

Rowan County, North Carolina



Request for Proposals

2022-034

Youngs Mountain Tower and Shelter

DUE: June 24, 2022

Prepared by



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1. Project Overview

1.1 Introduction

Rowan County, NC (County) currently owns and operates a 4-site, Project 25 Public Safety Land Mobile Radio System. The County is anticipating moving system equipment off an existing leased tower site and on to a new County owned tower. The County is seeking for qualified candidates to develop an existing greenfield location into a communications site, provide and install the tower, and shelter.

1.2 Overview

- A. "Respondent" shall indicate any firm responding to this RFP
- B. "Selected Vendor" shall indicate the firm selected to provide the tower, shelter, etc.
- C. The Selected Vendor shall provide the following:
 - 1. Development of greenfield location into 50' x 50' communications compound
 - 2. 300' Self-Supported tower
 - 3. 12' x 16' prefabricated communications shelter w/ 16 kW UPS
 - 4. Foundations for tower, shelter, and generator

1.3 Instructions for Respondent

1.3.1 General

- A. Proposals must be received by 3:00 PM prevailing time Friday, June 24, 2022, at the Purchasing Department, 130 W Innes St, Salisbury, NC 28144.
- B. Respondent shall submit a bound original and six bound copies of the proposal to the County. Each package shall also include a copy of the proposal in electronic format. The front of the package should be marked RFP # 2022-034 Rowan County Youngs Mountain Tower and Shelter.
- C. Faxed proposals will NOT be accepted.

- D. The County reserves the right to reject any or all proposals.

1.3.2 Pre-Proposal Conference

- A. A MANDATORY pre-proposal conference will be held on **Tuesday, month date, 2022 at 10:00 a.m., in the xxxx Room, xxx Building, 130 W Innes St, Salisbury, NC 28144.**
- B. Any individuals with disabilities, who require assistance or special arrangements in order to participate in bidding should contact the County. Please provide at least 48 hours notice so that reasonable efforts may be made to provide the proper arrangements. You may be requested to specify the nature of any accommodation or assistance, which may be required for your participation.
- C. Respondent may submit questions to the County up to 5 business days after the pre-proposal conference in either written or electronic format (email).
- D. County contact for submission of technical questions should be Allen.Cress@rowancountync.gov with a copy emailed to Anna Bumgarner, Purchasing Manager anna.bumgarner@rowancountync.gov
- E. Following the conference, all attendees will be provided with a copy of the sign-in sheet. Answers to received questions will be submitted to all attendees via email after the 5 business days succeeding the pre-proposal conference.
- F. Site visits will be conducted immediately following the Pre-Proposal Conference.

1.3.3 Addenda to the RFP

- A. During the proposal period, the County may issue written addenda to each person, firm, or corporation who has secured a copy of these specifications, making changes or corrections to 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.

1.3.4 Proposal Format

- A. The Proposer shall adhere to the proposal format provided below, organized by Section:
1. Section 1: Cover letter
 2. Section 2: Table of contents

3. Section 3: Executive summary
4. Section 4: Tower site design Information
 - a. Site plan
 - b. Compound plan
 - c. Tower drawing
 - d. Antenna mounting details
 - e. Construction details
 - f. Electrical Plan
 - g. Grounding plan
 - h. Grading, erosion, and sediment control details
 - i. Foundation drawings (Tower and shelter)
 - j. Shelter drawing
5. Section 5: Project Management plan including preliminary project schedule with detailed Gantt chart, clearly showing County responsibilities
6. Section 6: Quality Assurance / Quality Control (QA/QC) plan
7. Section 7: Warranty information
8. Section 8: Detailed equipment specification sheets for all proposed equipment
9. Section 9: Total proposal cost and detailed pricing breakdown

1.3.5 Evaluation Criteria

- A. The County shall evaluate proposals based on a number of criteria, including:
 1. RFP compliance
 2. Vendor experience
 3. Tower, shelter and site design
 4. Total costs
 5. Project schedule

