p.m. business hours.

2. The service facility shall provide prompt repair service, with service personnel arriving onsite within two hours after a service request by the County and returning the system to service within four hours after a service request by the County.

3. On-call County technical personnel shall be notified when service personnel have been dispatched and be given the opportunity to accompany the warranty provider.

4. The County shall be provided with written documentation indicating the cause of the service outage, the resolution, and all post-repair testing procedures to ensure proper operation. In the

event County-owned spares are used to complete the repair, the model and serial number of both the defective unit and the spare shall be noted in the documentation.

5. For all equipment needing factory or depot repairs, a comprehensive tracking system shall be put in place by the Contractor to track units to and from the factory/depot.

7.2 MAINTENANCE

A. The Contractor shall maintain and repair all systems, equipment, hardware, and software throughout the implementation, migration, and warranty periods. The County reserves the right to have technical staff onsite to witness, and if desired, assist in the maintenance and troubleshooting procedures. This does not relieve the Contractor from its warranty and maintenance responsibilities as defined in this document.

7.2.1 General Requirements

A. The approach to maintenance of this system shall be preventive maintenance.

B. Comprehensive maintenance services shall be proposed for each system.

C. Maintenance plans should be based on the quantities of equipment included in the proposed system. Plans shall include yearly pricing for years 2 through 15 following system acceptance (year one is provided under warranty). Pricing shall be broken out according to each of the services defined below. These plans shall include:

1. Fixed equipment onsite service:

    a. Two-hour response time, four-hour restoration time

    b. If Offerors are unable to perform to this, the service level agreements (SLAs) must be stated

2. Fixed equipment mail-in board repair:

    a. Emergency response: next day

3. All fixed equipment maintenance plans shall provide 24-hour system support so that users can dial one toll-free number to report problems and/or receive technical support.

4. The Contractor’s staff will dispatch the proper technician in the prescribed response time to resolve the problem if the Contractor is unable to resolve the problem through telephone consultation.

5. Maintenance plans shall include a semiannual preventive-maintenance check to include a retune of all RF components, including base stations, subscriber radios, and microwave radios. The retuning should restore components to manufacturer specifications.

6. Maintenance plans shall include 24 x 7 system monitoring and dispatch services.

7. Maintenance plans shall include the regular update of antivirus software on all servers and workstations.

7.2.2 Maintenance Standards

A. Replacement parts used in repairs shall be equal in quality and ratings to the original parts.

B. Equipment shall be maintained in a clean condition. Oil, dust, and other foreign substances shall be removed on a routine basis.

C. Equipment and system performance shall be maintained at the level initially described in these equipment and systems specifications. The service organization shall maintain records to confirm this has been done at intervals defined by the County.

D. Offerors shall provide only factory-trained and -authorized maintenance personnel.

E. If fixed equipment or a fixed equipment module fails more than twice during the acceptance test or twice during the first year, the Contractor shall meet with the County to discuss and explain such failures. If, in the opinion of the County, these failures indicate that the equipment is potentially prone to continuing failures, the Contractor shall replace it at no cost to the County.

F. Automatic system alerts generated via email or short message service (SMS) and sent to maintenance personnel that indicate system impairment shall constitute an actionable event requiring technician response.

7.3 PARTS AVAILABILITY

A. From the date of final acceptance to the seventh anniversary of the date of final acceptance, the Contractor shall maintain replacement parts for all delivered equipment.

B. In the event the Contractor plans to discontinue stocking any part required for maintenance after the seventh anniversary of final acceptance, the Offeror shall send written notice to the County 24 months prior to the date of discontinuance, to allow for last time buys and replenishment.

C. In the event the Contractor plans to discontinue manufacturing any part required for maintenance, the Contractor shall notify the County within one week following the publication of the cancellation notice. The manufacturer shall sufficiently stock the parts to be made available to the County for a minimum period of five years following cancellation.

D. All parts ordered on a priority basis shall be delivered within 24 hours after placing an order. Offerors shall provide year-round, 24-hour ordering facilities via telephone, Internet, email, and fax service.

7.4 SPARE EQUIPMENT

A. Offerors shall propose recommended spare parts for the system, subsystems, and individual equipment in their proposals.

B. The list of spare parts shall include the following, at a minimum:

1. Any vendor-identified field-replaceable units (FRUs)

2. Any infrastructure component that does not have FRUs that can cause a critical failure if it were to fail (e.g., base station antennas and other non-modular components)

3. Power supplies

4. Spares for less-critical items

C. The list shall include items that will rapidly and completely restore all critical system functionality with the least amount of effort (e.g., board replacement instead of troubleshooting to the component level when a critical unit has failed).

D. The quantities of spares in the list shall be appropriately sized to accommodate equipment quantities in the system.

E. The list shall define the primary equipment category each spare kit supports (e.g., transceiver board for a repeater, interface board for a console, etc.).

F. The system engineering design documentation shall include a narrative on the Offeror's ability to replace failed units from stock, as well as the process and timing to repair, replace, and return failed units delivered for repair.

G. System engineering design documentation also shall include the lifecycle of equipment, parts, and other maintenance support for the system.

H. Spares shall be included in any system update to keep them current.

7.5 LIFE CYCLE COST

A. Offerors shall propose an extended warranty for additional years beyond the initial warranty, renewable annually. Pricing shall be provided for years 2 through 15 following system acceptance.

B. Offerors shall propose a complete hardware and software maintenance package that provides a complete cost of ownership for the system(s) being offered to the County. The package should include system release updates, and hardware updates for those components that reach end of life (EOL) within the support period.

C. The maintenance package will need to be structured to account for a multi-year, phased-in system implementation.

D. Costs associated with the cost of ownership shall be provided for years 2 through 15 following system acceptance of the first phase.

E. Offerors shall fully describe the terms and conditions of the extended maintenance plan in their proposals.

8 SYSTEM IMPLEMENTATION, TESTING, AND ACCEPTANCE

8.1 GENERAL

A. The Contractor shall attend biweekly project and construction meetings as deemed necessary by the County prior to and during installation. Additional meetings may be scheduled at the discretion of the County.

B. If any changes in the overall timeline occur, the Contractor shall update the project schedule for discussion during these project meetings.

C. The Contractor shall provide written minutes of all meetings no later than five business days after the meeting.

8.2 SYSTEM INSTALLATION

A. Installation shall include a complete, tested system to include placement of associated cabling, appropriate system layout, and terminal connections. The Contractor shall provide associated power supplies and any other hardware, adapters, and/or connections to deliver a complete operable system to the County at the time of acceptance.

B. All installations shall be performed by factory-authorized or Offeror-affiliated service shops. Other shops or installers may be used upon mutual agreement between the County and Offeror. Qualified, adequately trained personnel familiar with this type of work shall perform all installations. Offerors shall provide the names of the service shops, their qualifications, a description of their certified training on the proposed system, a summary of their experience and a list of five references (minimum) for each proposed shop.

C. Prior to the start of system installation, the Contractor shall participate in a mandatory project site survey with the County or County’s representative to confirm actual equipment location within each space. At that time, the exact equipment locations shall be determined and documented by the Contractor.

D. The Contractor shall coordinate with others, as appropriate, to confirm that any preparation work that affects the installation of the base station equipment, such as tower work, coring, bracing, conduit, electrical, etc., is complete before final inspection.

E. The Contractor shall provide and pay for all materials necessary for the execution and completion of all work. Unless otherwise specified, all materials incorporated into the permanent work shall be new and shall meet the requirements of this specifications document. All materials furnished and work completed shall be subject to inspection by the County or the County’s representative.

F. Equipment supplied as spare equipment shall not be used for installation of the proposed system. All spare equipment shall be supplied in an unused condition.

G. All equipment and devices shall be cleaned internally and externally, and all damaged finishes shall be repaired.

H. Worksites shall be left neat and be broom swept upon completion of work each day. All shelter floors will be cleaned thoroughly, and all scuff marks and abrasions shall be removed prior to acceptance. All trash shall be removed weekly.

I. Inspection:

1. The County shall conduct an inspection of the installations upon substantial completion. Any deficiencies shall be documented on a single punch list and provided to the Offeror for resolution.

2. Final acceptance testing shall not commence until all punch-list items are resolved.

8.3 CUTOVER PLAN

A. During design review, the Contractor shall deliver a preliminary cutover plan describing how the new radio system will be phased into a fully operational system.

B. The Contractor shall be responsible for planning and coordinating the implementation of all equipment, subsystems, and the overall system.

C. Execution of the cutover plan shall ensure that new systems are brought online with minimum interruption to all existing systems and communications.

D. During design review, the Contractor shall deliver a preliminary cutover plan describing how the radio system will be phased into a fully operational system.

1. The Contractor shall successfully complete all tests and training prior to the actual cutover of systems.

2. The Contractor shall provide the necessary labor to cutover from existing systems to the new system.

3. The plan shall include the schedule and procedures associated with the transition of each operational user group. The plan shall specifically address how the existing users will begin using the new system with minimal operational impact.

4. The plan shall provide detailed component or subsystem cutover plans, and specifically delineate between systems that affect and do not affect ongoing operations.

5. The plan shall include contingencies.

6. The County reserves the right to approve and change the cutover plan as it relates to any or all system components.

8.4 STAGING

A. Each individual assembly or equipment unit shall undergo factory testing prior to shipment.

B. Standard factory test documentation, documenting the tests performed and indicating successful completion of testing, shall be submitted to the County.

C. System Staging:

1. The system shall be staged and tested at the factory in the United States to the greatest extent practical. The intent of the staging tests is to demonstrate to the County that the system is ready for shipment and installation. The Contractor shall provide travel expense coverage for two County personnel and one engineer/consultant to participate in the SATP.

2. The Contractor shall provide all necessary technical personnel and test equipment to conduct staging tests. All deviations, anomalies, and test failures shall be resolved at the Contractor's expense.

3. The Contractor shall use an approved SATP. It is expected that a preliminary SATP has been performed and all tests have been successful before the County witnesses the official SATP. The SATP shall be signed and dated by the Contractor and County representatives and engineers/consultants following completion of all tests. All tests in the SATP shall be marked as either pass, fail, or pass qualify.

4. Failed tests shall be documented, corrected, and retested. All defective components shall be replaced and retested. Defective components that cannot be corrected shall be replaced at the expense of the Contractor.

