



Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



William Cass, P.E.
Assistant Commissioner

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Bureau of TSMO
May 17, 2016

Her Excellency, Governor Margaret Wood Hassan
and the Honorable Council
State House
Concord, New Hampshire 03301

REQUESTED ACTION

Authorize the Department of Transportation to enter into a contract with R & R Communications Incorporated, Swanzey, NH (Vendor # 154891) on the basis of a low bid in the amount of \$151,510 for the purpose of providing statewide service and repairs to the Department's land mobile radio system and solar charged battery systems, effective July 1, 2016 through June 30, 2018. 82% Highway and 18% Turnpike.

Funding is available as follows for FY 2017 and is contingent upon the availability and continued appropriation of funds for FY 2018.

	FY 2017	FY 2018
04-96-96-960515-3007 Highway Maintenance Bureau 024-500225 Contract Repairs; Machine, Equip.	\$61,775.00	\$61,775.00
04-96-96-961017-7022 Turnpike Administration 024-500225 Contract Repairs; Machine, Equip.	\$5,029.87	\$5,029.87
04-96-96-961017-7027 Central Turnpike Maintenance 024-500225 Contract Repairs; Machine, Equip.	\$2,810.55	\$2,810.55
04-96-96-961017-7032 Blue Star Memorial Highway Maintenance 024-500225 Contract Repairs; Machine, Equip.	\$2,809.79	\$2,809.79
04-96-96-961017-7037 Spaulding Turnpike Maintenance 024-500225 Contract Repairs; Machine, Equip.	\$2,809.79	\$2,809.79
04-96-96-960515-3052 Transportation Management Center 024-500225 Contract Repairs; Machine, Equip.	\$520.00	\$520.00
Total	\$75,755.00	\$75,755.00

EXPLANATION

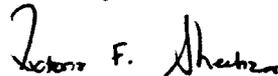
The Department of Transportation operates a statewide radio communications network that consists of mountain top repeaters, dispatch centers, base stations, and mobile radios that link toll, bridge maintenance, traffic operations, and highway maintenance facilities with a statewide dispatch center. For the longevity and viability of this communication system it is necessary that maintenance be performed. This contract is established to provide regular maintenance inspections to the equipment as well as provide unscheduled and emergency maintenance, as needed at the contract prices bid.

Bid solicitations were e-mailed to six NH service providers and a bid invitation was advertised in the Manchester Union Leader newspaper on April 14, 2016. Two bids were received with R & R Communications of Swanzey, N.H. responding with the lowest bid price. Attached is a copy of the bid tabulation. The Department is satisfied that the bid prices are reasonable and that R & R Communications Inc. is qualified to perform the required work.

This contract has been approved by the Attorney General as to form and execution and the Department has verified that the necessary funds are available. Copies of the fully executed contract are on file at the Secretary of State office and the Department of Administrative Services office, and subsequent to Governor and Council approval will be on file at the Department of Transportation.

Your approval of this contract is respectfully requested.

Sincerely,



Victoria F. Sheehan
Commissioner

Attachments

EXHIBIT-B

Section-8 Bid Tabulation Table		R&R	Green Mtn	Estimated Costs
Subtotal from Section-1	Page 1 of 7 Preventive Maintenance (PMI)	\$18,710.00	\$32,130.00	\$28,350.00
Subtotal from Section-2	Page 2 of 7 Dispatch Preventive Maintenance	\$2,500.00	\$3,570.00	\$4,800.00
Subtotal from Section-3	Page 3 of 7 Repeater "Site" PMI	\$5,440.00	\$8,347.50	\$7,200.00
Subtotal from Section-4	Page 4 of 7 "Antenna" System Work	\$5,880.00	\$6,610.00	\$5,870.00
Subtotal from Section-5	Page 5 of 7 Mobile radio Installations	\$900.00	\$1,495.00	\$800.00
Subtotal from Section-6	Page 6 of 7 Unscheduled Maintenance	\$42,325.00	\$52,240.00	\$42,755.00
Annual contract amounts		\$75,755.00	\$104,392.50	\$89,775.00

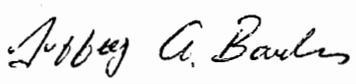
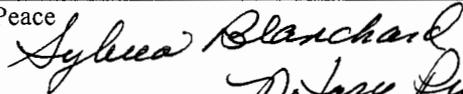
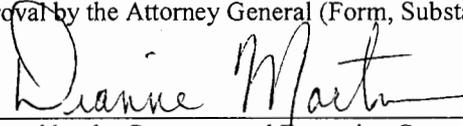
Notice: This agreement and all of its attachments shall become public upon submission to Governor and Executive Council for approval. Any information that is private, confidential or proprietary must be clearly identified to the agency and agreed to in writing prior to signing the contract.

AGREEMENT

The State of New Hampshire and the Contractor hereby mutually agree as follows:

GENERAL PROVISIONS

1. IDENTIFICATION.

1.1 State Agency Name NH Department of Transportation		1.2 State Agency Address Seven Hazen Drive, Concord NH	
1.3 Contractor Name R & R Communications Inc.		1.4 Contractor Address 526 Old Homestead Highway, Swanzey, NH 03446	
1.5 Contractor Phone Number (603) 352-1825	1.6 Account Number Multiple, Accounts See Attached	1.7 Completion Date June 30, 2018	1.8 Price Limitation \$151,510.00
1.9 Contracting Officer for State Agency David Rodrigue, PE, Director of Operations		1.10 State Agency Telephone Number NHDOT, Bureau of TSMO, TMC, (603) 271-6862	
1.11 Contractor Signature 		1.12 Name and Title of Contractor Signatory Jeffery Barden, President	
3 Acknowledgement: State of <i>NH</i> , County of <i>Chester</i> On <i>5/10/2016</i> , before the undersigned officer, personally appeared the person identified in block 1.12, or satisfactorily proven to be the person whose name is signed in block 1.11, and acknowledged that s/he executed this document in the capacity indicated in block 1.12.			
1.13.1 Signature of Notary Public or Justice of the Peace [Seal]		 Notary Public Expires <i>10/26/16</i>	
1.13.2 Name and Title of Notary or Justice of the Peace			
1.14 State Agency Signature 		1.15 Name and Title of State Agency Signatory NHDOT Director of Operations	
Date: <i>5/17/16</i>			
1.16 Approval by the N.H. Department of Administration, Division of Personnel (if applicable) By: _____ Director, On: _____			
1.17 Approval by the Attorney General (Form, Substance and Execution) (if applicable) By:  On: <i>5/31/16</i>			
1.18 Approval by the Governor and Executive Council (if applicable) By: _____ On: _____			

2. EMPLOYMENT OF CONTRACTOR/SERVICES TO BE PERFORMED. The State of New Hampshire, acting through the agency identified in block 1.1 ("State"), engages contractor identified in block 1.3 ("Contractor") to perform, and the Contractor shall perform, the work or sale of goods, or both, identified and more particularly described in the attached EXHIBIT A which is incorporated herein by reference ("Services").