1.3.6 Award Procedures

- A. A selection committee shall review the proposals submitted. After each proposal has been evaluated short listing procedures will narrow the list of candidates to the two or more best qualified. Those vendors may be invited to an interview at which time the vendor will be expected to conduct a presentation on its proposal and to answer any questions of the Selection Committee.
- B. Negotiations shall then be conducted beginning with the firm ranked first. If a contract satisfactory and advantageous to the County can be negotiated at a price considered fair and reasonable, the award shall be made to that offeror.
- C. The County reserves the right to accept or reject any or all proposals or any portion thereof.
- D. The County reserves the right to accept all or part of any proposal depending solely upon the requirements of the County.
- E. The County reserves the right to seek clarifications of any proposal submitted or specific aspects of any proposal prior to the award of the contract. After seeking such clarification, the County will allow the Respondent an opportunity to provide the requested clarification.

1.4 Instructions for Selected Vendor

1.4.1 Standards and Guidelines

- A. The Selected Vendor shall comply with the applicable portions of the following standards, rules, regulations, and industry guidelines (presented here in alphabetical order; not reflective of priority):
 - 1. American National Standards Institute (ANSI)
 - 2. American Society of Testing Materials (ASTM)
 - 3. Federal Aviation Administration (FAA)
 - 4. Federal Communications Commission (FCC)
 - 5. Institute of Electrical and Electronics Engineers (IEEE)
 - 6. International Building Code (IBC)

7. National Electrical Code (NEC) (NFPA-70)
 8. National Electrical Manufacturer's Association (NEMA)
 9. National Fire Protection Association (NFPA) 1221
 10. Telecommunications Distribution Methods Manual (TDMM)
 11. Telecommunications Industry Associations (TIA)
 12. Underwriters Laboratories, Inc. (UL)
- B. The Selected Vendor shall comply with industry best practices for system installation, grounding, bonding, and transient voltage surge suppression (TVSS), as outlined in Motorola's R56 standard.

1.4.2 Required Forms and Licensing

- A. Antenna Structure Registration (ASR) – The Selected Vendor shall be responsible for preparing ASR applications and submittals on behalf of the County.
- B. Federal Aviation Administration (FAA) - The Selected Vendor shall be responsible for preparing FAA applications and submittals as necessary on behalf of the County.

1.4.3 Governing Codes and Conflicts

- A. If the requirements of this RFP differ with those of the governing codes and regulations, then the more stringent of the two shall apply.
- B. If the requirements of this RFP conflict with those of the governing codes and regulations, the Selected Vendor is responsible for identifying the conflict and resolving to the satisfaction of the County.
- C. If the Respondent cannot meet any of the standards or guidelines listed in Section 1.4.1 the Respondent shall list all deviations in their proposal, for approval by the County.

1.4.4 Project Staffing

- A. The Selected Vendor shall provide the appropriate project staff based on workload and the level of effort required throughout the implementation/installation process.
- B. The staff identified in the Respondent's proposal, shall serve the duration of the project unless the Selected Vendor proposes an alternative plan to the County for consideration and gains approval.
- C. The County reserves the right to accept or reject any proposed staffing changes.
- D. The Selected Vendor's project manager:
 - 1. The Selected Vendor's Project Manager shall be the primary point of contact between the County and the Selected Vendor.
 - 2. The Selected Vendor's Project Manager shall bear full responsibility for supervising and coordinating the installation and deployment of the communications system;
 - 3. The Selected Vendor's Project Manager shall be responsible for:
 - a. Development and acceptance of the project management plan
 - b. Managing the execution of the project against that plan
 - c. Overseeing the day-to-day project activities, deliverables, and milestone completion
- E. The Selected Vendor's project manager shall be responsible for coordinating, and facilitating weekly status meetings.

1.4.5 Scheduling

- A. The Selected Vendor shall develop and maintain a project schedule including tasks, milestones, start and end dates, task predecessors, and task owners based on an approved WBS.
- B. The schedule shall represent tasks associated with completing work on all items identified in the WBS.

