

FIRE STATION 14 COMMUNICATION TOWER

1. CONTRACTOR RESPONSIBILITIES

Contractor shall:

- 1.1. Be licensed and fully competent in all aspects of the construction of a new 300-foot self-supporting County-owned tower site at Fire Station 14 in a safe manner.
- 1.2. Assume total responsibility for the delivery, installation, acceptance, of goods and services as stated in Exhibit A and all associated documents.
- 1.3. Employ only skilled, qualified workers.
- 1.4. Be responsible for verifying the completeness and suitability of all work or equipment proposed for this project. The Contractor shall provide any additional equipment required in order to meet these specifications, without claim for additional payment.
- 1.5. Be responsible for any loss or damage to property caused by actions of the Contractor or Contractors personnel.
- 1.6. Designate a single Project Manager to supervise and coordinate the Contractor's work. The Project Manager shall direct the Contractor's personnel and subcontractors in the project and assist in resolving project problems.
- 1.7. Be responsible for verifying the completeness and suitability of all work or equipment proposed for this project. The Contractor shall provide any additional equipment or labor required in order to meet these specifications, without claim for additional payment.
- 1.8. Provide 100% turnkey project that includes the design and construction of a new 300-foot self-supporting County-owned tower site at Fire Station 14, with platform, cable support, transportation and relocation and dismantling of the existing Umatilla tower site building, generator, and propane tank to the new construction location.
- 1.9. The new communication tower shall be designed and installed in accordance with applicable current codes, ordinances, and regulations imposed by authorities having jurisdiction; these current standards; and the manufacturer's design and installation current revision standards.
- 1.10. Includes the driveway, fencing, grounding, electrical utility, communications utility, Station 14 conduit connectivity extended from building during original construction, and landscaping.
- 1.11. Includes the design, engineering, supply all materials, deliver, construct, erect, mount, test, and warranty the new tower and install equipment required by the technical specifications.
- 1.12. Includes geotechnical investigations at the site involving earthwork. Geotechnical investigations and reporting shall be performed in accordance with ASTM D 420. Geotechnical reports shall be prepared and sealed by a professional engineer licensed with the State of Florida.
- 1.13. Include the installation of all systems and equipment as required by these specifications and consistent with current tower designs and construction.
- 1.14. Include all required labor, material, equipment, plans, engineering, surveys, permitting, zoning, and local and state inspections.
- 1.15. Include costs for general housekeeping and work area clean up.

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- 1.16. Include travel time.
- 1.17. Tower lighting to be provided by others through existing County contract with LumenServe.
- 1.18. Change orders shall not be issued for incidental items or tasks that should have been reasonably construed to be part of the project by the Contractor.
- 1.19. Perform National Historical Preservation Act (NHPA), National Environmental Policy Act (NEPA), and State Historic Preservation Office (SHPO) where required.
- 1.20. Contractor shall pay all fees and costs associated with obtaining all construction approvals, permits, and licenses.
- 1.21. Be responsible for inspections, penalties, fees, or fines for projects.
- 1.22. Notify Lake County Project Manager of any excavation at the site fifteen (15) days prior to completion of the excavation. Lake County reserves the right to inspect excavation, rocks, socket, and reinforcement placement.
- 1.23. Be responsible for any damages caused as the result of completing projects.
- 1.24. Furnish all tools and equipment necessary to complete projects timely.

2. SCOPE OF WORK

Contractor's scope of work related to site development is limited to the following:

PHASE I – CONSTRUCTION AND SITE PREPARATION**2.1. Site Engineering**

- 2.1.1. Prepare site construction drawings, showing the layout of various new and existing site components.
- 2.1.2. Prepare site construction drawings, showing the layout of various new and existing site components.
- 2.1.3. Conduct site walks to collect pertinent information from the sites (e.g., location of telco, power, existing facilities, etc.).
- 2.1.4. Prepare a lease exhibit sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- 2.1.5. Prepare record drawings of the site showing the as-built information.
- 2.1.6. Perform a boundary and topographic survey for the property on which the communication site is located or will be located.
- 2.1.7. Perform NEPA Threshold Screening including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 CFR Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility "may have a significant environmental impact" and thus require additional documentation, submittals, or work.
- 2.1.8. Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. The structural analysis includes

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mapping, structural measurement survey, materials testing, geotechnical investigation, and/or other field investigation to acquire the data.