3. EFFECTIVE DATE/COMPLETION OF SERVICES.

3.1 Notwithstanding any provision of this Agreement to the contrary, and subject to the approval of the Governor and Executive Council of the State of New Hampshire, if applicable, this Agreement, and all obligations of the parties hereunder, shall become effective on the date the Governor and Executive Council approve this Agreement as indicated in block 1.18, unless no such approval is required, in which case the Agreement shall become effective on the date the Agreement is signed by the State Agency as shown in block 1.14 ("Effective Date").

3.2 If the Contractor commences the Services prior to the Effective Date, all Services performed by the Contractor prior to the Effective Date shall be performed at the sole risk of the Contractor, and in the event that this Agreement does not become effective, the State shall have no liability to the Contractor, including without limitation, any obligation to pay the Contractor for any costs incurred or Services performed. Contractor must complete all Services by the Completion Date specified in block 1.7.

4. CONDITIONAL NATURE OF AGREEMENT.

Notwithstanding any provision of this Agreement to the contrary, all obligations of the State hereunder, including, without limitation, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds, and in no event shall the State be liable for any payments hereunder in excess of such available appropriated funds. In the event of a reduction or termination of appropriated funds, the State shall have the right to withhold payment until such funds become available, if ever, and shall have the right to terminate this Agreement immediately upon giving the Contractor notice of such termination. The State shall not be required to transfer funds from any other account to the Account identified in block 1.6 in the event funds in that Account are reduced or unavailable.

5. CONTRACT PRICE/PRICE LIMITATION/PAYMENT.

5.1 The contract price, method of payment, and terms of payment are identified and more particularly described in EXHIBIT B which is incorporated herein by reference.

5.2 The payment by the State of the contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance hereof, and shall be the only and the complete compensation to the Contractor for the Services. The State shall have no liability to the Contractor other than the contract price.

5.3 The State reserves the right to offset from any amounts otherwise payable to the Contractor under this Agreement those liquidated amounts required or permitted by N.H. RSA 80:7 through RSA 80:7-c or any other provision of law.

5.4 Notwithstanding any provision in this Agreement to the contrary, and notwithstanding unexpected circumstances, in no event shall the total of all payments authorized, or actually made hereunder, exceed the Price Limitation set forth in block 1.8.

6. COMPLIANCE BY CONTRACTOR WITH LAWS AND REGULATIONS/ EQUAL EMPLOYMENT OPPORTUNITY.

6.1 In connection with the performance of the Services, the Contractor shall comply with all statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal opportunity laws. This may include the requirement to utilize auxiliary aids and services to ensure that persons with communication disabilities, including vision, hearing and speech, can communicate with, receive information from, and convey information to the Contractor. In addition, the Contractor shall comply with all applicable copyright laws.

6.2 During the term of this Agreement, the Contractor shall not discriminate against employees or applicants for employment because of race, color, religion, creed, age, sex, handicap, sexual orientation, or national origin and will take affirmative action to prevent such discrimination.

6.3 If this Agreement is funded in any part by monies of the United States, the Contractor shall comply with all the provisions of Executive Order No. 11246 ("Equal Employment Opportunity"), as supplemented by the regulations of the United States Department of Labor (41 C.F.R. Part 60), and with any rules, regulations and guidelines as the State of New Hampshire or the United States issue to implement these regulations. The Contractor further agrees to permit the State or United States access to any of the Contractor's books, records and accounts for the purpose of ascertaining compliance with all rules, regulations and orders, and the covenants, terms and conditions of this Agreement.

7. PERSONNEL.

7.1 The Contractor shall at its own expense provide all personnel necessary to perform the Services. The Contractor warrants that all personnel engaged in the Services shall be qualified to perform the Services, and shall be properly licensed and otherwise authorized to do so under all applicable laws.

7.2 Unless otherwise authorized in writing, during the term of this Agreement, and for a period of six (6) months after the Completion Date in block 1.7, the Contractor shall not hire, and shall not permit any subcontractor or other person, firm or corporation with whom it is engaged in a combined effort to perform the Services to hire, any person who is a State employee or official, who is materially involved in the procurement, administration or performance of this

Contractor Initials
Date

44 5.15.16

Agreement. This provision shall survive termination of this Agreement.

7.3 The Contracting Officer specified in block 1.9, or his or successor, shall be the State's representative. In the event of any dispute concerning the interpretation of this Agreement, the Contracting Officer's decision shall be final for the State.

8. EVENT OF DEFAULT/REMEDIES.

8.1 Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):

8.1.1 failure to perform the Services satisfactorily or on schedule;

8.1.2 failure to submit any report required hereunder; and/or

8.1.3 failure to perform any other covenant, term or condition of this Agreement.

8.2 Upon the occurrence of any Event of Default, the State may take any one, or more, or all, of the following actions:

8.2.1 give the Contractor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) days from the date of the notice; and if the Event of Default is not timely remedied, terminate this Agreement, effective two (2) days after giving the Contractor notice of termination;

8.2.2 give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under this Agreement and ordering that the portion of the contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines that the Contractor has cured the Event of Default shall never be paid to the Contractor;

8.2.3 set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default; and/or

8.2.4 treat the Agreement as breached and pursue any of its remedies at law or in equity, or both.

9. DATA/ACCESS/CONFIDENTIALITY/PRESERVATION.

9.1 As used in this Agreement, the word "data" shall mean all information and things developed or obtained during the performance of, or acquired or developed by reason of, this Agreement, including, but not limited to, all studies, reports, files, formulae, surveys, maps, charts, sound recordings, video recordings, pictorial reproductions, drawings, analyses, graphic representations, computer programs, computer printouts, notes, letters, memoranda, papers, and documents, all whether finished or unfinished.

9.2 All data and any property which has been received from the State or purchased with funds provided for that purpose under this Agreement, shall be the property of the State, and shall be returned to the State upon demand or upon termination of this Agreement for any reason.

9.3 Confidentiality of data shall be governed by N.H. RSA Chapter 91-A or other existing law. Disclosure of data requires prior written approval of the State.

10. TERMINATION. In the event of an early termination of this Agreement for any reason other than the completion of the Services, the Contractor shall deliver to the Contracting Officer, not later than fifteen (15) days after the date of termination, a report ("Termination Report") describing in detail all Services performed, and the contract price earned, to and including the date of termination. The form, subject matter, content, and number of copies of the Termination Report shall be identical to those of any Final Report described in the attached EXHIBIT A.

11. CONTRACTOR'S RELATION TO THE STATE. In the performance of this Agreement the Contractor is in all respects an independent contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents or members shall have authority to bind the State or receive any benefits, workers' compensation or other emoluments provided by the State to its employees.

12. ASSIGNMENT/DELEGATION/SUBCONTRACTS. The Contractor shall not assign, or otherwise transfer any interest in this Agreement without the prior written notice and consent of the State. None of the Services shall be subcontracted by the Contractor without the prior written notice and consent of the State.