- C. The Selected Vendor shall update the project schedule with actual dates as tasks are completed.
- D. The Selected Vendor shall present all schedule updates to the County during the weekly status meetings.
- E. The schedule shall address the following at a minimum:
 - 1. Site surveys
 - 2. Detailed design review
 - 3. Permits
 - 4. Site preparation
 - 5. Equipment order and manufacturing
 - 6. Equipment delivery
 - 7. Installation
 - 8. Site acceptance/Inspection
 - 9. Documentation development and delivery
 - 10. Warranty

1.4.6 Project Meetings

- A. The Selected Vendor shall schedule a project kickoff meeting prior to the beginning of the project.
- B. The Selected Vendor shall schedule weekly project status meetings following contract award and the initial kickoff meeting.
- C. Weekly status meetings shall continue throughout the duration of the project until the County issues final site acceptance.
- D. The Selected Vendor shall be responsible for facilitating the weekly status meetings

- E. The Selected Vendor shall prepare and distribute meeting agendas and minutes to the County via e-mail on a weekly basis at least 24-hours prior to each scheduled meeting.
- F. Meeting agenda items shall include, as a minimum, the following items:
 - 1. Schedule review
 - 2. Status of deliverables
 - 3. Risk items and planned responses
 - 4. Proposed changes
 - 5. Plans for the next period
 - 6. Action item assignments
 - 7. Punch list review

1.4.7 QA/QC Plan

- A. The Selected Vendor shall include a project QA/QC plan.
- B. The QA/QC plan shall address all stages of the project, including, but not limited to:
 - 1. Procurement
 - 2. Site design
 - 3. Installation
 - 4. Implementation
 - 5. Site Acceptance/Inspection
- C. The QA/QC plan shall specifically describe the plans and procedures that ensure compliance of the proposed system design with the RFP requirements.
- D. The QA/QC plan shall be included in the project management plan developed by the Selected Vendor's project manager.
- E. The QA/QC plan shall be an integral part of the project.

- F. The QA/QC plan shall include the County personnel as part of the review and approval process for all deliverables and submittals.

1.4.8 Project Punch List

- A. The Selected Vendor shall establish and maintain a punch list, as mutually agreed to with the County.
- B. The punch list shall address all open issues including those related to sites, equipment, and site acceptance/inspection.
- C. The Selected Vendor shall maintain the punch list in real time
- D. The Selected Vendor shall distribute the punch list to the County weekly via e-mail.
- E. The punch list shall include the following at a minimum:
 - 1. Sequential punch list item number
 - 2. Date identified
 - 3. Item description
 - 4. The 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
- F. If the Selected Vendor receives written permission from the County to transfer the responsibility of an item to another person or group, the Selected Vendor shall add a new entry to the punch list and appropriately note the original entry.
- G. The Selected Vendor shall be responsible for reviewing each punch list item and advising the County of any changes.
- H. The Selected Vendor shall update the status of punch list items during each weekly status meeting.

1.4.9 Tower Inspection

- A. Upon completion of the tower installations, the Selected Vendor shall provide documentation detailing final inspection and testing including the following parameters:
 - 1. Steel structure
 - 2. Vertical alignment and plumbness
 - 3. All bolts tight and torqued to specification
 - 4. No damaged or missing structural members
 - 5. All surface scratches and damage to the galvanization shall be repaired
 - 6. No signs of stress or vibration
 - 7. All climbing ladders and other devices installed correctly
 - 8. Labels and tags properly affixed
- B. Final Inspection shall be conducted by a third-party independent tower engineering firm. Results shall be provided to the County prior to final site acceptance

2. Infrastructure Development

2.1 Site Locations

- A. The name and location of the site is listed in Table 1 below:

Table 1, Site Locations

Site Name	Type	Lat	Long
Youngs Mountain	Greenfield	35° 44' 15.71" N	80° 38' 47.78" W