5. Retest of individual failed SATP tests or the entire plan shall be at the County’s discretion.

6. The fully executed and completed SATP document shall be provided to the County.

7. Major subsystems, such as the microwave system, may be tested at a different facility, at a different time, from the radio system. However, all items identified above shall apply if the subsystems are staged at different locations and times.

8.5 COVERAGE TESTING

A. Offerors shall submit a preliminary CATP with their proposals. The final CATP shall be submitted during the final design stage of the project.

B. The coverage will be tested to the maps shown in the RFP submission and the coverage guarantee will be based on the maps. Offerors shall clearly state their coverage guarantee.

C. CATP:

1. The CATP shall be consistent with the procedures and guidelines outlined in TIA TSB-88, latest revision.

2. Retries will only be allowed if there is a proven equipment failure or human error.

3. Coverage testing shall commence only after each phase of the radio system is fully tested and aligned. Changes to the system by the Contractor that could potentially change coverage shall require retesting of coverage at the County's discretion, and at no cost to the County.

4. The Contractor shall perform two types of round-trip coverage testing. Each type of test will include an inbound test and an outbound test. If a grid from either or both fails, the test grid fails. Data will be presented for both inbound and outbound to understand the coverage. Both types of testing shall be complementary and serve to fully verify that coverage requirements are met both technically and operationally.

    a. Automated objective mobile drive testing
    b. Non-automated subjective DAQ testing (intelligibility testing)

5. In the interest of avoiding large system dead spots, the failure of five or more adjoining grids shall deem the coverage test a failure. Retesting of the entire coverage area shall only be performed after the Contractor has demonstrated corrective action to address the coverage gap.

6. Test Configurations:

    a. Testing configurations for the objective and subjective testing shall represent the operating configurations for users using portable and mobile radio equipment to be used with the system. This may include the Contractor or other P25 radios qualified by the County.

    b. Automated Objective Mobile Drive Testing:

        i. The Contractor shall test both the signal level and BER, as applicable, at a statistically significant number of test locations throughout the county utilizing automated test equipment.
        ii. Both outbound (talk-out) and inbound (talk-in) BER testing shall be conducted.
        iii. The County requires BER testing conducted at a failure rate of 2% for FDMA and 2.4% for TDMA.
        iv. For testing purposes, the County shall be divided into (½- mile by ½-mile) grids. The Contractor or its subcontractor(s) may subdivide grids if necessary.
        v. The Contractor shall complete the "estimate of proportions" test identified in TSB-88 to validate that ½-mile by ½-mile grids yield enough test points to achieve statistical significance, accounting for inaccessible grids. If there are an insufficient number of grids, then smaller grid sizes shall be proposed.
        vi. Inaccessible grids shall not count as either a pass or fail in the statistical analysis.
        vii. The Contractor shall not be allowed to retest any failed grids without authorization from the County.
        viii. The Contractor shall develop a link budget to ensure that the receiver utilized in the automated drive testing receives the equivalent signal strength of the specified coverage configuration (i.e., portable radio worn at hip level). The Contractor shall utilize attenuators to properly account for gains and losses of the testing setup, plus any required in-building losses.

ix. All test equipment must be calibrated prior to testing, and signal losses through each component must be tested.
x. The Contractor shall provide an NMO adaptor to test signal losses through the testing antenna port and cable.

c. Non-automated Subjective DAQ Testing:

i. Non-automated subjective DAQ coverage testing shall be conducted using typical portable radios supplied with the system.
ii. Talk-out and talk-in performance shall be documented.
iii. The Contractor shall provide a standardized test form for testing.
iv. Retries are not permitted.
v. Automatic audio capture shall be an acceptable method of completing this test and is preferred if available.

d. The Contractor shall guarantee coverage for both subjective and objective drive testing at the levels specified.

e. Both the objective and subjective tests must independently yield a ratio of passing grids to total grids tested greater than the mandated coverage percentages.

8.6 30-DAY OPERATIONAL TEST

A. The County shall perform a 30-calendar day operational performance of the system to ensure that all hardware and software defects have been corrected prior to entering final proof-of-performance testing. The fully integrated operation of the system, including all individual subsystems, shall be used by the County as it would for an accepted system. The tests shall be designed to demonstrate the reliability, long-term stability, maintainability of the systems, and customer training of each system.

B. A failure of any critical component of the system during this test will cause the test to restart after the repair is completed. The Contractor and the County shall agree on what constitutes a critical failure prior to commencing this test.

C. The Contractor shall provide a 30-day operational performance plan during the preliminary design phase.

8.7 TRAINING

A. The Contractor shall develop and conduct training programs to allow personnel to become knowledgeable with the system, subsystems, and individual equipment.

B. The Contractor shall provide complete and comprehensive system management training for up to 12 staff charged with managing the system. This training shall include the following, at a minimum:

1. System theory of operation
2. Monitoring and managing the system’s performance (system manager level)
3. System monitoring techniques

4. Writing and printing system reports

C. The Contractor shall provide complete and comprehensive operational training for up to eight user agency dispatchers on the provided dispatch console systems. This training shall include the following, at a minimum:

1. Setup and use of all functional elements and features included in the consoles
2. All GUI elements, manipulation, function, and use
3. Patching and multiple talkgroup operation
4. Use of headsets, microphones, speakers, and mouse controls

D. The Contractor shall provide operator train-the-trainer for up to 20 end user personnel on the proper operation and care of assigned mobile and portable radio equipment. This training shall include the following, at a minimum:

1. Proper microphone technique
2. Button, knob, and keypad functionality as programmed for that agency
3. Proper battery maintenance
4. Screen icon interpretation and meaning

E. Offerors shall fully describe all proposed training programs in their proposals detailing how the Offeror intends to provide training. The training description shall include the following:

1. A list of all subjects with a description of each
2. Class materials to be provided by the Offeror
3. Number of classes
4. Class duration
5. Need for recurring training
6. Class size
7. Class cost

F. All operator training shall be conducted at “to be determined” locations within the county. System management training shall be provided on the County system where practical. Technical training requiring lab and live system training may be scheduled at the Contractor’s training facility. The Contractor shall coordinate with the County regarding the number of attendees and schedule at least one month prior to the first scheduled class.

G. Classes shall be scheduled as near to system cutover as possible. The Contractor shall work with the County to develop the schedule.

H. The Contractor shall provide all instructional materials, including printed manuals, audiovisual presentations, interactive self-paced PC programs, and complete equipment operating instructions for all technical and operational training classes.

1. The actual and/or exact model and series of equipment being delivered shall be made available for hands-on use and operation during training.

2. All instructional materials shall be subject to the approval of the County and shall become property of the County.

3. Additional training courseware and related media to be used in future academy training and refresher training shall be provided in a reproducible format with no limitation on the number of copies to be reproduced for training use. At least one hard copy and an electronic copy (on compact disc [CD] or USB stick) of all materials shall be provided.

8.8 PHASE ACCEPTANCE TESTING

A. Prior to phase acceptance testing, the Contractor shall verify and document that all equipment, hardware, and software are upgraded to the latest factory revision including subscribers. Multiple revision levels among similar equipment are not acceptable. A phase ATP may not proceed without an agreed-upon acceptance plan. This plan will be submitted to the County at least 45 days before testing. No testing may begin without County approval of the plan. The County shall be given two weeks' written notice that the system is ready for phase acceptance testing.

B. Phase ATP:

1. The Contractor shall use the completed and approved phase ATP. It is expected that a preliminary phase ATP has been performed and all tests have been successful before the County witnesses the official phase ATP. The phase ATP shall be signed and dated by the Contractor and County representatives following completion of all tests. All tests in the phase ATP shall be marked as either pass, fail, or pass qualify.

2. The Contractor shall provide all necessary technical personnel and test equipment to conduct phase ATP tests. All deviations, anomalies, and test failures shall be resolved at the Contractor's expense.

3. Failed tests shall be documented, corrected, and retested. All defective components shall be replaced and retested. Defective components that cannot be corrected shall be replaced at the Contractor's expense.

4. Retest of individual failed ATP test or the entire plan shall be at the County's discretion.

5. The fully executed and completed phase ATP document shall be provided to the County.

8.9 AS-BUILT DOCUMENTATION

A. At the completion of the installation phase, the Contractor shall provide complete as-built documentation as outlined below:

1. Equipment provided
2. Plan and elevation drawings of all equipment, including antennas on towers
3. Cabling and terminations
4. Block and system-level diagrams
5. Programming
6. Setup and alignment information
7. Successfully completed, signed, and dated SATP

8.10 SYSTEM ACCEPTANCE

A. The County shall deem the system ready for final acceptance following successful completion and approval of the following:

1. Final design submittals
2. SATP
3. System installation
4. Final inspection and punch-list resolution
5. As-built documentation
6. FATP, including CATP
7. 30-day operational test completion
8. Training

9 SUBSCRIBER EQUIPMENT

9.1 OVERVIEW

A. Subscriber equipment includes all VHF, 700/800 MHz band, non-fixed user equipment:

1. 55 portable radios
2. 82 mobile radios
3. 10 control stations

B. There are an estimated 147 subscriber radios (portable and mobile) that will need to be replaced across primary system users to ensure compliance with a P25 VHF, 700/800 MHz system. While the County intends to directly purchase all subscribers required for system deployment, subscriber radio proposals submitted in response to this solicitation must permit direct purchasing by any municipality, local government, or public safety entity on the County system, at the discounted pricing levels provided.

C. Offerors are encouraged to provide competitive pricing and bulk-purchase discounts and incentives.

D. Offerors shall provide unit pricing for all user subscriber equipment and accessories. Pricing information shall be provided for the full range of installation configurations offered by the Offeror, with the specific installation costs for each.

9.2 GENERAL REQUIREMENTS

A. All subscriber equipment shall be of high quality and intended to provide high reliability under heavy use in severe environments. Equipment shall be type-accepted by the FCC in accordance with the Commission’s Part 90 Rules and Regulations.