13. INDEMNIFICATION. The Contractor shall defend, indemnify and hold harmless the State, its officers and employees, from and against any and all losses suffered by the State, its officers and employees, and any and all claims, liabilities or penalties asserted against the State, its officers and employees, by or on behalf of any person, on account of, based or resulting from, arising out of (or which may be claimed to arise out of) the acts or omissions of the Contractor. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

14. INSURANCE.

14.1 The Contractor shall, at its sole expense, obtain and maintain in force, and shall require any subcontractor or assignee to obtain and maintain in force, the following insurance:

14.1.1 comprehensive general liability insurance against all claims of bodily injury, death or property damage, in amounts of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate; and

14.1.2 special cause of loss coverage form covering all property subject to subparagraph 9.2 herein, in an amount not less than 80% of the whole replacement value of the property.

14.2 The policies described in subparagraph 14.1 herein shall be on policy forms and endorsements approved for use in the State of New Hampshire by the N.H. Department of Insurance, and issued by insurers licensed in the State of New Hampshire.

14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or his or her successor, a certificate(s) of insurance for all insurance required under this Agreement. Contractor shall also furnish to the Contracting Officer identified in block 1.9, or his or her successor, certificate(s) of insurance for all renewal(s) of insurance required under this Agreement no later than thirty (30) days prior to the expiration date of each of the insurance policies. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference. Each certificate(s) of insurance shall contain a clause requiring the insurer to provide the Contracting Officer identified in block 1.9, or his or her successor, no less than thirty (30) days prior written notice of cancellation or modification of the policy.

15. WORKERS' COMPENSATION.

15.1 By signing this agreement, the Contractor agrees, certifies and warrants that the Contractor is in compliance with or exempt from, the requirements of N.H. RSA chapter 281-A ("*Workers' Compensation*").

15.2 To the extent the Contractor is subject to the requirements of N.H. RSA chapter 281-A, Contractor shall maintain, and require any subcontractor or assignee to secure and maintain, payment of Workers' Compensation in connection with activities which the person proposes to undertake pursuant to this Agreement. Contractor shall furnish the Contracting Officer identified in block 1.9, or his or her successor, proof of Workers' Compensation in the manner described in N.H. RSA chapter 281-A and any applicable renewal(s) thereof, which shall be attached and are incorporated herein by reference. The State shall not be responsible for payment of any Workers' Compensation premiums or for any other claim or benefit for Contractor, or any subcontractor or employee of Contractor, which might arise under applicable State of New Hampshire Workers' Compensation laws in connection with the performance of the Services under this Agreement.

16. WAIVER OF BREACH. No failure by the State to enforce any provisions hereof after any Event of Default shall be deemed a waiver of its rights with regard to that Event of Default, or any subsequent Event of Default. No express failure to enforce any Event of Default shall be deemed a waiver of the right of the State to enforce each and all of the provisions hereof upon any further or other Event of Default on the part of the Contractor.

17. NOTICE. Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given in blocks 1.2 and 1.4, herein.

18. AMENDMENT. This Agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver or discharge by the Governor and Executive Council of the State of New Hampshire unless no

such approval is required under the circumstances pursuant to State law, rule or policy.

19. CONSTRUCTION OF AGREEMENT AND TERMS

This Agreement shall be construed in accordance with the laws of the State of New Hampshire, and is binding upon and inures to the benefit of the parties and their respective successors and assigns. The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

20. THIRD PARTIES. The parties hereto do not intend to benefit any third parties and this Agreement shall not be construed to confer any such benefit.

21. HEADINGS. The headings throughout the Agreement are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Agreement.

22. SPECIAL PROVISIONS. Additional provisions set forth in the attached EXHIBIT C are incorporated herein by reference.

23. SEVERABILITY. In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement will remain in full force and effect.

24. ENTIRE AGREEMENT. This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire Agreement and understanding between the parties, and supersedes all prior Agreements and understandings relating hereto.

Contractor Initials *AA*

Date

5-10-16

EXHIBIT-A

SECTION-1, Scope of Services

- 1) Provide all labor, equipment, repair parts, software, transportation and lodging (prior approval for lodging required) necessary for maintaining the Department's two-way radio communication equipment to meet specifications of Item #2. The system is composed mainly of Harris (formerly M / A COM Inc.), Motorola Inc., Icom Inc., Kenwood, and Bosch Telex Communications, and Cambium microwave equipment. The system (as of Jan 1, 2016) consists of the equipment outlined in the UHF & VHF land mobile, VHF-Aeronautic, and VHF-Marine equipment counts. See Pages-25, 26, 27 and 28 of Exhibit-A, Section-1.

These types and quantities may increase and decrease during the contract period as specified by the Department's highway equipment inventory (HEI). Services shall be provided for all such equipment not otherwise covered or restricted by manufacturers' warranty conditions but limited to equipment owned by the Department.

Note: The term *unscheduled* shall be synonymous with word *unplanned* when reference is made to; maintenance, service, and or repair. The term Failed shall be synonymous with a system or instrument that no longer function or meets specifications as defined by items #2

- 2) Specifications in addition to manufactures' shall include; the commissioning data or system acceptance, normal performance specifications, device functionality, previous acceptance level, as built diagrams, owner preferred (documented) configuration settings, and applicable Federal Communications Commission (FCC) authorization(s).
- 3) Provide requested service and or **unscheduled repair** to radio equipment governed by Federal Code of Regulation (CFR) 47, Part-80, **Maritime** and Part-87, **Aviation** services by retention of a FCC a licensed repair technician with a valid first or second class radiotelegraph operators license or a general radiotelephone operators license at a *cost per hour* as specified in Exhibit-B, Section-6.
- 4) Provide for *annual* physical and preventive maintenance inspections (**PMI**) of the *land-mobile radio system dispatch equipment, repeater stations, control stations and remote controls, and solar charged Battery banks*, completing all necessary adjustments *tasks and documentation* outlined in applicable NHDOT preventive maintenance lists to meet specifications as summarized in item #2 at the *fixed price* as submitted in Exhibit-B, Sections 1 and 2. The minimum-required preventive maintenance task list is included in Exhibit-A.
- 5) Provide for certain amount of **Preventive Maintenance Inspections (PMI) of Department designated mobile and portable radios** on an annual basis including all associated equipment at their assigned location or a mutually agreeable site(s), completing all necessary updates and PMI tasks to meet specifications as summarized in item #2 at the *fixed (unit) price* as submitted in Exhibit-B, Section-1. The minimum-required preventive maintenance task list is included in Exhibit-A.

Contractor shall contact NHDOT, Communications Supervisor the same business day for Department the generated work order number (s) for problems discovered during PMI that are cause for repair outside the scope of a PMI and or are found but not corrected on the spot during the scheduled PMI.