2.2 Site Development

- A. Site development task shall include but, not be limited to the following:
1. Survey the site
 2. Produce engineered site drawings
 3. File applicable permits (building, NEPA, SHPO, etc.)
 4. File for FAA clearance
 5. File FCC/ASR for under construction
 6. Provide application for commercial power
 7. Cut and gravel access to site
 8. Remove trees and topsoil within 50' x 50' area
 9. Grade lot
 10. Provide PE stamped drawings for foundations based upon soil analysis
 11. Evacuate for foundation (tower, shelter and generator)
 12. Install foundations (tower, shelter and generator)
 13. Install site grounding as per Motorola R56 grounding standard

14. Backfill foundations and grounding area
15. Install weed prevention material and cover site with #57 stone
16. Deliver tower to site, assemble and stack
17. Deliver and set shelter
18. Assemble any shelter items removed for shipping
19. Install ice bridge
20. Install electrical service, including 200 Amp x 4 gang meter center mounted on H-Frame
21. Install conduits between generator and shelter
22. Get electrical inspection
23. Installation of eight-foot in height chain link fence with 12' gate including barbed wire (three strands)
24. Install 15' wide gravel access road
25. Clean up site
26. Change FCC/ASR status to complete
27. Install any required signage (ASR, Warning, etc)
28. Obtain tower inspection
29. Cleanup site

2.3 Self-Supporting Tower

2.3.1 Design Criteria

- A. The design shall be based on the minimum wind and ice requirements as specified for Class III structures in TIA -222 Standard current revision.
- B. Each tower and foundation shall be designed for all equipment, appurtenances, ancillary equipment, and antenna loading provided in Table 2 below.

Table 2 – Tower Loading

Component	Elevation	Component	Elevation
5/8" x 4' lightning rod	300'	(4) Panel (8' x 1' x 4")	160'
(3) DS8M14PDBU-D	280'	(4) Panel (8' x 1' x 4")	160'
DS8M14PDBU-D	240'	(4) Panel (8' x 1' x 4")	160'
(4) Panel (8' x 1' x 4")	180'	(4) Panel (8' x 1' x 4")	160'
(4) Panel (8' x 1' x 4")	180'	(4) TMA (12" x 12" x 8")	160'
(4) Panel (8' x 1' x 4")	180'	(4) TMA (12" x 12" x 8")	160'
(4) TMA (12" x 12" x 8")	180'	(4) TMA (12" x 12" x 8")	160'
(4) TMA (12" x 12" x 8")	180'	SP1 VFA12-HD	160'
(4) TMA (12" x 12" x 8")	180'	SP1 VFA12-HD	160'
SP1 VFA12-HD	180'	SP1 VFA12-HD	160'
SP1 VFA12-HD	180'	PAD6-59B w/Radome	140'
SP1 VFA12-HD	180'	PAD6-59B w/Radome	120'

- C. The tower shall be manufactured as a self-supporting lattice.
- D. The tower and foundation shall be rated at 75% capacity.
- E. All structural steel and hardware shall be galvanized after fabrication in accordance with the appropriate standards.
 - 1. All tower materials shall be hot dip galvanized after fabrication; with a minimum zinc coating of 2 oz. per sq. ft.
 - 2. Bolts shall be hot dip galvanized according to American Society for Testing and Materials (ASTM) A-325 or the latest version of this standard.
- F. The make, model, serial number, and height of the tower shall be clearly labeled at the base of the tower. Labeling shall be weatherproof and durable such as a stamped metal plate or equivalent.

2.3.2 Waveguide Support

- A. There shall be a ladder type support system associated with the tower to mount the transmission cables.
- B. The support system shall accommodate cable or waveguide mounting hardware at the proper intervals.

- C. The support shall be equipped with precision punched or drilled holes to allow installation of snap-in type or bolt-in hangers.
- D. The support system shall be sized for 50% growth beyond initial system implementation.
- E. The support materials will be of similar construction as other tower materials to appear integral to the structure.
- F. The support shall be designed to meet rigidity specifications similar to the tower.

2.3.3 Waveguide Bridge

The tower shall be equipped with a waveguide bridge with support posts spaced at intervals compliant to the wind loading specifications, but not more than 10 feet distant.