- 2.1.9. Provide tower climbing and tower mapping services for towers up to 350 feet to collect information about structural members and existing equipment.
- 2.1.10. Research permit requirements (building, utility, and construction) for the construction of the proposed site and determine if the permits are required. If a permit is required, Contractor shall obtain the necessary permit forms and complete the necessary information on behalf of the customer.
- 2.1.11. Submit the completed application forms, to the local jurisdiction and apply for applicable permits.

2.2. Site Preparation

- 2.2.1. Obtain the permits such as electrical, building and construction permits, and any inspections that may need to be coordinated with the local authorities to complete site development work.
- 2.2.2. Provide all mobilization costs for the construction crews and equipment.
- 2.2.3. Grading of site compound to provide a level, solid, undisturbed surface for installation of site components.
- 2.2.4. Supply and install gravel surfacing to a depth of six (6) inches, underlain with geotextile fabric within the fenced-in site compound area.
- 2.2.5. Construct any necessary swales around the compound to control soil erosion.
- 2.2.6. Provide silt fence around the compound to control soil erosion.
- 2.2.7. Supply and install 8-foot-high chain link fencing with a 10-foot-wide gate around the shelter compound.
- 2.2.8. Site touchup (fertilize, seed and straw) disturbed areas not covered with gravel after completion of construction work. Landscaping, decorative fencing or any other aesthetic improvement required by local jurisdictions.

2.3. Site Components Installation

- 2.3.1. Construct one (1) reinforced concrete foundation necessary for 12' x 16' shelter on TIA/EIA-222 normal soil conditions.
- 2.3.2. Construct one (1) concrete slab for 500-gallon aboveground LP fuel tank at 3,000 psi with reinforcing steel necessary for foundations on TIA/EIA- 222 normal soil conditions.
- 2.3.3. Construct one (1) foundation for the existing 50KW generator with reinforcing steel necessary for foundations on TIA/EIA-222 normal soil conditions.
- 2.3.4. Coordinate the installation of utilities services to the site – electrical and communications.
- 2.3.5. Connection to existing Fire Station 14 conduits
- 2.3.6. Supply and install grounding system around the shelter tied to the fence and other new metal structures within compound to meet Motorola's R-56 standards.

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- 2.3.7. Conduct one (1) three-point ground resistance test of the site.
- 2.3.8. Supply and install one freestanding 24-inch-wide cable/ice bridge from tower to the shelter.

2.4. Antenna and Transmission Line Installation

- 2.4.1. Install three (3) antennas for the RF system.
- 2.4.2. Install one (1) GPS antenna.
- 2.4.3. Install one (1) tower top amplifier. (Provided by County)
- 2.4.4. Install necessary linear feet of 3/8-inch transmission line.
- 2.4.5. Install necessary linear feet of 7/8-inch transmission line.
- 2.4.6. Install necessary linear feet of 1-1/4-inch transmission line.
- 2.4.7. Perform sweep tests on all transmission lines.
- 2.4.8. Supply and install waveguide bridge and grounding system at the bottom of antenna support structure for grounding RF cables before they make horizontal transition.

Should site location or Exhibit A change as agreed between the parties via change order, Contractor shall review the changes and adjust pricing as needed.

2.5. Landscaping

The visual impact of a communications tower shall be mitigated for nearby viewers through landscaping at the base of the Communications Tower and ancillary structures. Landscaping shall be installed on the outside of fences or walls except on agricultural zoned lands as follows:

- 2.5.1. Type A Buffer (Section 9.01.06.B, Table 2) shall be used: the existing vegetation shall be preserved to the maximum extent practicable and may be used as a substitute of or in supplement toward meeting the Type A Buffer requirements.
- 2.5.2. Landscape Buffers. The table below provides the required buffer and specific requirements.