- 6) Provide for **unscheduled repairs to a repeater system**, including but not limited to: repairs to the tower-mounted antenna and cable system, repeater transceiver equipment, antenna combiner or multi-coupler equipment, repairs to restore alternating current (AC) power at communications sites from the power supplying wall outlet to the radio equipment, and repairs necessary to maintain or restore direct current (DC) power at the Mount Cardigan repeater site, Orange NH, consisting of wet-cell storage batteries, solar panels, propane-powered generator and related load management equipment thus meeting the specifications as summarized in item #2 at *cost(s) per hour* as specified in Exhibit-B, Section-4 and Section-6
- 7) Provide for **unscheduled repairs to control (base) stations** included but not limited to: repairs to control station equipment, repairs to failed station tower-mounted antenna systems, and repairs necessary to restore electric power from the AC power-supplying wall outlet to the communications equipment to meet specifications as summarized in item #2 at a *cost per hour* as specified in Exhibit-B, Section-6.
- 8) Provide for **unscheduled repairs to control (base) station antenna and grounding systems** with various mounting configurations that are not tower mounted, such as but not limited to, antennae that are accessible from a ladder, rooftop, and or any antenna mounting structures not considered a tower at the *same rate* identified for item #7, unscheduled repairs to control (base) stations Exhibit-B, Section-6, "Base Stations"
- 9) Provide for routine and emergency **unscheduled repairs to dispatch locations** including but not limited to: repairs to dispatch location radios or radio remote control equipment, console or remote control premise wiring, evaluation of end to end performance and functionality of leased telecommunications lines that compose the dispatch communication network, repairs necessary to restore electric power at dispatch locations sites from the AC power-supplying wall outlet to the communications equipment to meet the specifications as summarized in item #2 at a *cost per hour* as specified in Exhibit-B, Section-6.
- 10) Provide for **unscheduled repairs to desktop (radio) remote controls** including but not limited to: repairs to remote controls, interconnection cables & connectors, premise wiring, evaluation of end to end performance and functionality of leased telecommunications lines, reporting of faulty leased lines, and repairs necessary to restore electric power at the desktop remote sites from the AC power-supplying wall outlet to the communications equipment thus meeting the specifications as summarized in item #2 at a *cost per hour* as specified in Exhibit-B, Section-4 and Section-6
- 11) Provide for **unscheduled repairs to mobile radios** at their assigned locations, or at the Department's prerogative, a mutually agreeable site. Repairs to failed mobile radio equipment to include but are not limited to; transceiver, microphone, internal / external speaker, mobile antenna system, interconnection cables and connectors, power conditioners, DC to DC converters, DC power cables and connectors, repairs necessary to restore electrical power from battery (or pre-designated point of origin) to radio equipment thus meeting the specifications as summarized in item #2 at a *cost per hour* as specified in Exhibit-B, Section-6.

Note: The Department owns and operates approximately 50-each, 24-volt vehicles

- 12) Provide for **unscheduled repairs to Aeronautic (Unicom) and or Marine radios** at their assigned locations, or at the Department's prerogative, a mutually agreeable site. Repairs to failed equipment to include but not limited to transceiver, microphone, internal / external speakers, antenna system connectors, surge protection, repairs necessary to restore electrical power to radio equipment from the AC power-supplying wall outlet to the communications equipment meeting specifications as summarized in item #2 at a *cost per hour* as specified in Exhibit-B, Section-6.

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- 13) Results of all PMI inspections, requested evaluations, unscheduled repairs, adjustments or contractor recommendations shall be forwarded in writing in a mutually agreed format within **3-days** of contractor action to NH DOT, Communications Supervisor / Contract Administrator. Electronic Communications is preferred.
- 14) **On-site response** to unscheduled maintenance request by Department shall be no greater than thirty 32 hours or four (4) normal business days (weather and travel conditions permitting). Department shall issue work order numbers for all such requested work. Contractor shall credit the Department 4-hours of contracted bid rate (per applicable radio equipment type and travel rate) for each eight (8) hours of delay in on-site response after thirty-two (32) business hours.
- 15) **Immediate on-site response**, of less than twenty-four (24) hours is required for **emergency** repairs to Items-3, 6, 7, 8, & 9 as requested by the Department. The Department will exercise discretion over prioritizing multiple service requests or failures. Contractor shall credit Department Eight (8) hours of contracted rate (per applicable radio equipment type and travel rate) for every four (4) hours of delay in immediate response after twenty-four (24) hours. Other unscheduled repairs shall be within normal (contractor) working hours per and shall be performed in accordance to item #13, weather and traveling conditions permitting, unless otherwise requested by Contractor then authorized or waived by the Department.
- 16) Provide for **installation** of Department spares for mission critical communication end item components. The use & distribution of supplied Departmental spares shall be at the discretion and authorization of the Department's Communication Supervisor.
- 17) Provide for (computer) drafting of configuration files, and file transfer of equipment configuration files, firmware, software, and or feature updates, apart from preventive maintenance inspection tasks, at a **cost per hour** as specified in Exhibit-B, Section-4.
- 18) Provide mobile radio, antenna, and associated power system installations for trunk & dash mounted mobile radios with accessories. At the vehicles assigned location or location designated by Department for a fixed rate as specified in Exhibit-B, Section -5 (with travel allowance specified in Exhibit -B, Section -6
- 19) Provide for new or replacement **installations of fixed base or repeater antennae** and or inspections with (NHDOT) standardized grounding, bonding and lightning protection systems at a rate per by retention of a tower crew certified in tower climbing and personnel rescue at hourly rate that covers labor and travel cost for all personnel required to complete a specified installation at **cost(s) per hour** as specified in Exhibit-B, Section-4.
- 20) Travel Allowances (rate) to the job site(s) for installation work and unscheduled maintenance shall be computed **from** the Contractor's or Subcontractor's **closest** repair facility that are located within the State of New Hampshire or closest NH state border if outside of NH, and shall be identified by the hourly rate in Exhibit -B, Section-6 that covers all cost self-identified by contractor for a combination of vehicles and personnel. Travel allowance shall not be calculated for scheduled maintenance inspections or unscheduled maintenance performed in conjunction with scheduled inspections.
- 21) **Annual** physical inspections and preventive maintenance for all equipment locations including District and Bureau offices **shall be scheduled by the contractor** and shall result in the least disruption to ongoing operations as determined by District Engineer or Bureau Administrator. Contractor shall provide 48-hour advanced notice to the District Office for repeater and dispatch equipment preventive maintenance inspections.