- A. There shall be posts placed on both lateral sides of the bridge to fully support the load.
- B. The bridge shall be designed to support all initial antenna transmission lines plus 50% growth capacity.
- C. The structure shall comply with the tower wind and ice requirements as specified in TIA -222 Standard current revision.
- D. The Selected Vendor shall furnish and install the waveguide bridge between the tower and equipment shelter.
- E. The following criteria shall govern the design of the waveguide bridge:
 - 1. Structurally sturdy to support live and dead loads
 - 2. Free standing (i.e., not attached to the shelter or tower)
 - 3. Minimum width of 2 feet in width
 - 4. Length/height as required by the site specifics
 - 5. Bridge/ice shield material shall be fabricated from galvanized bar grating or approved equivalent
 - 6. All components of the waveguide bridge shall be hot-dipped galvanized after fabrication

- 7. Posts shall have galvanized caps
- 8. Posts shall be set in concrete foundations.
- F. Each post shall be separately grounded to the site ground system
- G. Waveguide bridge shall be adjustable in height to allow interface with shelter waveguide entry ports

2.3.4 Climbing Equipment

- A. The tower shall be equipped with an approved climbing ladder and safety device.
 - 1. The ladder may be integrated into the structural components of the tower.
 - 2. An anti-climbing device shall be installed at the base of the climbing equipment
- B. There shall be a climbing safety system compliant to original manufacturer's specifications.
- C. The equipment shall comply with TIA-222 current revision.

2.3.5 Lighting System & Control

- A. The Selected Vendor shall furnish and install an obstruction lighting system approved by the FAA and compliant with applicable standards.
- B. The lighting system shall include:
 - 1. Controller
 - 2. Lamps
 - 3. Lightning protection
 - 4. Mounting hardware
 - 5. Service cabling and conduit
 - 6. Conduit drain-breather system
 - 7. Wiring

8. Other material required for a complete installation
- C. The lighting system shall be controlled by a 120-volt or 240-volt AC, single-phase solid-state control unit and power supply.
- D. The control unit shall be installed within a NEMA 3R metal cabinet or a NEMA 4X cabinet. The control unit shall be mounted inside the equipment shelter.
- E. The lights shall be automatically controlled by means of a photoelectric unit. The control unit shall be designed with relays for:
 1. ON-OFF status of lights
 2. Control unit failure
 3. Light failure
- F. The lighting system shall automatically revert to back-up power source upon loss of primary power. The lighting system shall automatically reset upon power restoration of primary power.
- G. The controller shall include a test switch allowing simulation of daytime and nighttime modes.
- H. All tower lighting wiring shall be contained within rigid galvanized conduit, junction boxes, and lighting equipment housings.
- I. Vertical conduit runs shall be adjacent to the tower waveguide supports.
- J. All levels of lighting shall be clearly visible from any direction of approach to the tower.
- K. The photoelectric unit shall be installed in a moisture-proof protective metal or high impact plastic housing.
- L. The photoelectric unit shall be installed on the building in an inconspicuous location and adjusted to attain an unobstructed view of the NNE sky.
- M. The photocell shall be mounted such that it is not affected by artificial light.
- N. Photocell wiring shall be installed entirely within rigid galvanized conduit.
- O. Ice shields shall be installed for all lighting system fixtures except for the top most light.

- P. The controller case shall be grounded to the equipment shelter building ground with #4 AWG or larger copper wire.

2.4 Tower Installation

2.4.1 General

- A. The Selected Vendor shall:
 - 1. Furnish all materials, labor, equipment, and mounting hardware to provide a complete functional tower installation.
 - 2. Perform all operations required for the installation.
 - 3. Be responsible for all concrete work and excavation.
- B. All concrete work shall comply with manufacturer's recommendations, including temperature, slump and air content.
- C. Two sets of fresh field concrete specimens shall be taken for each concrete pour.
 - 1. One set of field-cured concrete specimens shall be tested for weight.
 - 2. One set of specimens shall be tested for compressive strength with the tests to be taken at 7 days and at 28 days.
 - 3. The results of these tests will be presented to Rowan County.
 - 4. The compressive strength test shall be the average of the two specimens from the same composite sample.
- D. Tower documentation shall include construction, installation, and maintenance drawings.
- E. All drawings shall be approved by a North Carolina registered Professional Engineer (PE).