Buffer Area Type	Width Options (All options available unless restricted)	Landscape Requirements (per 100 linear feet)
A	20 Feet	<ul style="list-style-type: none"> • Two (2) canopy trees; • One (1) ornamental tree (optional); and • One (1) single row of shrubs.
	15 Feet	<ul style="list-style-type: none"> • Three (3) canopy trees; • Two (2) ornamental trees; and • One (1) single row of shrubs.
	10 Feet	<ul style="list-style-type: none"> • Two (2) canopy trees; • One (1) ornamental tree; and

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		<ul style="list-style-type: none"> • One (1) single row of shrubs.
	<p>5 feet</p> <p>Residential Zoning to Residential Zoning only</p>	<ul style="list-style-type: none"> • Six-foot solid wall.

2.6. Responsibility of the County

Contractor's scope and pricing for this site is based on the understanding that the tasks listed below will be performed by the County.

- 2.6.1. Assign a Project Manager for daily coordination.
- 2.6.2. Provide Radiofrequency (RF) electromagnetic energy (EME) license plans for the site to comply with FCC requirements, prior to starting tower work.
- 2.6.3. Secure site lease/ownership, zoning, permits, easements, power, and telco connections.
- 2.6.4. Any upgrade of the antenna support structure necessary to accommodate new antennas.
- 2.6.5. Review and approve site designs within seven (7) calendar days of submission by Contractor.
- 2.6.6. Assist Contractor with permitting for sites, as owner/lessee.
- 2.6.7. Provide property deed, boundary survey and lease information along with existing as-built drawings for existing tower sites to Contractor's architectural engineer for conducting site engineering.

2.7. Tower

- 2.7.1. New tower design shall be similar to existing Fire Station 112 tower site allowing for the same loading and colocation capabilities and installed according to TIA-222 and codes, ordinances and regulations of authorities having jurisdiction. Where these standards contain conflicting requirements, the more stringent requirements shall apply.
- 2.7.2. Building, Generator, Propane tank for FS 14 to be relocated from and match existing Umatilla site design.
- 2.7.3. Tower Classification – Tower for the use of public safety or critical infrastructure industry communications system shall meet the requirements of Class III structures as defined in TIA-222.
- 2.7.4. Loads – The tower design and loading shall be in accordance with TIA-222 so that the design strength exceeds the loading of the tower, antennas, and appurtenances (antenna support hardware, waveguides and transmission lines, grounding kits, tower lighting systems, tower climbing systems, etc.), ice, wind, and seismic loads. As practical, transmission lines shall be evenly distributed on tower faces to distribute loads.
- 2.7.5. All proposed current and future loads, including antennas and appurtenances being located from existing structure, shall be carefully verified before tower analysis is

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performed. The following information for each proposed antenna shall be provided to the structural engineer:

- 2.7.5.1. Manufacturer, model, size, weight, and effective projected area of the antennas, antenna support hardware, and transmission lines or waveguides.
- 2.7.5.2. Antenna mounting height
- 2.7.5.3. Tower leg or face on which the antenna will be mounted
- 2.7.5.4. Routing of transmission lines or waveguide
- 2.7.6. Tower shall be designed for the future installation of 2 additional carriers designed with up to 125% of proposed load or consistent with Fire Station 112 Tower design, whichever is greater.

2.8. Tower Erection

- 2.8.1. All work associated with the construction of towers shall be inspected and approved by a professional engineer. The erection of towers shall be in accordance with TIA-222. The tower shall be grounded continuously during erection.
- 2.8.2. Tower Climbing Facilities – A climbing ladder or other climbing facility shall be provided for each new tower in accordance with TIA-222.
- 2.8.3. Obstruction Marking and Lighting – All work to be performed by others.
- 2.8.4. The FAA shall be notified of proposed or actual construction or alteration by completing FAA Forms 7460-1 and 7460-2 and providing supporting data by Obstruction and Lighting contractor.

2.9. Existing Utilities

Location of all existing utilities shall be verified before site work begins. Existing utilities must be protected during site work.