- 22) To what extent a failure will permit, Contractor shall first **document results** of performed PMI procedures on failed equipment **prior** to undertaking other repairs necessary to restore equipment to conditions and specifications as outlined in Item #2.
- 23) Repair costs for parts and labor covered under ongoing or remaining manufacturers' warranties are not included in this contract.
- 24) Where equipment repair involves a combined part and labor cost that is greater than (>) one-half (1/2) the (equal equipment) **replacement cost**, the contractor shall contact the NH DOT Communications Supervisor prior to facilitating repair.
- 25) The Department reserves the right to make additions and / or deletions to this Scope of Services as required by budgetary restraints, State and Federal regulation, or unrealized requirements.
- 26) The Department requests that bidders for this contract provide the following information which is believed to be critical in the overall maintenance of the Department's radio system. Failure to provide this information may result in the disqualification of the request for bid submission.
- a. A **brief profile of the contractor's employees** that would be charged with maintenance and repair of the Department's radio system. This information should include at a minimum, employees name, job title, experience, qualifications, and FCC issued General Radio Telephone Operators (GROL) license number. Additionally, profile should describe any specific experience or training employee has maintaining or installing, Motorola Inc., Harris Inc, (formerly M / A Com Inc.) Bird TX / RX Systems Inc., Bosch Telex Communications Inc., Cambium Networks Inc., equipment as well as all varieties of communications consoles and portable radios.
 - b. A **description of repair facilities**, radio and telecommunications test equipment, specialized repair and installation equipment, computer equipment, computer software, and service vehicles including all-terrain vehicles (ATV) and snowmobiles.
- Note: The **successful bidder**, shall provide a certificate of calibration traceable to National Institute Standards & Technologies (NIST) **for each** piece of electronic test equipment intended for use maintaining Department's radio system that is to be used to measure parameters governed by ► FCC regulations and licensee authorizations such as, (RF) power, frequency and bandwidth.
- c. A **description of the contractor's after hours service response plan** including a commitment to a guaranteed (phone) call back time with an estimated time of travel to contractor's repair facility including State and Federal holidays.
 - d. The successful bidder /contractor shall be responsible for insuring all existing, and future, employees charged with maintenance of Department systems, subsystems, and components, are familiar with the task list(s) associated with each preventive maintenance routine he or she shall be charged with performing.
 - e. A list of no less than three (2) radio communication systems composed of the same equipment type and complexity maintained by Contractor with contact information of references shall be submitted for consideration.

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27) Billing for services will be presented to the Department's bureaus as detailed in Exhibit-B,
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EXHIBIT-A

SECTION 2-PREVENTIVE MAINTENANCE TASK LISTS

Annual and bi-annual physical inspections and preventive maintenance to be performed on each type of land-mobile radio equipment shall include, but not be limited to, the following inspection items. The preventive maintenance inspection (PMI) is to be completed during an initial inspection and if any follow-up repairs or corrective action outside the scope of task list are required, this action should be *self-scheduled* and completed as soon as practical. Work request numbers shall be requested and obtained from Department's Communications Supervisor or designee to track the follow-up maintenance. The following types of corrective action shall be indicative of *preventive maintenance*; cleaning, tightening, securing and retying cables, replacing electrical or radio frequency (RF) connections, removing foreign debris & cleaning components or sub-assemblies, measurement, recalibration, adjustment of operating parameters of end item equipment. Replacement of worn or broken indicators and controls, replacement of broken or worn-out antenna whips, loading coils, microphone parts or assemblies. Equipment configuration file, software or firmware upgrades to end item equipment. PMI reports shall be submitted to the Communications Supervisor, or designee within 7 business days. The report shall contain contractor provided technical readings and notes on Department drafted Excel spread sheet. Updates to spreadsheet information shall be transmitted to Department Communication Supervisor per occurrence. All costs for travel time, including the use of vehicle(s), for physical inspections and preventive maintenance shall be included in the unit price for the PMI of the specific equipment type.

I. Repeater(s) & Site

A. Mechanical Inspection to Include:

1. Visual inspection of antenna and cable system from ground with visual magnification aid. i.e. binoculars. Photographs may be requested form Department.
 - a. Inspect antenna mount attachments
 - b. Inspect cable attachment to tower or fixture
 - c. Inspect for any signs of ice or other forms of damage to cables.
 - d. Inspect for loose, corroded, detached ground or bonding connection.
 - e. Inspect for physical mounting or electro magnetic field conflicts with co-site users.

2. Visual of infrastructure
 - a. Inspect the antenna supporting structure for any obvious signs of wear, damage, vandalism or loose guy wires.
 - b. Inspect equipment shelter for any obvious problems such as rodents, vandals, water leaks, and environmental controls that are detrimental to NH DOT equipment
 - c. Inspect ground and bonding connections between NH DOT equipment and external ground grid elements.

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3. Visual inspection of repeater and antenna combiner system. (If applicable) Note on report any deficiencies
 - a. Inspect cabinets for ease of access and security and integrity.
 - b. Inspect all cables, RF and ground connectors internal to the shelter for tightness cleanliness and electrical integrity.
 - c. Inspect for any signs of water or rodent damage.
 - d. Insect for proper electrical breaker labeling and manual cutoff operation.
 - e. Check for missing 50-ohm terminations on RX multi-coupler and TX combiner rack.
 - f. Verify service literature and hand mic' is stored in DOT equipment cabinet.
 - g. Replace worn out door seals
 - h. Inspect cabinet electric fans and clean air filters. Note completion of cleaning task.
 - i. Inspect under (old style) RF power Amplifier cover, clean inside PA removing all dust and debris. Note completion
 - j. ▼Check for posting of transmitter's current Federal Communications Commission (FCC) authorization.

Please Note on the PMI report any items they warrant further inspection, major corrective action, or notification to responsible party. Contractor shall follow-up, follow through on corrective actions that are part of PMI.

As suggested by Contractor and or requested by NHDOT, Contractor shall perform closer inspection of tower mounted antenna system(s) by climbing the antenna mounting structures.

The New Hampshire Department of Resources and Economic Development (DRED) is the communications site manager for all NH Department of Transportation repeater sites with the exception of the following locations. Specific points of contact for each exception site and tower vary but are available by request. Existing site standards shall be provided to contractor.

Moose Mountain- New Hampshire Public Television
Mount Ascutney- Electronic Communications Association, Inc.
Mount Uncanoonuc- Town of Goffstown (Police)
Mount Whittier- Whittier Communications Inc.
Hackett Hill – NHDOT

B. Electrical Inspection to Include (Document as found values prior to adjustment)

Repeater Exhibit-A, Page- ____ of ____

i. Power Supplies (PS)

1. Measure and record AC line voltage at PS outlet.
2. Measure and record the supply DC voltage while in standby and while under load (transmitting)

ii. Transmitter measurements- Adjust as required

1. ► Measure and record RF power output from transmitter
(TX) power amplifier (PA).
2. Calculate and record voltage standing wave ratio (VSWR) between TX and combiner or duplexer cavity.
3. Measure and record RF power at the output of combiner cavity.
4. Calculate and record the VSWR between the output cavity or duplexer and TX antenna cable.

$$VSWR = \frac{1 + \sqrt{\frac{P_{rev}}{P_{fwd}}}}{1 - \sqrt{\frac{P_{rev}}{P_{fwd}}}}$$

Where P_{rev} = reverse power
 P_{fwd} = forward power

5. ► Measure and record repeater voice frequency modulation
(FM) deviation.
 6. ► Measure and record repeater continuous tone coded sub-audible squelch (CTCSS) FM deviation
- g. ► Measure and record carrier frequency of operation (error)
- h. Investigate PA alarm light. (if applicable)

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iii. Receiver measurements-Adjust as necessary

1. Measure and record receiver (RX) sensitivity through RX multi-coupler or duplexer.
2. Measure and record the signal level needed for the RXer to achieve 12-dB SNR without antenna system
3. Using a directional coupler, measure and record both signal levels needed to achieve 12-dB signal-to-noise ratio (SNR) through RX multi-coupler or duplexer **with and without** RX site antenna. See Diagram-1
4. Observe and note any co-channel users or adjacent channel interference that occurs while CTCSS decode is disabled.
5. Calculate and record the difference (if any) in decibel signal level between the two SNR readings in step b.