2.4.2 Erection

- A. The foundation shall be allowed to cure for at least 7 days before erecting the tower.

- B. Manufacturer recommended bolts shall be used for all connections in accordance with the installation documentation.
- C. Bolts should be of such lengths as to protrude beyond the nuts a minimum of 1/4 inch and a maximum of 1/2 inch.
- D. All bolts shall be equipped with self-locking nuts.
- E. Field reaming of coated metal components will be acceptable only upon determining there is no structural damage to the tower.
- F. Field remanufactured holes must be hot stick galvanized as specified and completely filled by the use of a larger diameter bolt.
- G. All bolts placed through slotted holes shall be equipped with flat washers.
- H. Mud, dirt, and other foreign matter shall be removed from the tower sections before erection. Special attention shall be given to cleaning the contact surfaces at joints before they are bolted together.
- I. When portions of the tower are ground assembled, such assembly shall be on rigid surfaces or blocking, which will provide support to prevent distortion of tower steel and damage to surface finish.
 - 1. All bolts shall be installed in all connections of ground assembled portions of the tower.
 - 2. Temporary bracing of tower members shall be used to avoid overstressing or distortion.
- J. The structure shall be erected plumb.
- K. The method of assembling and erecting shall be such that no member will be subjected to a load in excess of that for which it was designed.
- L. Extreme care shall be taken to establish and maintain the true geometric shape of the portion of the tower assembled.
 - 1. All connections must lie flat where bolted together.
 - 2. No gaps between butt flanges or connections are acceptable after the bolts are tensioned.

- M. Slings or other equipment used for picking up members or portions of the tower shall be of such material or protected in such a way as to not damage the tower section, the finish, or distort or overstress the tower when lifts are made.
- N. Portions of the tower shall be raised in such a manner that no dragging on the ground or against other hard surfaces occurs.
- O. Damaged tower sections can be used if properly repaired.
 - 1. If a damaged portion cannot be repaired to the satisfaction of Rowan County, it shall be replaced.
 - 2. For any galvanized surfaces, damaged for any reason, zinc-based solder repair shall be used.
 - a. Solders in a rod form or a powder may be used.
 - b. Surfaces must be cleaned using a wire brush or a light grinding action.
 - c. Surface preparation shall extend into the surrounding undamaged galvanized coating.
 - d. The thickness of zinc solder repair shall be equivalent to the originally specified hot dip galvanizing process.
 - e. Repairs shall be performed in accordance with the solder manufacturer's instructions.
- P. Only wrenches of proper size, which will not deform the nuts, nor damage the surface finish, are to be used.
- Q. Standard ironworkers' 12-inch spud or 12-inch socket wrenches shall be used.
- R. Pipe extenders will not be permitted.
- S. During construction of the tower where required, the obstruction lighting fixtures shall be installed and operated at each required level as each such level is exceeded in height during construction.

2.4.3 Grounding

- A. The tower and all appurtenances shall be installed in accordance with Motorola R56 Standard.
- B. All equipment mounted on the tower shall be properly bonded/grounded to the tower.
- C. All antenna systems shall be effectively grounded and provide surge protection to all equipment.
- D. All antenna transmission lines shall be properly bonded/grounded to the tower.
 - 1. At a minimum, transmission lines shall be bonded/grounded at the antenna base, at the base of the tower, and at the exterior ground bar located at the entry to the building.
 - 2. Additionally, transmission lines shall be bonded/grounded to the tower or cable ladders at intervals recommended by the manufacturer.
 - 3. Antenna transmission line ground conductors shall be bonded to the tower in compliance with standards.
- E. The site installation should have less than 5 ohms resistance between any connected point on the ground bus and earth ground.
- F. The Selected Vendor shall test ground resistivity using the four-point method.
- G. The Selected Vendor shall supply a ground test report that fully describes the testing method used.