B. All subscriber equipment shall meet MIL-STD-810 C, D, E, and F.

C. All subscriber equipment shall be software programmable.

D. All subscriber equipment shall support the following operating modes:

1. Conventional analog FM network
2. Conventional analog FM off-network (talkaround)
3. Conventional P25 Phase 1 network
4. Conventional P25 Phase 1 off-network (talkaround)
5. Trunked P25 Phase 2 network (required option for interoperability)

E. All equipment shall be programmed for operation on the proposed system that will be procured through this RFP.

F. Offerors shall propose a comprehensive subscriber maintenance program that includes provisions for subscriber repair and preventive maintenance on annual and biannual schedules.

9.2.1 Portable Radios

A. Offerors shall provide pricing for portable radios in the pricing forms found in the pricing workbook. There are approximately 82 portable radios on the system that will need to be replaced. All portables shall be included under Model 2 (see description below) for the purposes of the proposal; however, unit pricing shall be included for the other models as well as all available feature sets. The municipality, local government, or public safety entity will select the desired model and feature(s). As an OPTION, multiband portable radios should also be offered.

B. Offerors shall include unit programming.

C. As an OPTION, Offerors shall propose radios certified as intrinsically safe.

D. Offerors shall provide the highest-tier product available, highly reliable, and intended for mission-critical operations. Pricing shall be provided for a minimum of three models:

1. Model 1: Basic model, typically identified with no keypad or display
2. Model 2: Mid-range model, typically identified with limited keypad and display
3. Model 3: Advanced model, typically identified with full keypad and display

E. Features:

1. Full compliance with P25 features and operation
2. PTT button
3. Top-mounted on/off volume knob
4. Talkgroup/channel selector
5. Emergency button, protected from inadvertent activation
6. Alphanumeric display (on applicable models), minimum of eight characters
7. Transmit indicator
8. OPTIONAL – AES 256-bit encryption
9. OPTIONAL – OTAP and associated fixed equipment
10. OPTIONAL – OTAR and associated fixed equipment
11. OPTIONAL – Subscriber radio GPS and associated fixed equipment

F. Battery:

1. Offerors shall provide pricing for a battery sized to support a 12-hour shift.

2. Offerors shall propose batteries certified as intrinsically safe as an OPTION.

3. Batteries shall provide a minimum operational use of eight hours based on a 5-5-90 duty cycle.

4. Recharge time to full capacity shall not exceed one hour.

5. Lithium-ion batteries are required.

6. Offerors shall provide detailed specifications for all batteries proposed, including the following, at a minimum:

    a. Battery life
    b. Total battery lifecycle expectancy
    c. Recharge time
    d. Dimensions
    e. Weight
    f. Warranty

G. Accessories: Offerors shall provide, as a base proposal, wired remote speaker microphones for law enforcement with a standard swivel case and single charger. OPTIONAL pricing for all accessories, including the following, shall be provided at a minimum:

1. AES encryption
2. Data cables
3. Battery chargers:

    a. Single-bay battery charger
    b. Multiple-bay battery charger
    c. Vehicular charger

4. Alternate antennas
5. Remote speaker microphone
6. Remote speaker microphone with antenna
7. Wireless remote speaker microphone
8. Large/rugged remote speaker microphone for high-noise environments
9. Headset:

    a. Wired
    b. Wireless/Bluetooth

10. Carrying cases/belt clips

H. Offerors shall provide detailed equipment specifications for all proposed portables and accessories, including the following information:

1. Radio dimensions
2. Radio weight with battery
3. Antenna type
4. Frequency channel capacity
5. General features, transmit/receive parameters, and mechanical specifications

I. Multiband portable radios:

1. As an OPTION, Offerors shall provide multiband portable radios capable of operating in the following frequency bands:

   a. VHF: 136–174 MHz
   b. UHF: 380–520 MHz
   c. 700/800 MHz: 762–870 MHz

2. Offerors shall provide detailed specifications for radios and all accessories.

9.2.2 Mobile Radios/Control Stations

A. Offerors shall provide pricing for mobile radios and control stations in the pricing workbook. There are approximately 55 mobiles and 10 control station radios on the system that will need to be replaced. All mobile radios and control stations shall be included as dash-mount Model 2 (mid-tier) for the purposes of the proposal; however, unit pricing shall be included for remote mounts, as well as all available configurations and feature sets.

B. Pricing shall include installation and programming.

C. Offerors shall provide pricing for a minimum of three tiers with the base proposal cost at the mid-tier.

D. Mobile radios shall be supplied complete with microphone, external speaker, cables, fusing, mounting hardware, coaxial cable, and antennas to provide for a complete installation.

E. Control station radios shall be supplied complete with desk microphone, speaker, cables, coaxial cable, and omnidirectional antennas to provide for a complete installation.

F. OPTIONAL: Control station configurations shall be offered with both a deskset consolette setup with built-in power supply and a mobile radio with a DC power supply.

G. Offerors shall provide pricing for remote-mounted units.

H. Features:

1. Full compliance with P25 features and operation
2. Remote speaker microphones
3. Front-mounted on/off volume knob
4. Talkgroup/channel selector
5. Emergency button, protected from inadvertent activation
6. Alphanumeric display
7. Transmit indicator

8. Dash- and remote-mount configurations
9. OPTIONAL – OTAP and associated fixed equipment
10. OPTIONAL – OTAR and associated fixed equipment
11. OPTIONAL – Subscriber radio GPS and associated fixed equipment
12. OPTIONAL – Control station combiners for configurations supporting 4/8/12/16/32 ports

I. Accessories: Offerors shall provide OPTIONAL pricing for all accessories, including the following, at a minimum:

1. AES encryption
2. Cables:

    a. Data cables
    b. Extension cables
    c. Adapters
    d. Power cables

3. Antennas
4. External speakers
5. Public address kits
6. Remote speaker microphones
7. Desktop microphone (control stations only)
8. GPS functionality and associated fixed network hardware
9. Mobile data interface
10. Surveillance mobile package:

    a. Disguise antenna
    b. One-hand control head microphone

J. Offerors shall provide detailed equipment specifications for all proposed mobiles and accessories, including the following information:

1. Radio dimensions
2. Radio weight with battery
3. Antenna type
4. Frequency channel capacity
5. General features, transmit/receive parameters, and mechanical specifications

K. Multiband mobile radios:

1. As an OPTION, Offerors shall provide multiband mobile radios capable of operating in the following frequency bands:

    a. VHF: 136 – 174 MHz
    b. UHF: 380 – 520 MHz
    c. 700/800 MHz: 762 – 870 MHz

2. Offerors shall provide detailed specifications for radios and all accessories.

9.2.3 Fleet Mapping

A. The Contractor shall develop the actual fleet map with input and direction from the County. The fleet map shall contain at a minimum:

1. Talkgroup ID
2. Agency
3. Emergency actions
4. Encryption capability
5. Roaming capability
6. Priority
7. Scan

B. The Contractor also shall develop subscriber unit programming templates. These templates shall have the basic features and functions defined for a particular subscriber unit and user type. Templates shall be developed on a per-agency basis.

C. Once the fleet map and templates are approved and completed, the Contractor shall use these for installation of subscriber units and for further configuration of the system. The Contractor shall submit these with the final as-built documentation.

9.3 SUBSCRIBER WARRANTY AND MAINTENANCE

9.3.1 Subscriber Warranty

A. Offerors shall offer a subscriber radio warranty that commences on final acceptance of the County's P25 system or upon delivery of the radios, whichever is later; any subsequent purchases shall include warranty periods of at least one year that co-terminate with the warranty or maintenance periods of any previously purchased radios, unless otherwise agreed by the purchasing entity. The warranty shall include the repair of any radio that fails due to manufacturer defects within the warranty period, at no additional cost to the owning agency.

9.3.2 Subscriber Maintenance

A. Offerors shall offer subscriber maintenance plans on a recurring fee structure to provide added services and coverage beyond the initial warranty period. Offerors shall provide pricing in the pricing workbook for the following subscriber maintenance packages:

1. Extended warranty beyond the initial warranty period for failures that occur due to manufacturer defects or normal wear and tear

.

2. Preventive maintenance plan to restore the radios to the manufacturer's specifications at the following recurring intervals:

a. One year
b. Two years

3. Accidental damage replacement plan to cover the repair or replacement of radios that have failed due to accidental damage, at no additional cost to the owning agency.

B. Offerors shall offer subscriber maintenance pricing on a per-request fee structure to provide added services and coverage beyond the initial warranty period. Offerors shall provide pricing in the pricing workbook for the following subscriber maintenance services:

1. Factory repair of a radio that has failed due to manufacturer defects or normal wear and tear.

2. Preventive maintenance to restore the radios to the manufacturer’s specifications.

3. Factory repair of a radio that has failed due to accidental damage.

4. Programming of a radio to update the radio’s programming parameters.

5. Programming of a radio to update the radio’s firmware (firmware purchased separately).

GLOSSARY OF TERMS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AC	Alternating current
agency	Term that applies generically to any local, state, federal entity or organization, such as: a department, division, city/town, or bureau. Includes: government, quasi-government and private groups
ANSI	American National Standards Institute
APCO	Association of Public-Safety Communications Officials–International
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing Materials
ATPC	Automatic transmit power control
ATS	Automatic transfer switch
AWG	American wire gauge
backhaul	The transporting of radio communications traffic between distributed sites (typically access points) and more centralized points of presence.
Bandwidth	The capacity of a channel to carry signals. The amount of spectrum required to transmit a signal without distortion or loss of information.
BER	Bit error rate; a measure of the number of errors in received transmissions when compared to the original transmission, frequently expressed as a percentage.
bit	Binary digit
BTU	British thermal unit
CAI	Common air interface
CATP	Coverage acceptance test plan
C	Celsius
CFR	Code of Federal Regulations
channel	The route through which a message is sent. A connection between initiating and terminating nodes of a circuit. A single path provided by a transmission

	medium via an electrical separation, such as by frequency or frequency pairs.
communications	Information transfer among or between users. In public safety communications, the ability of public safety agencies to talk across agencies.
connectivity	The complete path between two terminals.
Contractor	Any individual or entity selected from among all Offerors to supply products and services in response to this RFP.
conventional	A radio system with dedicated, single-purpose channels (can be shared between several users with different operational needs; *e.g.,* fire and police). A user must select the specific channel to be used.
coverage	The geographic area included within the range of a wireless radio system.
CPC	Channel performance criterion
CSI	Construction Specifications Institute
CSSI	Console subsystem interface
DAQ	Delivered audio quality
dB	Decibel
dBm	Decibel referenced to one milliwatt. (zero dBm)
DC	Direct current
digital	Radio transmission method that replaces analog systems and transmits its signal in binary 1s and 0s the same as a computer. One major difference is that digital signals do not degrade gradually the way analog signals do as the distance between the transmitter and receiver increases.
DS-0	A basic digital signaling rate of 64 kilobits per second (kbps), corresponding to the capacity of one voice-frequency-equivalent channel. The DS-0 rate, and its equivalents E-0 and J-0, form the basis for the digital multiplex transmission hierarchy in telecommunications systems used in North America.
DS-1	Digital Signal, Level 1
DTMF	Dual-tone multi-frequency
EIA	Electronic Industries Alliance