▶ Denotes FCC license parameter

▼ Denotes Site Standard

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Signal to Noise test setup with Directional Coupler

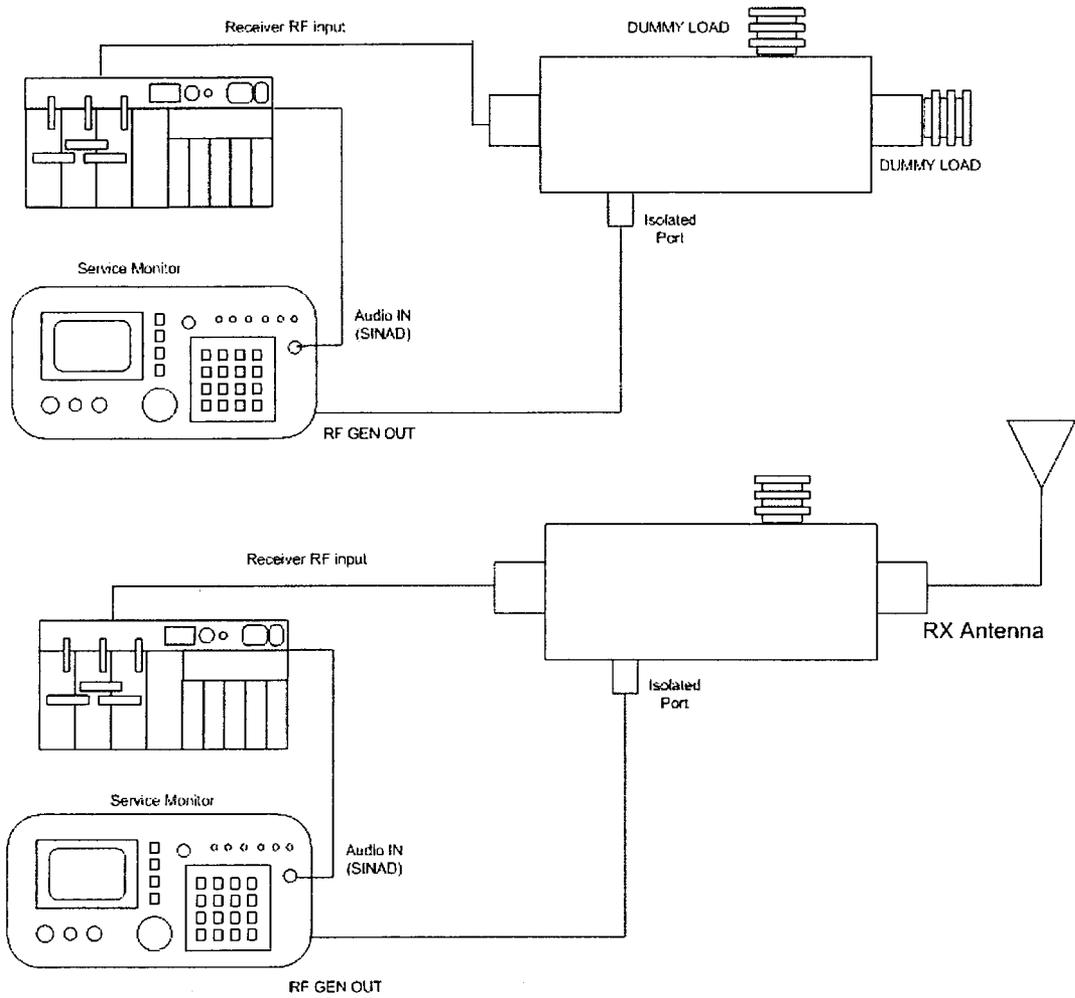


Diagram-1

RF
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II. Control / Desk-Top Base Stations (Including those associated with Dispatch Facilities) Either Harris Inc., Orion, M7100, Motorola XTL2500 or Kenwood TK5820.

A. Mechanical Inspection to Include:

1. Visual inspection of antenna and cable system from ground level with visual magnification aid. i.e. binoculars
 - a. Inspect antenna mount attachment(s)
 - b. Inspect cable attachments to mounting fixture and building facility.
 - c. Inspect for any signs of damage to exposed cable.
 - d. Inspect for loose, corroded, detached ground or bonding connections.
 - e. Check for presence of a Polyphaser ® in antenna system
 - f. Note on inspection report the specific type (s) and estimated length of feedline cable.
 - g. ► Record on inspection report the polarization of the antenna.
 - h. ► Record on inspection report the height, in feet at the tip of the antenna to nearest foot.

2. Visual of infrastructure
 - a. Inspect the antenna supporting structure for any obvious signs of wear, damage.
 - b. Inspect equipment shelter for any obvious problems such as rodents, vandalism, water leaks, and environmental controls.
 - c. Inspect ground and bonding connections between equipment and external ground field elements.
 - d. Verify presence of an earth terminal ground rod that antenna system is attached to.
 - e. Inspect wall or ceiling outlet that provides commercial power to base station.
 - f. Inspect RF cable entry port weather seal. Maintain as needed.

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3. Visual of Control / Base Station

- a. Inspect for any signs of rodent or water damage.
- b. Inspect alternating current (AC) power cord and plug.
- c. Inspect telco interconnect wiring (for remote base)
- d. Inspect Main RF cable, RF Cable stub and connector that attaches to radio. Insure mini UHF tightness.
- e. Check for presence of a test microphone at remote sites. (leave mic' removed from base at remote sites)
- f. Check physical condition of microphone at local and remote control station.
- g. Note on report if power supply is bonded to central electrical ground via electric cord. (i.e. no 3-prong adaptors)
- h. Note on report if Chassis of station is bonded to site ground
- i. **Clean inside and outside equipment as needed.**
- j. ▼ Verify presence of current FCC authorization (License)

B. Electrical Inspection to Include (Document *as found* values prior to changes or adjustment)

1. Power Supply

- a. Measure and **record** AC input voltage
- b. Measure and **record** the voltage while in standby and while transmitting.

2. Software / Firmware

- a. Read radio program file and save (until deemed unneeded) preserving any features function unique to radio
- b. **Record** configuration *file name* if unique to the radio.
- c. Update file, with appropriate configuration as provided by NHDOT.
- d. Update flash version as necessary.
- e. Harris Inc, Orion flash version OG47402.
Harris Inc, M7100 _____
Motorola, XTL 2500 as recommended by Manufacturer
Motorola, APX series as recommended by Manufacturer
- d. **Record** version replaced and version used.

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3. Transmitter (TX) measurements- Adjust as required. Document as *found* and *as corrected* values.

- a. Verify local push-to-talk (PTT) TX operation.
- a. ► Measure and record RF power output from transmitter.
- b. Calculate and record voltage standing wave ratio (VSWR) between TX and antenna cable.
- c. ► Measure and record TX voice frequency modulation (FM) deviation.
- d. ► Measure and record TX CTCSS only FM deviation.
- e. ► Measure and record error of carrier frequency of operation.
- f. Verify **remote** TX channel selection and TX PTT operation for all remote channels. (DDC-100 exempt from all remote channels requirement)
- g. Measure and record **remote** voice FM deviation level.
- h. Verify intercom operation with remote operator.