2.5 Equipment Shelter

2.5.1 Shelter Size

- A. The shelter size shall be nominal 11'6" wide (12' wide with roof overhang) exterior x nominal 16' long exterior x nominal 9'2" high interior, single room concrete shelter.

2.5.2 Shelter Construction

- A. The shelter construction shall be concrete or concrete composite.

2.5.3 Shelter Design and Construction Requirements

- A. In addition to all applicable codes and standards, Selected Vendor shall design the shelter to meet or exceed the following structure requirements:
1. 200 pounds per square foot distributed floor loading while on foundation
 2. 125 pounds per square foot distributed floor loading while lifting
 3. 200 pounds per square foot minimum roof load
 4. 120 Mph wind load
 5. Seismic zone 4
 6. Vents and entryways shall be constructed to deter vandalism
 7. Vents and entryways shall be constructed to prevent entry of rodents
 8. Waterproof

2.5.4 Exterior Finish

The exterior finish of the shelter shall be exposed aggregate.

2.5.5 Bullet Resistance

Shelter walls must be capable of stopping 30.06 rifle fires per UL 752 requirements.

2.5.6 Fire Rating

Shelter walls must provide a two-hour fire rating.

2.5.7 Insulation and Interior Finish

- A. Walls and ceiling must be insulated to a minimum value of R-11.
- B. Interior walls and ceiling must be sheathed with ½ inch white Nu-Poly® or similar board.

- C. Shelter walls must be reinforced as required to support wall mounted equipment.
- D. Floor will be covered with light colored industrial grade vinyl tile floor covering.

2.5.8 Exterior Door

- A. The shelter shall be equipped with a 42 inch by 84-inch door.
- B. The door shall have a bullet resistance rating that complies with levels 4 of UL 752 ballistic standards.
- C. Door, frame and frame components shall be painted or otherwise treated to be rust-proof.
- D. Each door shall as a minimum be equipped with the following hardware and accessories:
 - 1. A continuous stainless-steel hinge the entire length of the door
 - 2. Neoprene weather strip
 - 3. High security locking cylinder latch set
 - 4. Level 4 Mortised dead bolt
 - 5. Anti-pick plate on strike of door to restrict access to the latch and deadbolt
 - 6. Hydraulic closer
 - 7. An exterior mounted canopy to protect the door entry shall be designed to support a load of 100 pounds per square foot

2.5.9 Power Distribution

Power distribution shall include the following:

- A. Surge protection devices compliant with Motorola R56 and UL1449
- B. 16 KW Uninterruptible Power Source.
- C. One (1) 225 Amp main breaker, 10,000 AIC, 120/240 VAC, single phase, 60 Hz, 42 space, utility power distribution panel, in a NEMA 1 surface mount enclosure
- D. Utility power panel to be supplied with the circuit breakers as required

- E. One (1) 200 Amp, 240 VAC, fused, double pole, single throw safety switch in a NEMA 1 enclosure
- F. One (1) 200 Amp, 240 VAC, non-fused, double pole, double throw manual transfer switch in a NEMA 3R enclosure
- G. One (1) 200 Amp, four pin exterior power receptacle; Appleton Model: AJA20044-200RS.
- H. Twelve (12) 20 Amp specification grade duplex receptacles
- I. One (1) 20 Amp specification grade exterior ground fault duplex receptacle
- J. Seven (7) equipment AC circuit drops on individual two pole, 15 Amp, 240 VAC breakers routed in two conduits (four drops will be pulled in one conduit and three in a second) to customer specified locations on the ceiling above customer equipment racks. Flexible conduit including circuit conductors will be coiled and tagged for identification with enough length to reach the floor and an additional four feet (4') of circuit conductors to be cut to length and terminated by the customer