EMI	Electromagnetic interference
encryption	The reversible transformation of data from the original (plain text) format to a difficult-to-interpret format as a mechanism for protecting its confidentiality, integrity and sometimes its authenticity. Encryption uses an encryption algorithm and one or more encryption keys.
ERP	Effective radiated power
F	Fahrenheit
FAA	Federal Aviation Administration
FATP	Final acceptance test plan
FCC	Federal Communications Commission
FDMA	Frequency division multiple access
first responders	The first professionals called to an incident or emergency that provides immediate support services during prevention, response, and recovery operations.
FM	Frequency Modulation; a signal transmission with constant signal strength, where the center frequency varies in proportion to the voice being transmitted. FM signals are not susceptible to most interference sources. Radio systems operating on FM are being replaced by digital systems.
frequency	The number of cycles or events of a periodic process in a unit of time.
frequency bands	The spectrum of transmission space where mobile radio systems operate in the United States. They are (from low to high): High HF (25-29.99 MHz) Low VHF (30-50 MHz) High VHF (150-174 MHz) Low UHF (450-470 MHz) UHF TV Sharing (470-512 MHz) 700 MHz (764-776 and 794-806 MHz) 800 MHz (806-869 MHz) 2.4 GHz 4.9 GHz
FRU	Field replaceable unit
gateway	A device that can transparently interconnect radio audio paths so that agencies can patch into each other's radio channels in real time. This can be

	done at the baseband level or using IP. A gateway provides interconnection between two networks with different communications protocols.
GFI	Ground fault interrupter
GHz	Gigahertz (1 billion hertz)
GoS	Grade of service
GPS	Global Positioning System; a U.S. satellite system that lets persons or systems determine their position with extreme accuracy using GPS receivers.
GUI	Graphical user interface
HVAC	Heating, ventilation, and air conditioning
Hz	Hertz (same as cycles per second)
ID	Identification
IEEE	Institute of Electrical and Electronic Engineers
infrastructure	Dedicated telecommunications networks; the hardware and software needed to complete and maintain a public safety communications system.
interference	Extraneous energy, from natural or man-made sources, that impedes the reception of desired RF signals.
interoperability	The ability of diverse systems and organizations to work together (interoperate). In public safety, the ability of personnel to exchange voice and data communications with staff from other agencies, on demand and in real time.
intranet	A private computer network that uses Internet technologies to share an organization's information or operational systems with its employees in a secure manner.
IP	Internet Protocol
ISSI	Inter-RF subsystem interface
kHz	Kilohertz (1000 hertz)
kVA	Kilovolt ampere
kW	Kilowatts

LAN	Local-area network
LCD	Liquid crystal display
LED	Light-emitting diode
LMR	Land mobile radio; a public or private radio service providing two-way communication, service paging and radio signaling on land.
Mbps	Megabits per second (1 million bits per second)
MHSB	Monitored hot standby
MHz	Megahertz (1 million hertz)
modem	An acronym for modulator/demodulator, which is a device that translates digital signals coming from a computer into analog signals that can be transmitted over standard telephone lines. The modem also translates the analog signals back into digital signals that a computer can understand.
MPE	Maximum permissible exposure
MTBF	Mean time between failures
NAD	National American Datum
NEBS	Network Equipment Building System
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NiMH	Nickel-metal hydride
NMI	Network management interface
NMS	Network management system
NMT	Network management terminal
NPSPAC	National Public Safety Planning Advisory Committee
NRTL	Nationally recognized testing laboratory
O.D.	Outside diameter

OET	Office of Engineering & Technology
Offeror	Any individual or entity bidding on the right to supply products and services in response to this RFP.
OSHA	Occupational Safety and Health Administration
OTAP	Over-the-air programming
PC	Personal computer
P25 or APCO 25	Project 25; a suite of standards for digital radio communications for use by federal, state/province and local public safety agencies in North America to enable them to communicate with other agencies and mutual-aid response teams in emergencies.
psig	Pounds per square inch gauge
PTT	Push to talk
Public safety spectrum	Specific bands of frequencies set aside by the FCC for use by public safety agencies. They are: Low Band (25-50 MHz) VHF High Band (150-174 MHz) 220 MHz Band (220-222 MHz) UHF Band (450-470 MHz) 700 MHz Band (764-776 and 794-806 MHz) 800 MHz Band (806-824 and 851-869 MHz) 4.9 GHz Band
QA/QC	Quality assurance/quality control
R56	Motorola installation guide; *Standards and Guidelines for Communication Sites*
receiver	The component(s) of a radio device that converts the radio waves into audible signals.
repeater	A special receiver/transmitter combination that receives a signal on one frequency and retransmits a new signal on another frequency, usually within the same frequency band, sometimes referred to as a relay station.
RF	Radio frequency
RFI	Radio frequency interference

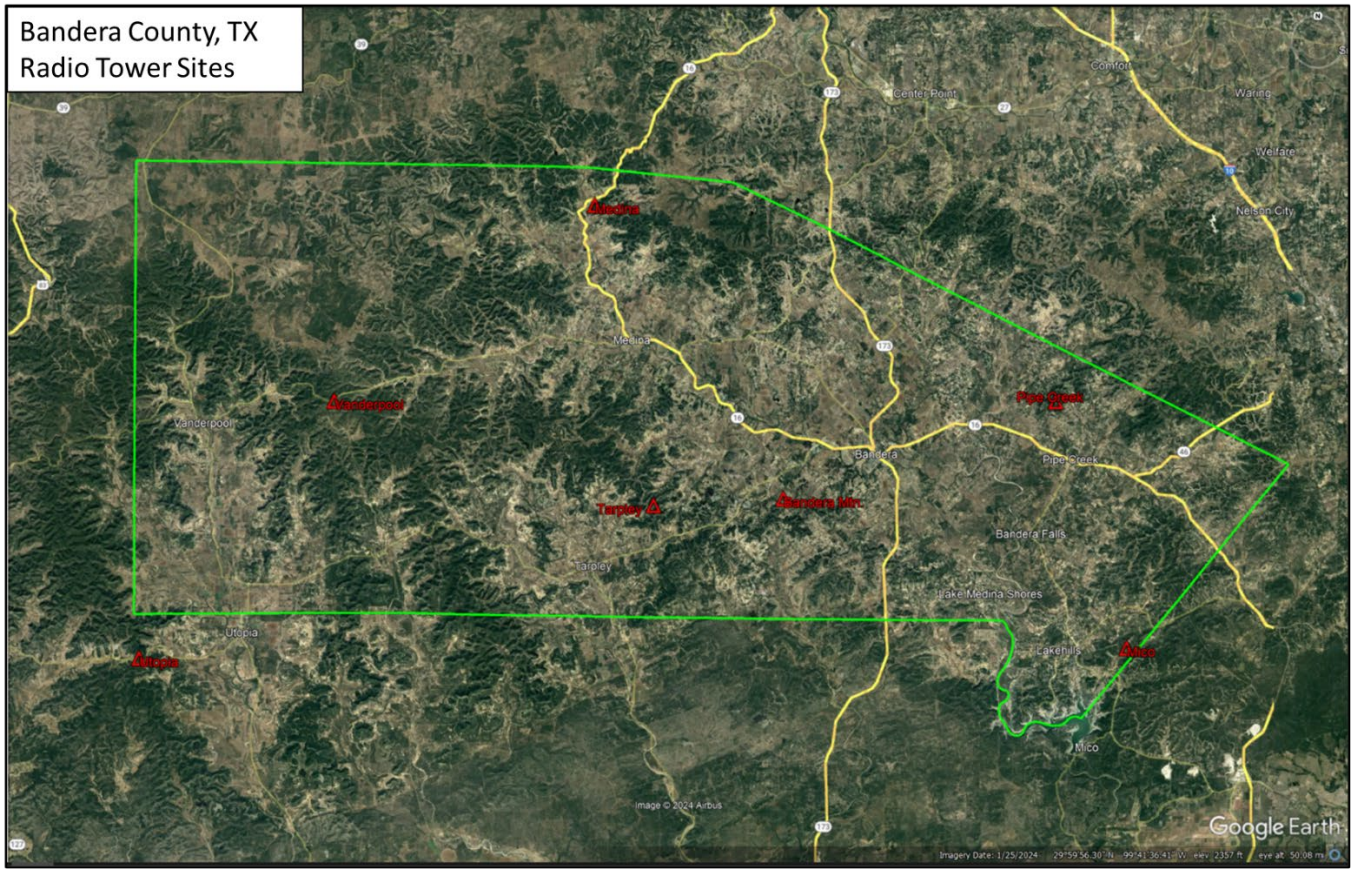
RFP	Request for proposals
RTU	Remote terminal unit
SATP	Staging acceptance test plan
SoR	Statement of requirements
spectrum	The range of electromagnetic radio frequencies that can be decomposed into frequency components, used in the transmission of sound, data and television.
subscriber	User/customer on a network.
subscriber unit	User’s equipment (usually a mobile or portable radio)
talkgroup	An assigned talk path similar to a channel on a conventional system.
TDMA	Time division multiple access
TDMM	Telecommunications Distribution Methods Manual
Telco	Telecommunications company
TIA	Telecommunications Industry Association
trunked	A radio system with a group of channels available and assigned as needed to specific “groups” or operations. The channels are programmed for automatic system assignment while in use, and then released for other users. A trunked system maximizes channel utilization.
TSB	Telecommunications Systems Bulletin
TTA	Tower-top amplifier
turnkey	Entire system with hardware and software assembled and installed by a vendor and sold as a package.
TVSS	Transient voltage surge suppression
UHF	Ultra-high frequency
UL	Global safety certification company; formerly known as Underwriters Laboratories
UPS	Uninterruptible power supply
USGS	U.S. Geological Survey