4. Receiver (RX) measurements & Scan operation

- a. Measure and record in dB RX sensitivity at antenna jack.
- b. Verify CTCSS decode, decode enable / disable operation.
- c. While CTCSS decode is disabled, over-modulate a test frequency with a 1-kHz test tone and document what level of (over) modulation the RX is unable to demodulate.
- d. Verify local and remote scan disable and enable.
- e. Verify scan, scan resume operation.
- f. Verify power-up default settings if applicable. (channel, scan, volume audio level etc.)
- g. Note any adjacent channel interference or co-channel user activity.
- h. For a remote station measure and record (in decibels) the **line out** audio level while terminated. (600 Ω)

► Denotes FCC license parameter

▼ Denotes Site Requirement

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III. Dispatch Equipment

A. Visual of infrastructure all locations

- a. Inspect 120-volt power source, check for proper electric breaker labeling and manual cutoff operation. Label if needed
- b. Inspect 12-volt power supplies and wiring for PC console, HB plus headset adaptor, and each Bosch, Telex IP-223 or IP224.
- c. Verify uninterruptible power source (UPS) operation.
(This will require pre-coordination)
- d. Inspect any & all associated premise telecommunications network wires up to local Ethernet Switch and or Fairpoint Demarcation point.

B. General Inspection of Bosch Console equipment at Lancaster, Enfield, and Bedford. (Note: Lancaster and Bedford only have IP223s and no PC)

1. Inspect PC monitor for quality and cleanliness. Correct screen justification if necessary and clean
2. Remove debris from beneath keys on keyboard.
3. Inspect physical condition and action of user controls, keys, buttons, displays, foot-switch, and microphone.
4. Remove dust and debris from on or inside equipment cabinets
This will require pre-coordination
5. Inspect condition of interconnection cabling. tie up and bundle and protect all cables as necessary

C. Electrical Measurements- Adjust as necessary

1. With 1,000 Hz test tone, measure and record in decibels (dB) the minimum audio signal level necessary to generate busy data generation on both channels of all IP-223 or IP 224. Note radio channel-name.
2. Measure and record in dB the average voice level during transmit on each wire line of each console channel.
Perform functional test with Telex test handset.
3. Measure and note presence of any direct current (DC) on leased telecommunications lines at the service providers demarcation point. Isolate NH DOT equipment if necessary.
4. Obtain IP-223 web page and verify and record revision number of firmware.
5. Update IP 223 firmware if necessary.

D. Bedford Dispatch Location (this will require two people)

1. General Inspection of 3-Channle Zetron 4010 Console equipment

- a. Inspect labels for legibility and accuracy. Correct as necessary.
- b. Remove debris from beneath keys on keyboard.
- c. Inspect physical condition and action of user controls, keys, buttons, displays, foot-switch, and microphone.
- d. Inspect for any corrosive damage to console positions.
- e. **Remove dust and debris** from inside console equipment cabinets, Personnel Computer.
- f. Inspect condition of interconnection cabling.
- g. Check clock for time accuracy (Bedford)

2. Functional Check

- a. Verify all push-to-talk (PTT) functions of console, microphone, and footswitch.
- b. Verify TX indications of both consoles and channel cards.
- c. Verify channel mute-functions.
- d. Verify all channel bank and channel selection operation.
- e. Verify any cross muting or interlock operation.
- f. Verify audio volume adjustment / settings
- g. Check reset function of each channel card.

3. Electrical Measurements- Adjust as necessary

- a. Measure and record in decibels (dB) the audio signal level necessary to generate busy indication for both channels. A & B of both console channel cards as measured on the associated telco line input. Note channel name designation.
- b. Measure and record in dB the average voice level from channels A & B of all channel cards as measured on the associated telco line.
- c. Measure and record in dB the 1-kilohertz (kHz) alert tone level generated from the console and passed through channels A & B of all Zetron channel cards or at Base station line-in as measured on the associated telco line.
- d. Measure and record in dB the audio telco line level input to the console system that is the result of a fully-quiet, over-the air 1-kHz. Direct modulation of all base radios
- e. Simulate failure for Zetron dual, 12-volt power supply. Verify Dual power supply functionality of redundancy.

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IV. (Radio) Remote Controls

1. Visual

- a. Review network topography if communications network has multiple (radio remote) control points.
- b. Inspect power source, check for proper electric breaker labeling and manual cutoff operation.
- c. Inspect ground and bonding system. Maintain as necessary and recommend improvements.
- d. Inspect interconnecting telecommunications cables and connectors.
- e. Inspect any associated premise telecommunications network wires.
- f. Check for presence of a Polyphaser® in the remote's premise telecommunications wire(s). **Note** findings
- g. Verify radio loop number is posted at service provider's demarcation point when leased service is employed. {Districts; 1,2,3,4}

2. General Inspection

- a. Check for presence of channel labels. Inspect labels for legibility and accuracy. **Correct** as necessary.
- b. Inspect physical condition and action of user controls, keys buttons, displays, indicators and microphone.
- c. Perform internal visual inspection of device.
- d. Remove dust and debris from inside equipment.
- e. Inspect condition of interconnection cabling.
- f. Inspect condition of primary (AC) power cable.

3. Functional Check

- a. Review any user concerns
- b. Verify push-to-talk (PTT) functions of remote's, buttons and microphone.
- c. Verify Transmit (TX) indication for all PTTs.
- d. Verify TX voice operation.
- e. Verify channel indication for each channel of operation.
- f. Verify channel change function for each channel of operation. (Zetron DDC 100 exempt from each and every requirement)
- g. Verify audio volume adjustment operation.
- h. Verify receive busy indicator operation.
- i. Verify monitor enable, disable and reset function
- j. Verify scan operation and indications.
- k. Verify line termination and marked bottom of device "Terminated" or "Bridged"

4. Electrical Measurements- Adjust as necessary

Note: These tasks do not apply to Remote Control, Zetron, DDC-100 or Bosch 2002

- a. Measure and record in dB the average TX voice level measured when bridged across telecommunications network.

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V. Mobile Radios

A. Mechanical Inspection to Include:

1. Visual

- a. Inspect mobile antenna MOT roof mount and O-ring. Apply silicon as needed to O-ring
- b. **Document** by photograph any alternative method of antenna installation that does not incorporate a proper antenna ground plane. (in roof mount)
- c. Inspect mobile antenna loading coil and whip
- d. Inspect complete antenna for any signs of physical, weather or ultra-violet damage. Replace applicable parts
- e. Inspect antenna RF connector for looseness proper installation.
- f. Inspect exposed portions of antenna cable for damage.
- g. Inspect main DC power wire and connectors for condition, damage or corrosion.
- h. Inspect interconnection and option cables for condition, damage or corrosion.
- i. Verify that unused slack in interconnection, power cabling, and accessory cables are not vulnerable to physical damage or corrosion. *option cable connector.
- j. Inspect for secure mounting of all radio components and accessories. Tighten or remount any component that are loose or have become uncounted.
- k. Inspect overall condition of main radio components: transceiver, control head, microphone. Note on inspection report
- l. Verify that the main power wire is fused at a practical and safe distance from point of connection to battery or pre-designated source of power. (Preferably 1-foot)
- m. Inspect radio main lead direct current (DC) ground connection for corrosion.