2.5.10 Lighting

- A. Equipment shelter lighting shall be energy efficient and generate low heat levels. Acceptable lighting shall be long lasting energy efficient technologies, such as light emitting diodes (LED)
- B. Equipment shelter lighting shall comply with the U.S. defense standard MIL-STD-461E or most current version for low radio frequency interference (RFI) lighting fixtures.
- C. One -100 Watt exterior door light with vandal resistant lens.
- D. Placement of equipment shelter lighting shall assure illumination in front of and behind tall equipment racks (within aisle ways; not directly above equipment racks).
- E. Eight – four foot, two tube surface mounted LED light fixtures.
- F. Interior lighting control switches shall be located near the non-hinged side of the entrance door to the equipment shelter. One switch shall control a single lighting fixture and the second switch shall control the remaining lighting fixtures. Refer to

NFPA, NEC 70-2011 (or latest edition) Article 410 - Luminaries, Lamp Holders, and Lamps for additional information.

- G. Interior emergency backup lighting units shall be installed and activate immediately upon failure of all AC power. The emergency backup lighting shall also be equipped with an illuminated "Exit" sign mounted above the exit door of the equipment shelter indicating exit locations in the equipment shelter during emergency evacuation.
- H. Each exterior light equipped with a combination photoelectric/motion switch shall also have a photoelectric /motion bypass switch installed at the same location as the interior lighting control switches.

2.5.11 HVAC

- A. HVAC shall be redundant wall mount air conditioning units, with lead/lag controls allowing approximately equal operating time on each unit.
- B. Two (2) nominal 29,600 Btu/hr (2-1/2 tons) wall mount air conditioning units, with low ambient and compressor anti cycle controls, integral 5 kW resistance heat strips and washable dust filters

2.5.12 Shelter Alarms

- A. The following alarm devices shall be provided with wiring coiled and tagged and attached to a 48" x 72" x 3/4" equipment mounting board:
 - 1. Two-line voltage smoke detectors (One for each room)
 - 2. Two intrusion alarm switches with form "C" contacts rated .1 Amps at 28 VDC
 - 3. One high temperature alarm, which will consist of single pole double throw dry contacts. Adjustment range is 30 - 110 F.
 - 4. One low temperature alarm, which will consist of single pole double throw dry contacts. Adjustment range is 30 - 110 F.
 - 5. One humidity alarm which will consist of single pole, single throw form A or B dry contacts rated at 7.5 Amps (resistive) at 115 Vac, 60 Hz. Adjustment range is 20 TO 80% relative humidity.

6. One air conditioner compressor high and low head pressure lockout switch alarm
7. One utility power failure alarm
8. One set of generator alarms (generator run, fail, warning)

2.5.13 Grounding

- A. The interior ground system shall be installed as per Motorola R56 Standard
- B. One 1" Schedule 40 PVC sleeve installed at 45 degrees through the wall for ground exits
- C. Ground bar kit to include interior and exterior ground buss bars and exterior copper straps located at the entry port

2.5.14 Entry Ports

- A. Cable entry ports shall consist of one waveguide entry panel with 12 - 4-inch holes w/sleeves and protective blank covers.

2.5.15 Cable Tray

- A. Shelter shall be equipped 18" wide cable tray.

2.5.16 Telco Board

- A. Shelter shall be provided with one 4-foot x 6 foot x $\frac{3}{4}$ inch Telco board(s).

2.5.17 Accessories

The Selected Vendor shall provide the following accessories:

- A. Two portable 10 pound CO₂ fire extinguishers
- B. One handheld emergency eye wash station
- C. One first aid kit

2.5.18 Drawings

- A. The Selected Vendor shall provide two sets of shelter drawings with each shelter.
- B. The Selected Vendor shall supply typical foundation drawings based on actual soil conditions.
- C. The Selected Vendor shall supply support calculations for recommended building tie down locations.

Appendix A – Mandatory Submittals

See separately provided MS Word document- Appendix A Mandatory Submittals.doc

(Purchasing will add needed information)

Appendix B – Pricing Forms

Youngs Mountain Tower Site	Cost
Site Preparation (Compound, Access Road, Utilities)	
12'x16' Shelter	
Shelter foundation	
Shelter delivery and installation services	
300' Self Supporting Tower	
Tower delivery	
Tower foundation	
Tower erection services	
Permits, fees and licensing	
Misc items not listed above	
Total	