VHF	Very-high frequency
VSWR	Voltage standing wave ratio
Voting receiver	Multiple remote receivers tied together through a comparator device at a transmitter site to improve portable coverage; signal strength is compared from each receiver, and the best receiver becomes the receiver during a specific transmission.
WAN	Wide-area network
WBS	Work breakdown structure

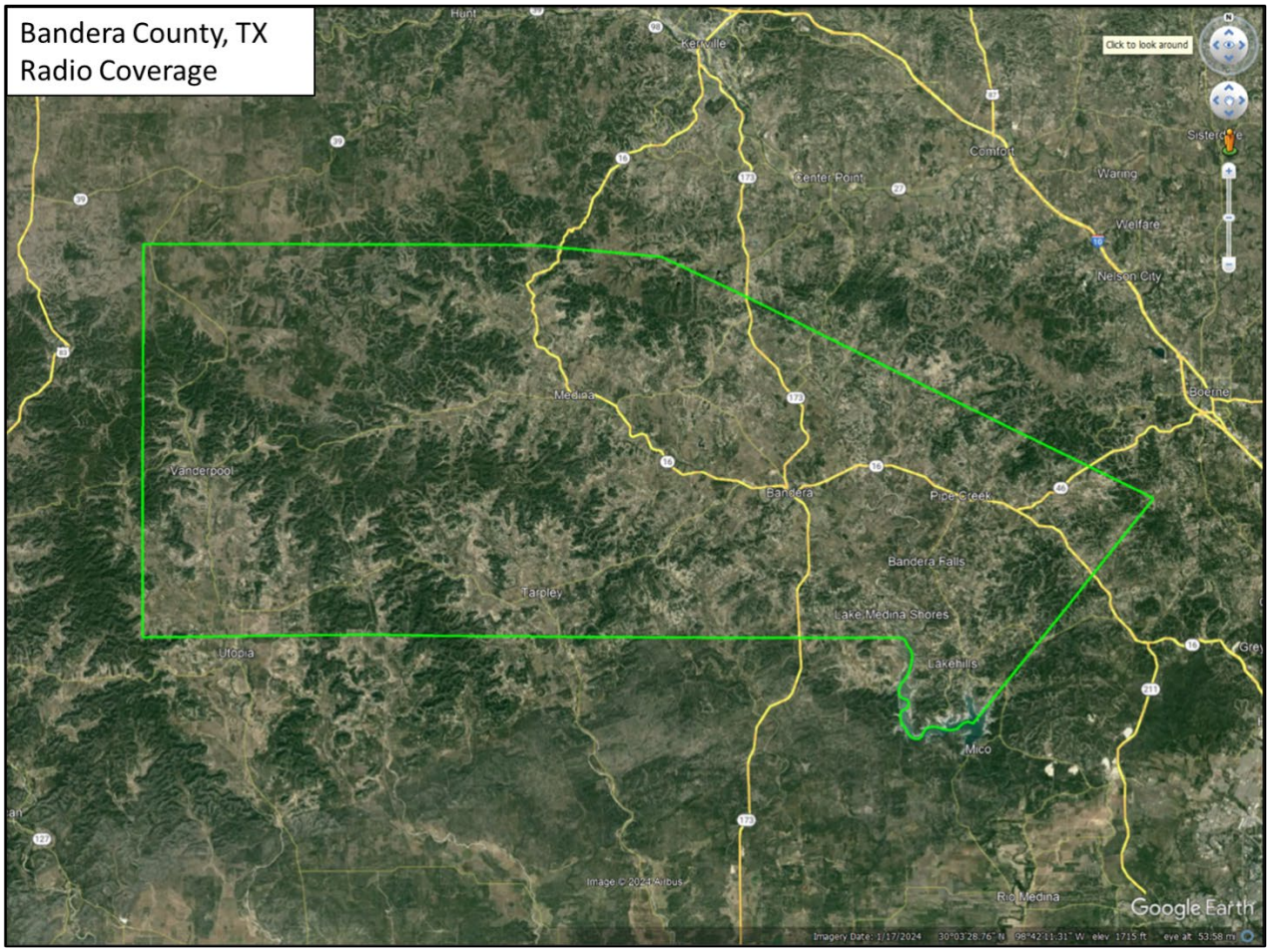
APPENDIX A: TOWER SITES

Address	City	State	Zip	Site Latitude	Site Longitude
Bandera Mountain, 1236 Indian Creek Rd	Bandera	TX	78003	29-41-57.23 N	99-08-24.19 W
Tarpley, 5112 Kyle Ranch Rd	Tarpley	TX	78883	29-41-42.2 N	99-13-57.6 W
Vanderpool, 13655 FM 337	Vanderpool	TX	78885	29-45-33.5 N	99-27-37.0 W
Medina, 10 Bedrich Dr	Medina	TX	78055	29-52-51.3 N	99-16-29.5 W
Mico, 11789 FM 1283	Lakehills	TX	78063	29-36-20.9 N	98-53-41.5 W
Pipe Creek, 2250 South Goat Ridge	Pipe Creek	TX	78063	29-45-31.8 N	98-56-46.1 W
***Utopia**, Ranch to Market Road 1050	Utopia	TX	78884	29-35-57.8 N	99-35-58.2 W

* Neighboring county site; proposed usage for Bandera County



APPENDIX B: COVERAGE REQUIREMENTS MAP



APPENDIX C: COMPLIANCE MATRIX

The Compliance Matrix is provided below for review. A separate Excel spreadsheet will be provided for completion.

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
1	Project Overview		
1.1.	Introduction		
1.2.	Bandera County Background		
1.3.	Request for Proposal Overview		
1.4.	Project Delivery Timeline and County Financial Terms		
1.5.	Project Summary		
1.6.	Proposals Desired		
1.6.1.	Systems Technical Requirements		
1.6.2.	Services		
1.7.	Quality Assurance and Coordination		
1.7.1.	Standards and Guidelines		
1.7.2.	P25 Standard Compliance		
1.7.3.	Frequency Coordination and Licensing		
1.7.4.	Permitting		
1.8.	Project Management		
1.8.1.	Scheduling		
1.8.2.	Project Punch List		

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
1.8.3.	Project Meetings		
1.8.4.	Project Staffing		
1.8.5.	Quality Assurance/Quality Control Program		
1.9.	Delivery, Storage, and Handling		
1.10.	Project Submittals		
1.10.1.	Preliminary Design (45 days after notice to proceed)		
1.10.2.	Final Design (90 days after notice to proceed)		
1.10.3.	System Staging, Delivery, and Installation		
1.10.4.	Final System Acceptance		
2	**Instructions to Offerors**		
2.1.	Overview		
2.2.	Mandatory Pre-Proposal Conference		
2.3.	Schedule of Events		
2.4.	Proposal Format		
2.5.	Evaluation		
2.6.	Proposal Options		
2.7.	Alternate Proposals		
2.8.	Addenda		
2.9.	Award of Contract		

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
3	Radio Communications System Requirements		
3.1.	Overview		
3.2.	Interoperability/P25 Statement of Requirements		
3.3.	System Configuration		
3.3.1.	Redundancy and Survivability		
3.3.2.	Expansion		
3.4.	Site Selection		
3.5.	Coverage		
3.5.1.	Coverage Maps		
3.5.2.	Map Criteria		
3.5.3.	Coverage Model		
3.5.4.	TIA TSB-88 – User Choices		
3.6.	Site Equipment		
3.6.1.	Overview		
3.6.2.	System and Site Control Equipment		
3.6.3.	Simulcast Equipment		
3.6.4.	Receiver Voting		
3.6.5.	Base Station Equipment		
3.6.6.	Antenna Systems		
3.6.7.	Antenna Installation		

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
3.6.8.	Removal of Existing Infrastructure and Equipment		
3.7.	Network Management System		
3.7.1.	Network Management Terminal		
3.7.2.	Remote Terminal Units		
3.8.	Integrated Voice and Data		
3.9.	Backup Consolettes		
3.10.	Shared Equipment – Option		
4	**Backhaul Network**		
4.1.	Overview		
5	**Site Development**		
5.1.	General		
5.2.	Towers		
5.3.	Shelters		
5.4.	Generator and Automatic Transfer Switch		
5.4.1.	Propane Generator		
5.4.2.	Automatic Transfer Switch		
5.4.3.	Propane Fuel System		
5.5.	DC Power		
5.6.	Site Preparation		
5.7.	Fencing		
6	**Dispatch Consoles**		

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
6.1.	General Requirements and Features		
6.2.	Operational Requirements		
6.3.	Conventional Requirements		
6.4.	Systems Integration		
6.5.	Logging Recorder		
6.6.	Operator Position Equipment		
7	**Warranty, Maintenance, and Support**		
7.1.	Warranty		
7.2.	Maintenance		
7.2.1.	General Requirements		
7.2.2.	Maintenance Standards		
7.3.	Parts Availability		
7.4.	Spare Equipment		
7.5.	Life Cycle Cost		
8	**System Implementation, Testing, and Acceptance**		
8.1.	General		
8.2.	System Installation		
8.3.	Cutover Plan		
8.4.	Staging		
8.5.	Coverage Testing		
8.6.	30-day Operational Test		

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
8.7.	Training		
8.8.	Phase Acceptance Testing		
8.9.	As-Built Documentation		
8.10.	System Acceptance		
9	**Subscriber Equipment**		
9.1.	Overview		
9.2.	General Requirements		
9.2.1.	Portable Radios		
9.2.2.	Mobile Radios/Control Stations		
9.2.3.	Fleet Mapping		
9.3.	Subscriber Warranty and Maintenance		
9.3.1.	Subscriber Warranty		
9.3.2.	Subscriber Maintenance		
	Glossary of Terms and Acronyms		
Appendix A	**Tower Sites**		
Appendix B	**Coverage Requirements Map**		
Appendix C	**Compliance Matrix**		
Appendix D	**Proposal Pricing Instructions**		
Appendix E	**County Schools Location Information and Map**		
Appendix F	**Bandera County Terms and Conditions**		

RFP Section	Description	Offeror's Statement of Compliance Select one from the drop-down list: Comply Comply with Clarification Exception	Offeror's Clarifications and Comments
	Bandera County Contractor Insurance Requirements & Agreement Requirements		
	Payment Bond		
	Performance Bond		
Attachment A	**Proposal Form**		

APPENDIX D: PROPOSAL PRICING INSTRUCTIONS

The Pricing Workbook, a separate Excel document, has been developed to foster conformity of Offerors' pricing proposals and aid in evaluation of these proposals. The price sheets are designed to provide justification for an Offeror's pricing proposal and evaluation criteria.