3. PHASE II – RELOCATION OF EXISTING UMATILLA SITE

- 3.1. The intent of this phase is to complete site preparation to provide for a maximum of a three (3) day relocation and re-establishment of services and includes the relocation of the existing Umatilla tower site building, generator, and propane tank.
 - 3.1.1. Disconnect utilities
 - 3.1.2. Relocation/transport from existing Umatilla site for Placement/installation at Fire Station 14
 - 3.1.2.1. Remove and install (1) existing prefabricated concrete shelter 12'x16'.
 - 3.1.2.2. Remove and install existing (1) 500-gallon LP fuel tank. Fuel and connection to generator will be provided by County under a separate contract.
 - 3.1.3. Ground
 - 3.1.4. Establish electrical services
 - 3.1.5. Complete testing of electrical and generator
 - 3.1.6. Align Microwave
 - 3.1.7. Complete site testing with Motorola

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3.1.8. Complete inspections and Certificate of Occupancy (CO) for permits

3.2. Umatilla Site - SBA, Inc., non-County leased site.

3.2.1. All County lines, equipment, and connectivity at the Umatilla site are to be removed and/or relocated. Site will change from the current leased guyed wire tower the new self-supporting tower. The relocation and equipment clearing will be for County owned equipment only. Tower, fencing, and other equipment will remain and should be returned to operational status minus the Lake County equipment.

3.2.2. Removal of all County ancillary components at Umatilla site

3.2.3. Repair/replace any easement/ground disturbances and fencing

3.2.3.1. Any access ruts or damage will require repair and coordination with easement/property owners.

4. MOTOROLA COORDINATION

4.1. To be accomplished separately (by others) coordinated with tower crews

4.1.1. Turn Down existing Umatilla site

4.1.2. Line Testing

4.1.3. Microwave alignment

4.1.4. Turn Up new Station 14

5. OTHER INFORMATION

5.1. Provided by Others

5.1.1. Frequency coordination to be accomplished separately

5.1.1.1. 700/800 – APCO/Region 9 Coordination and licensing

5.1.1.2. Microwave - Accomplished by Motorola/MNI under separate contract

6. INSPECTION

County will conduct multiple inspections during construction and a final inspection. Deficiencies identified by inspections will be recorded as a punch-list item. These items are to be corrected within 30 days.

7. ADDITIONAL SERVICES – TOWER INSPECTIONS, TROUBLESHOOTING, AND REPAIR

7.1. Guyed Tower Inspection

7.1.1. Check guy wire tension and plumb of tower. Correct if minor.

7.1.2. Inspect tower for corrosion – clean minor surface rust and spray galvanize.

7.1.3. Inspect antenna and brackets – tighten and plumb as necessary.

7.1.4. Inspect anchors.

7.1.5. Inspect groundings.

7.1.6. Secure any loose items on the tower and report findings.

7.2. Not Guyed Tower Inspection

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- 7.2.1. Visual inspection from the ground prior to climbing.
- 7.2.2. Inspect tower for corrosion – clean minor surface rust and spray galvanize.
- 7.2.3. Inspect antenna and brackets – tighten and plumb as necessary.
- 7.2.4. Inspect anchors.
- 7.2.5. Inspect groundings.
- 7.2.6. Secure any loose items on the tower and report findings.

7.3. Hourly Rate for troubleshooting, repairs, and maintenance, and or modifications to the tower(s) or tower site(s).

8. DELIVERY REQUIREMENTS AND ACCEPTANCE

- 8.1.** The Contractor shall submit a PDF file of all tower as-built documentation to Lake County for review and approval.
- 8.2.** Tower construction as-built drawings including, but not limited to, the following:
 - 8.2.1. Site layout drawings
 - 8.2.2. Foundation details for the tower
 - 8.2.3. Tower design detail drawings including light controller wiring. Lighting systems to be provided by others.
- 8.3.** The County shall not assume full financial responsibility until the project is complete and accepted by the County. Under no circumstances shall any warranty begin until final acceptance of the project by Lake County.

9. WARRANTY REQUIREMENTS

- 9.1.** Contractor shall warrant five (5) years for the new tower, including its foundation and grounding system.
- 9.2.** Contractor shall repair, replace, or otherwise correct defective tower, foundation, or grounding system during the warranty period at no cost to Lake County.
- 9.3.** Contractor will be the main point of contact for repairs, additions, and modification during the warranty period and considered for on-going maintenance.

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