The County has $1,000,000 appropriated the first year. Funding for other years has not been identified. Multiple forms may be needed for year 2, year 3, etc. to finish the project. Please identify these costs by phase for the County to understand its cash flow requirements for your solution.

Detailed line-item pricing for all material and services is required. Offerors may add lines to the worksheets to accommodate their in-depth pricing details in support of their project approach.

The sum of the costs provided on the sheets shall total the cost of an Offeror's proposal before any incentive discounts are applied.

Any optional equipment or services shall be clearly marked "OPTIONAL" so as not to be included in the project cost calculation.

A separate worksheet should be generated for each tower site and equipment location, including, but not limited to, the core controllers, simulcast cell controllers, each site where RF equipment is located, and dispatch locations.

Antenna systems for LMR and microwave systems should be listed on the worksheet page for that site. Additional lines may be inserted as needed.

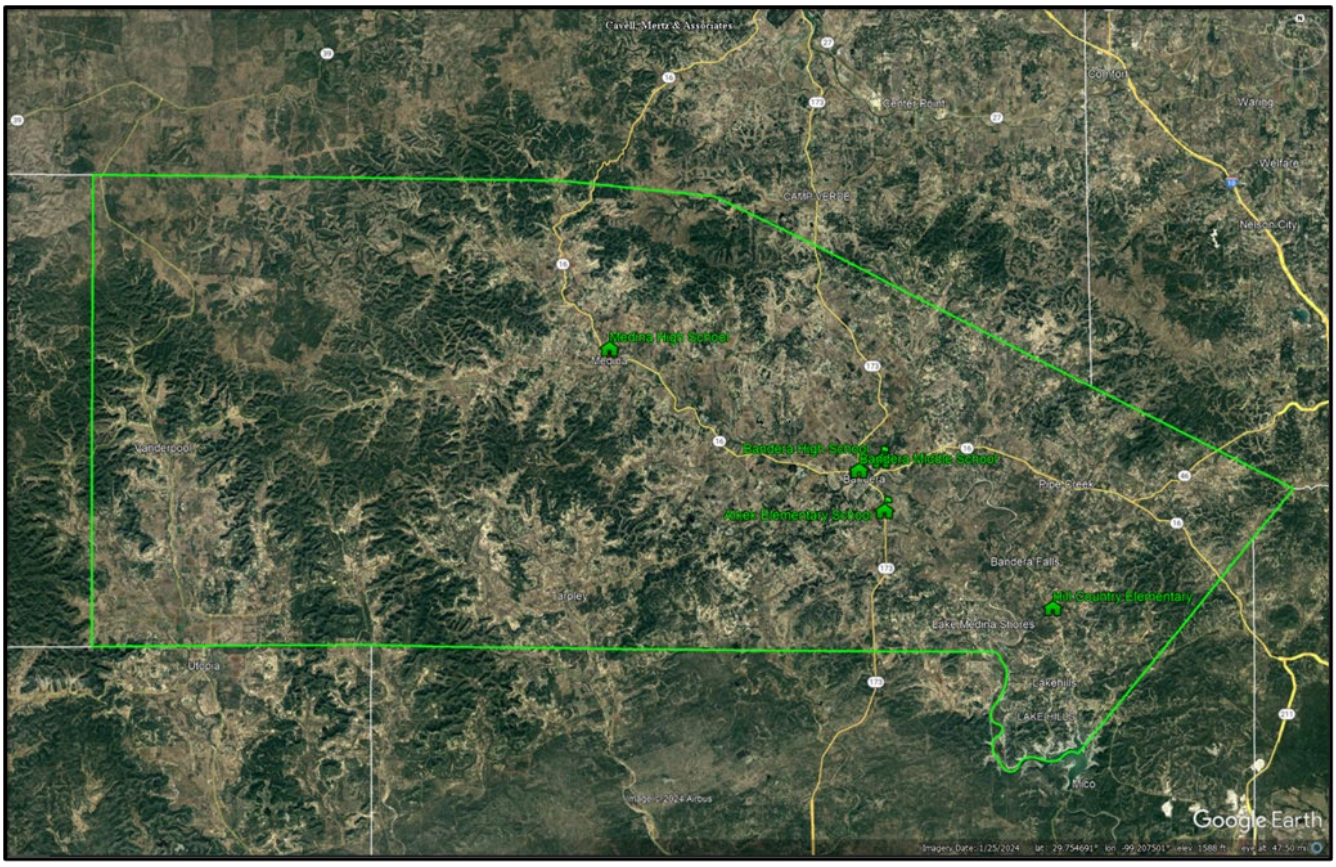
Each individual labor task by site and function needs to be detailed. If the County is not able to afford a complete solution, the County reserves the right to retract services and features.

Subscriber pricing sheets shall include the full list of radios, software options, and accessories included within an Offeror's base proposal. Separate sheets shall be provided for any alternate radio models, options, and accessories not included in an Offeror's base proposal.

The 15-year cost of ownership should include all services available from the Offeror.

APPENDIX E: COUNTY SCHOOLS LOCATION INFORMATION AND MAP

School	Latitude	Longitude
Alkek Elementary School 1798 TX-173 Bandera, TX 78003	29.702625°	-99.059737°
Hill Country Elementary 6346 FM1283 Pipe Creek, TX 78063	29.644353°	-98.944203°
Bandera Middle School 1005 Cherry St Bandera, TX 78003	29.726813°	-99.077072°
Bandera High School 474 Old San Antonio Rd Bandera, TX 78003	29.732781°	-99.061863°
Medina High School 1 Bobcat Lane Medina, TX 78055	29.799504°	-99.248353°



APPENDIX F: BANDERA COUNTY TERMS AND CONDITIONS

1 STANDARD TERMS AND CONDITIONS

1. ENTIRE AGREEMENT: These standard Terms and Conditions and the Terms and Conditions, Specifications, Drawings and other requirements included in Bandera County's Request for Proposal are applicable to Contracts/Purchase Orders issued by Bandera County hereinafter referred to as the County and the Offeror herein after referred to as the Offeror or Contractor. Any deviations must be in writing and signed by a representative of the County and the Offeror. No Terms and Conditions contained in the Offeror's Bid/Proposal, Invoice or Statement shall serve to modify the terms set forth herein. If there is a conflict between the provisions on the face of the Contract/Purchase Order these written provisions will take precedence.

2. OFFICIAL BID NOTIFICATION: Bandera County utilizes the following for official notifications of bid opportunities: https://www.banderacounty.org/page/Bandera%20County%20Bid%20Listing and the Bandera Bulletin. These are the only forms of notification authorized by the County. The County is not responsible for receipt of notifications or information from any source other than those listed. It shall be the Offeror's responsibility to verify the validity of all bid/proposal information received from any source other than Bandera County. There will be NO COST to the Offeror for using the County's website and bid notification system for its Bids/Proposals.

3. PROHIBITION AGAINST PERSON INTEREST IN CONTRACTS: No Bandera County employee shall have a direct or indirect financial interest in any contract with the County or be directly or indirectly financially interested in the sale of land, materials, supplies, or services to the County.

4. COMPETITIVE PRICING: It is the intent of the County to consider Interlocal Cooperative Agreements and State/Federal contracts in determining the best value for the County.

5. RIGHT TO AUDIT: The County shall have the right to examine and audit after reasonable notice any and all books and records of Offeror/Contractor that may relate to this agreement including, without limitation, the performance of Offeror/Contractor, its employees, agents, and subcontractors. Such books and records will be maintained in accordance with generally accepted accounting principles and shall, upon request and at the County's request, be made available at a location designated by the County. Offeror/Contractor shall, except for copying costs, otherwise bear all costs of producing such records for examination and copying by the County. Unless otherwise agreed by the parties, such records must be made available to the County within five business days. The provisions of this paragraph shall survive the termination of this agreement.

6. CORRESPONDENCE: The Proposal number must appear on all correspondence and inquiries pertaining to the Request for Proposal. The Purchase Order number must appear on all invoices or other correspondence relating to the contract.

7. INDEMNITY/INSURANCE: See attached Bandera County minimum requirements, required for all onsite work on County property.

8. EASEMENT PERMISSION: The Contractor shall not enter or use private property except as allowed by easements shown on the contract documents or if the Contractor obtains specific written permission from the property owner.

9. COUNTY-PROVIDED SERVICES: The Contractor, or any subcontractor or vendor shall use only County-provided services in performing this contract including but not limited to: Electric (if available), Water, Sanitation, and Solid Waste Services. The rate charged by the County shall be the same as charged for the same or similar services.

10. CONTRACTOR EQUIPMENT IDENTIFICATION: All equipment used on the project shall be clearly marked with the Contractor's name and logo. Subcontractor equipment shall also be similarly marked.

11. DELIVERY: All goods shall be delivered F.O.B. Destination unless otherwise authorized herein. C.O.D. shipments or deliveries are not permitted.

12. TIE BIDS: In the event of tie bids, preference will be given to the Offeror who offers the best value to the County in accordance with State Law.

13. ERROR-QUANTITY: Bids must be submitted in units of quantity specified, extended, and totaled. In the event of discrepancies in extension, the unit prices shall govern.

14. ACCEPTANCE: The right is reserved to accept or reject all or part of the bid, and to accept the offer considered most advantageous to the County by line item or total bid.

15. SUBSTITUTION: Every delivery of goods by the Contractor must comply with all provisions of this order including the specifications, delivery schedule, quantity and quality. Any delivery which does not conform to the County's requirements shall constitute a breach of contract. Offeror does not have authorization to make a substitute unless it is agreed to by the County.

16. BID LIST REMOVAL: The County reserves the right to remove a vendor from any Bid List for: (1) continued failure to be responsive to the County, (2) failure to deliver merchandise within promised time, (3) delivery of substandard merchandise or (4) failure to comply with the Contract/Purchase Order requirements.

17. DELIVERY TIMES: Deliveries to designated County Buildings or Facilities will be accepted during normal working hours, i.e. 8:00 a.m. to 5:00 p.m., Monday through Friday unless other arrangements have been made. Deliveries being made directly to County work sites should be coordinated with the County employee responsible for the work being performed at that site.

18. PACKAGING: Unless otherwise indicated, items will be new, not rebuilt, in first class condition, and in containers suitable for damage-free shipment.

19. WARRANTY: All warranty agreements and requirements are stated in Section 7 of this RFP.

20. TERM CONTRACTS: Except as otherwise provided herein, prices must remain firm for the entire contract period, including any periods of extension or renewal. At the time of any renewal or extension of the contract, the County or the Contractor may request a price adjustment based upon the economy. All requests for a price adjustment must include detailed documentation and rationale to support the requested adjustment. The party to whom a request for price adjustment is made may, in its sole discretion, accept or reject the request. Any price adjustment must be mutually agreed upon in writing by the parties and shall be effective for the applicable renewal term.

21. TERM CONTRACT QUANTITIES: The quantities in the request for proposal are estimated requirements and the County reserves the right to increase or decrease the quantities or cancel any item to be furnished. The Contractor shall have no claim against the County for anticipated profits for quantities diminished or deleted.

22. TERM CONTRACT SHIPMENTS: The Offeror will make shipments under this contract only when requested and only in the quantities requested. If there are minimum shipments or standard packaging requirements, please note the items affected.

23. CONTRACT RENEWAL OPTIONS: In the event a clause for option to renew for an additional period is included in the request for proposal, all renewals will be based solely upon the option and agreement between the County and Offeror. Either party dissenting will terminate the contract in accordance with its initial specified term.

24. TAXES-EXEMPTION: All quotations are required to be submitted LESS Federal Excise and State Sales Taxes. Tax Exemption Certificate will be executed for the Contractor.

25. ASSIGNMENT: Offeror shall not assign this order or any interest herein, including any performance or any amount which may be due or become due hereunder, without the County's prior written consent.

26. INVOICING: Send ORIGINAL INVOICE to address indicated on the purchase order. If invoice is subject to cash discounts, the discount period will begin on the day invoices are received. So that proper cash discount may be computed, invoice should show amount of freight as a separate item, if applicable; otherwise, cash discount will be computed on total amount of invoice.

27. INSPECTION: Goods purchased are subject to inspection and approval by the County. The County reserves the right to reject or refuse acceptance of goods which are not in accordance with the County's instructions, specifications, drawings and data, or Offeror's warranties (expressed or implied). Mobile installations shall be in conformance with best standard industry practice. Goods not accepted will be returned to Contractor at Contractor's risk and expense. Mobile installations not in conformance will be re-installed and approved by the County prior to system acceptance. Payment for any goods shall not be deemed an acceptance thereof.

28. ELECTRONIC SIGNATURE – UNIFORM ELECTRONIC TRANSACTION ACT: The County adopts Vernon's Texas Statutes and Codes Annotated Business and Commerce Code Chapter 43. Uniform Electronic Transaction Act, allowing individuals, companies, and governmental entities to lawfully use and rely on electronic signatures.

29. FUNDING OUT CLAUSE: This agreement may be terminated by the County without notice and without penalty or liability in the event that (1) the County lacks sufficient funds for this agreement; (2) funds for this agreement are not appropriated by the County Council; and (3) funds for this agreement that are or were to be provided by grant or through an outside service are withheld, denied or are otherwise not available to the County.

30. DISPUTE RESOLUTION: Pursuant to subchapter I, Chapter 271, TEXAS LOCAL GOVERNMENT CODE, contractor agrees that, prior to instituting any lawsuit or other proceeding arising from any dispute or claim of breach under this Agreement (a "Claim"), the parties will first attempt to resolve the claim by taking the following steps: (i) A written notice substantially describing the factual and legal basis of the claim shall be delivered by the contractor to the County within one-hundred eighty (180) days after the date of the event giving rise to the claim, which notice shall request a written response to be delivered to the contractor not less than fourteen (14) business days after receipt of the notice of claim; (ii) if the response does not resolve the claim, in the opinion of the contractor, the contractor shall give notice to that effect to the County whereupon each party shall appoint a person having authority over the activities of the respective parties who shall promptly meet, in person, in an effort to resolve the claim; (iii) if those persons cannot or do not resolve the

claim, then the parties shall each appoint a person from the highest tier of managerial responsibility within each respective party, who shall then promptly meet, in person, in an effort to resolve the claim.

31. DISCLOSURE OF CERTAIN RELATIONSHIPS: Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that any supplier or person considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the supplier or person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the Bandera County Auditor's Office not later than the 7th business day after the date the supplier or person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code. A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor. Chapter 176 and the questionnaire may be found at www.banderacounty.org/page/auditor.home.

32. By submitting a response to this request, Offeror represents that it complies with the requirements of Chapter 176 of the Texas Local Government Code.

33. PERFORMANCE: If Contractor fails to comply with any provisions or terms of this order, the County may, at its option, cancel this order or any other orders outstanding. In the event of cancellation, the County retains all rights and remedies it may have. There are several sections contained here-in that list conformance requirements. Each requirement listed in this RFP will be carefully monitored for compliance.

34. PATENTS: Offeror agrees to indemnify and hold harmless the County against all costs and expenses, including attorneys' fees and undertakes and agrees to defend at Offeror's own expense, all suits, actions or proceedings in which the County or the users of the County's products are made defendants of actual or alleged infringement of any U.S. or foreign patent resulting from the use or sale of the items purchased hereunder (except infringement necessarily resulting from adherence to County's specifications or drawings) and further agrees to pay and discharge any and all judgments or decrees which may be rendered in any such suit, action or proceeding.

35. APPLICABLE LAW: This agreement shall be governed by the Uniform Commercial Code as adopted in the State of Texas as effective and in force on the date of this agreement.

36. VENUE: This agreement will be governed and construed according to the laws of the State of Texas. This agreement is performable in Bandera County, Texas.

37. TERMINATION: The County at any time after issuance of this agreement, by 30 days' written notice, has the absolute write to terminate this agreement for cause or convenience. Cause shall be the Contractor's refusal or failure to satisfactorily perform or complete the work within the time specified, or failure to meet the specifications, quantities, quality and/or other requirements specified in the Contract/Purchase Order. In such case, the Contractor shall be liable for any damages suffered by the County. If the agreement is terminated for convenience, the Contractor has no further obligation under the agreement. Payment shall be made to cover the cost of material and work in process or "consigned" to the County as of the effective date of the termination.

38. FORCE MAJEURE: To the extent either party of this agreement shall be wholly or partially prevented from the performance of the term specified, or of any obligation or duty placed on such party by reason of or through work strikes, stoppage of labor, riot, fire, flood, acts of war, insurrection, court judgment, act of God, or other specific cause reasonably beyond the parties control and not attributable to its malfeasance, neglect or

nonfeasance. In such event, the time for performance of such obligation or duty shall be suspended until such disability to perform is removed.

2 Insurance

The Contractor must provide a certificate of insurance evidencing proof of General Liability, Automobile, and Workers' Compensation/Employers Liability insurance coverage's as set forth in the attachments to these terms and conditions. The County will be provided a Waiver of Subrogation waiving Rights of Recovery against the County on the Workers' Compensation/Employers Liability policy. The County will be shown as the certificate holder. This insurance must stay in force for the duration of the contract.

3 Bid Bond

Offerors shall submit a bid bond equal to five percent (5%) of the bid price. Failure to submit a bid bond when required may deem the bid non-responsive. Bid Bonds may be submitted electronically with the executed original provided immediately upon request.

Payment bond and performance bond forms can be found in the attachments to these terms and conditions.

4 Definitions

County:	Refers to Bandera County, Texas
Proposer:	Any firm that submits a proposal in response to this RFP. Any requests addressed to the Proposer will be addressed in the response.
Contractor:	The successful Proposer with whom a contract is executed pursuant to this RFP. Any requests addressed to the Contractor will be fulfilled upon the execution of the contract unless exception is taken in the response, mutually agreed, and formally recorded.
Shall:	"Shall" is a requirement that must be implemented unless extreme costs/efforts are involved; an acceptable substitute must be offered to the Client.
Should:	"Should" indicates strong preference.
May:	"May" indicates an optional item.

5 Terms and Conditions Attachments

Bandera County Contractor Insurance Requirements & Agreement Requirements

Contractors performing work on County property or public right-of-way for Bandera County shall provide the County a certificate of insurance or a copy of their insurance policy(s) evidencing the coverages and coverage provisions identified herein. Contractors shall provide the County evidence that all subcontractors performing work on the project have the same types and amounts of coverages as required herein or that the subcontractors are included under the contractor's policy.

All insurance companies and coverages must be authorized by the Texas Department of Insurance to transact business in the State of Texas and must be acceptable to Bandera County.

Listed below are the types and minimum amounts of insurances required and which must be maintained during the term of the contract. The County reserves the right to amend or require additional types and amounts of coverages or provisions depending on the nature of the work.

TYPE OF INSURANCE	AMOUNT OF INSURANCE	PROVISIONS
Workers' Compensation **Employers' Liability**	Statutory Limits $100,000 per occurrence	**County to be provided a *WAIVER OF SUBROGATION AND 30 DAY NOTICE OF CANCELLATION or*** material change in coverage. **Insurance company must be A-rated or above.**
Commercial General (Public) Liability to include coverage for: a) Premises/Operations b) Products/Completed Operations c) Independent Contractors d) Personal Injury e) Contractual Liability	Bodily Injury - $250,000 per person, $500,000 per occurrence; Property Damage - $100,000 per occurrence -OR- Combined single limit of $600,000	***County to be listed as ADDITIONAL INSURED and provided 30 DAY NOTICE OF CANCELLATION*** **or material change in coverage.** **Insurance company must be A-rated or above.**
Business Auto Liability to include coverage for: a) Owned/Leased vehicles b) Non-owned vehicles c) Hired vehicles	Bodily Injury - $250,000 per person, $500,000 per occurrence; Property Damage - $100,000 per occurrence. -OR- Combined single limit of $600,000	***County to be listed as ADDITIONAL INSURED and provided 30 DAY NOTICE OF CANCELLATION*** **or material change in coverage.** **Insurance company must be A-rated or above.**

This form must be signed and returned with your proposal. Offerors are stating that they have the required insurance and, if selected to perform work for the County, will provide the certificates of insurance with the above requirements to the County. **A PURCHASE ORDER WILL NOT BE ISSUED WITHOUT EVIDENCE OF INSURANCE.**

AGREEMENT

I agree to provide the above-described insurance coverages within 10 working days if selected to perform work for Bandera County. I also agree to provide the County evidence of insurance coverage on any and all subcontractors performing work on the project.

Project/Bid# _____

Company: _____ **Vendor# (if applicable):** _____

Printed Name: _____

Signature: _____ **Date:** _____

Payment Bond

STATE OF TEXAS }
COUNTY OF BANDERA }

WHEREAS, _____ as principal ("Contractor") and _____, a corporation organized under the laws of _____ and being duly authorized to do business in the State of Texas, as surety ("Surety")(whether one or more), do hereby expressly acknowledge themselves to he held and bound to pay to Bandera County, Texas, a home-rule municipality organized and operating under the Constitution and laws of the State of Texas (the "County"), its successors and assigns, and to all persons, firms, subcontractors and corporations who may furnish materials or labor under the contract as more fully described below, the sum of _____ Dollars in the lawful currency of the United States of America ($ _____) for the payment of which Contractor and Surety are liable to the County, jointly and severally; and

WHEREAS, Contractor has this day entered into a written contract with the County to build and construct:

P25 Radio System – RFP # 2024-06-27

which contract and the plans and specifications therein mentioned (collectively referred to hereinafter as the “Contract”) are hereby expressly incorporated into and made a part hereof as though set forth at length; and

WHEREAS, this bond is given pursuant to Chapter 2253 of the Texas Government Code;

NOW, THEREFORE, if Contractor shall promptly make payment to all persons, firms, subcontractors and corporations who may furnish materials or labor under the Contract, then this obligation shall be void; otherwise to remain in full force and effect. The obligations of Contractor and Surety under this bond apply both to the original Contract and to any extension of time or modification of the Contract and Surety agrees that no change, extension of time, addition, expansion or other modification of the Contract, the work to be done under the Contract, or the plans and specifications which are a part of the Contract shall in any manner affect the obligations of Surety under this bond, and Surety waives notice of any such change, extension of time, addition, expansion or other modification. The obligations of Contractor and Surety under this bond are performable and payable in Bandera County, Texas such that exclusive venue for any legal action pertaining to this bond shall lie in Bandera County, Texas. By their signatures below, the persons signing this bond warrant and represent that they are, respectively, duly authorized to sign on behalf of Contractor and Surety.

EXECUTED this the _____ day of _____, 20____.

CONTRACTOR:	**SURETY:**
By:_____	By:_____
Title:_____	Title:_____

ACKNOWLEDGMENTS

[Contractor]

STATE OF TEXAS }
COUNTY OF BANDERA }

Before me _____(insert the name of the officer) on this day _____ personally appeared _____ known to me (or proved to me on the oath of _____) or through _____ (description of identity card or other document) to be the person whose name is subscribed to the forgoing instrument and acknowledged to me that he/she executed the same for the purpose and consideration therein expressed.

Given under my hand and seal of office this _____ day of _____, 2_____.

_____ _____
Notary Public in and for the State of Texas
My Commission Expires:_____
Typed or Printed Name of Notary

[Surety]

STATE OF TEXAS }
COUNTY OF BANDERA }

This instrument was acknowledged before me on the _____ day of _____, ___ by _____ who is the _____ of the Surety, on behalf of Surety.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this the _____ day of _____, 2___.

_____ _____
Notary Public in and for the State of Texas
My Commission Expires:_____
Typed or Printed Name of Notary

Performance Bond

STATE OF TEXAS }
COUNTY OF BANDERA }
WHEREAS, _____ as principal ("Contractor") and _____, a corporation organized under the laws of _____ and being duly authorized to do business in the State of Texas, as surety ("Surety")(whether one or more), do hereby expressly acknowledge themselves to he held and bound to pay to Bandera County, Texas, a home-rule municipality organized and operating under the Constitution and laws of the State of Texas (the "County"), its successors and assigns, and to all persons, firms, subcontractors and corporations who may furnish materials or labor under the contract as more fully described below, the sum of _____ Dollars in the lawful currency of the United States of America ($ _____) for the payment of which Contractor and Surety are liable to the County, jointly and severally; and WHEREAS, Contractor has this day entered into a written contract with the County to build and construct:

P25 Radio System RFP # 2024-06-27

which contract and the plans and specifications therein mentioned (collectively referred to hereinafter as the "Contract") are hereby expressly incorporated into and made a part hereof as though set forth at length; and

WHEREAS, this bond is given pursuant to Chapter 2253 of the Texas Government Code;

NOW, THEREFORE, if Contractor shall well, truly and faithfully perform all of the undertakings, duties, terms, conditions and agreements of the Contract; shall satisfy all claims and demands incurred under the Contract; shall fully indemnify and hold the County harmless; shall reimburse and repay the County for any outlay or expense which the County may incur in making good any default, and shall promptly make payment to all persons, firms, subcontractors and corporations who may furnish materials or labor under the Contract, then this obligation shall be void; otherwise to remain in full force and effect. The obligations of Contractor and Surety under this bond apply both to the original Contract and to any extension or modification of the Contract and Surety agrees that no change, extension of time, addition, expansion or other modification of the Contract, the work to be done under the Contract, or the plans and specifications which are a part of the Contract shall in any manner affect the obligations of Surety under this bond, and Surety waives notice of any such change, extension of time, addition, expansion or other modification. The obligations of Contractor and Surety under this bond are performable and payable in Bandera County, Texas such that exclusive venue for any legal action pertaining to this bond shall lie in Bandera County, Texas. By their signatures below, the persons signing this bond warrant and represent that they are, respectively, duly authorized to sign on behalf of Contractor and Surety.

EXECUTED this the _____ day of _____, 2____.

CONTRACTOR:

By:_____
Title:_____

SURETY:

By:_____
Title:_____

ACKNOWLEDGMENTS

[Contractor]

STATE OF TEXAS }
COUNTY OF BANDERA }

Before me _____(insert the name of the officer) on this day _____ personally appeared _____ known to me (or proved to me on the oath of _____) or through _____ (description of identity card or other document) to be the person whose name is subscribed to the forgoing instrument and acknowledged to me that he/she executed the same for the purpose and consideration therein expressed. Given under my hand and seal of office this _____ day of _____, 2_____.

_____ _____
Notary Public in and for the State of Texas Typed or Printed Name of Notary
My Commission Expires:_____

[Surety]

STATE OF TEXAS }
COUNTY OF BANDERA }

This instrument was acknowledged before me on the ____day of _____, 2____ by _____ who is the _____ of the Surety, on behalf of Surety.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this the ____ day of _____, 2____.

_____ _____
Notary Public in and for the State of Texas Typed or Printed Name of Notary
My Commission Expires:_____

ATTACHMENT A: PROPOSAL FORM

PROPOSAL FORM

(Completed Form Shall Be Submitted as Proposal Cover Pages)

RFP Number:	2024-06-27
Proposal Name:	Bandera County, TX Project 25 Public Safety Network
Due Date and Time:	August 30, 2024, 2:00 pm CST

OFFEROR INFORMATION	
Firm/Company Name	
Mailing Address	
Payment Address (if different from Mailing Address)	
Firm Telephone Number	(_____) _____- _____
Federal Employer Identification Number (FEIN)	_____-_____
Social Security Number (only if a FEIN is NOT provided)	_____-_____-_____
Representative Name/Title	
Representative Telephone Number	
Representative Email Address	

1. **ANTI-COLLUSION CERTIFICATION**

The undersigned certifies that this proposal is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting a proposal for the same product and that this proposal is in all respects bona fide, fair and not the result of any act of fraud or collusion with another person or firm engaged in the same line of business or commerce. The Offeror understands collusive bidding is a violation of Federal law and that any false statement hereunder constitutes a felony and can result in fines, imprisonment, as well as civil damages.

2. **PAYMENT TERMS (must be minimum net 30):**

- ☐ "Net 30"
- ☐ **Other, Specify _____**

If payment terms are not specified above, then the terms shall be "Net 30 Days".

3. **ADDENDA:** Offeror hereby acknowledges receipt of and incorporation of all requirements of any addenda issued for this Request for Proposals:

Addendum No. _____ Dated _____
Addendum No. _____ Dated _____
Addendum No. _____ Dated _____

4. **EXCEPTIONS:**

Indicate if modifications are requested by acknowledging the appropriate statement below, as applicable:

- ☐ Offeror understands and agrees to all terms, conditions, requirements, and specifications stated herein.

- ☐ Offeror takes exception to terms, conditions, requirements, or specifications stated herein, and requests the following specific itemized modifications (attach additional pages if necessary):

_____
_____
_____
_____
_____

Exceptions taken from the stated terms and/or specifications may cause for proposals to be deemed "non-responsive".

5. **OFFEROR'S CHECKLIST:**

This checklist is provided to assist Offerors in submitting a responsive proposal and may not be inclusive of all solicitation requirements. Offerors are expected to carefully read the entire Request for Proposals document prior to submitting a proposal:

- ☐ Completed and Signed Proposal Form *(This form should act as a cover for the proposal)*
- ☐ References
- ☐ Price/Technical Proposal
- ☐ Insurance Form
- ☐ One (1) Original Proposal and six (6) Copies
- ☐ One (1) Electronic Proposal

6. **AUTHORIZATION**

In accordance with the term conditions and specifications of this Request for Proposals, the undersigned agrees to furnish any or all of the items and/or services at the prices quoted, at the price set opposite each item, to be delivered within the specified timeframe and to the specified place. The undersigned acknowledges that **the proposal is valid for a period of 180 days** from the due date and certifies he/she has read, understands, and agrees to all terms, conditions, and requirements of the Request for Proposals, and is authorized to contract on behalf of firm named below.

Firm Name:_____

Print Name:_____ Title: _____

Signature:_____ Date: _____

(This form must be signed. All signatures must be original and not photocopies.)