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B. Software / Firmware

- a. Read radio program file(s) and save (until deemed unneeded)
- b. Record present file name if unique to the radio under inspection.
- c. Program radio with latest applicable Code plug program file.
- d. Update MDC code (h-number of Vehicle) features, flash, or version as necessary or requested, preserving any features function or soft-pots unique to radio.

C. Functional Checks and Corrosion Control

1. Functional Check

- a. Verify radio is configured for "switched ignition" on -off operation. **Record** any exceptions to not working with Key per user request.
- b. Verify power -on option button.
- c. Operate all manual controls and verify proper travel and functions of user controls.
- d. Verify proper scan and monitor enable / disable with microphone.
- e. Verify microphone push-to-talk transmit indication and operation.
- f. Verify proper voice operation of microphone.
- g. Verify proper speaker operation.

2. Corrosion Control

- a. Remove any paint or corrosion inhibitor from brass MOT mount found during visual inspection.
- b. Perform any corrective action required for main DC power connection to source power.
- c. Perform any corrective action required for main DC ground up to and including re-locating ground point. Apply anti-oxide if needed.
- d. Clean external surfaces of radio components. Remove dust debris, sand or grim.

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D. Electrical Measurements

1. Direct Current (DC) voltage

- a. Verify proper voltage and current power source at point of supply. Record vehicles standby operating voltage
- b. Verify DC to DC converter output voltage & current if applicable.
- c. Verify proper ventilation for DC to DC converters.
- d. Record if DC to DC converter is configured for 24-volt 'switched ignition' operation

2. Radio Frequency measurements, ► Denotes FCC license parameter

a. Transmitter (TX) -adjust, repair or correct as necessary.

- I. ► Measure and record in watts TX RF power output.
- II. Measure, calculate and record VSWR between TX and antenna.
- III. ► Measure and record TX carrier frequency error.
- IV. ► Measure and record TX voice modulation level
- V. Insure mini UHF Connector is tightly connected when PMI is completed.

b. Receiver (RX)

- I. Measure and record in dB the level necessary to break RX critical squelch.

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VI. Portable Radios, including accessories

A. Mechanical Inspection to Include

1. Note manufacturer's model, make or trade name.
2. Inspect chassis, display, escutcheon, battery case, antenna, and carrying case and speaker microphone when applicable.
3. Inspect battery contact plating.
4. Check for portable to battery looseness
5. Inspect charger (battery) pocket for cleanliness Clean as needed
6. Record overall assessment of portable condition: New, fair, good, poor.
7. Record specific attributes that contribute to the condition such as damage, stress, cleanliness, corrosion, wear, etc.
8. Check for presence of (NHDOT) date inscription on battery case. Record date.
9. Clean items as needed. Add or Replace 16-channel label as needed

B. Test and Measurement

1. Portable Transceiver

a. Functional Check

- I. Will radio 'power up'?
- II. Will radio transmit a carrier?
- III. Will radio transmit a modulated carrier?
- IV. Will radio provide a receive indication?
- V. Will radio provide recovered receive audio?
- VI. Verify proper functions of applicable user controls
 - A. ON-Off /Volume
 - B. Channel monitor
 - C. Channel / channel bank selection
 - D. Scan, Scan channel add and delete
 - E. Hi-Low power setting
 - F. Back-Light

■ Please refer to Item #21-Scope of Services when a portable radio fails a functional check.

b. Receiver Test and Measurement

- I. Measure and record in dB the receiver sensitivity at a 50 Ω input point to the receiver.
* Alternatively a radiated sensitivity test may be employed when a suitable test input is not available. However, test and result must be repeatable.
- II. Verify proper receiver indications.
- III. Verify proper CTCSS decode.
- IV. Verify proper CTCSS decode enable and disable
- V. Verify proper Scan indication.
- VI. Verify proper Scan-receive operation.

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c. Transmit Test and Measurement-document *as found* and *as corrected* values

- I. Measure and record HI output power.
- II. Measure and record Low output power.
- III. Measure and record voice modulation level.
- IV. Measure and record CTCSS modulation level
- V. Measure & record carrier frequency error either:

2. Battery

- a. Measure and record terminal voltage after a charge time of ½-Hour.
- b. Measure and record the milli-ampere hour rating the battery achieves after a cycle test. (only if proper terminal voltage is achieved)
- c. Inscribe battery with service Month and Year (M / YR) if a new battery is deployed to NHDOT

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2016 UHF Radio Equipment Counts

District or Bureau	Repeaters	Remote	Fixed Base	Mobiles	Portables
District One	4	0	14	104	71
District Two	5	0	5	69	43
District Three	4	1	8	90	55
District Four	4	4	2	69	54
District Five	5	2	3	118	36
District Six	1	0	1	77	18
Commissioner's Office	0	0	0	2	1
Bridge Design	0	0	0	5	0
Bridge Maintenance	0	0	4	75	22
Construction	0	0	0	2	0
Highway Design	0	0	0	0	68
Mechanical Services	0	0	4	19	3
Materials Research	0	0	0	0	4
TSMO	9	0	18	2	4
Highway Maintenance	0	1	1	6	0
Aeronautics	0	0	0	1	2
Rail and Transit	0	0	0	2	3
Bureau of Turnpikes	3	4	31	81	21
Spares	6	1	2	0	0
Department Totals	41	13	93	722	406
Total Mobiles & Portables					1128

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2016 VHF Radio Equipment Schedule

District or Bureau	Fixed Base	MOBILE	PORTABLE
District One	0	3	0
District Two	0	1	0
District Three	0	3	0
District Four	0	0	0
District Five	0	4	0
District Six	0	3	2
Commissioner's Office	0	2	0
Bridge Design	0	0	0
Bridge Maintenance	3	4	15
Construction	0	0	0
Highway Design	0	0	0
Mechanical Services	0	0	0
Materials Research	0	0	0
Traffic	0	0	0
TSMO	0	2	1
Highway Maintenance	0	2	0
Aeronautics	0	1	2
Rail and Transit	0	3	3
Bureau of Turnpikes	0	1	0
Spares	1	0	0
Department Totals	4	29	23

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Aeronautics and Marine Radios

Aeronautics	Make	Model
BERLIN		DX835
COLEBROOK	KING	193
CONCORD	ICOM	A200B
CLAREMONT	ICOM	A200B
FRANCONIA	ICOM	A200B
HAMPTON	ICOM	A200B
HAVERHILL	JOHNSON	727
HILLSBORO	MENTOR	MB-10
KEENE	ICOM	A200B
JAFFREY	JOHNSON	727
LACONIA	ICOM	A200B
MOULTONBOROUGH	MENTOR	MB-10
NEWPORT	MENTOR	MB-10
PLYMOUTH	ICOM	A200B
ROCHESTER	ICOM	A200B
TWIN MOUNTAIN	KING	193
WHITEFIELD	ICOM	A200B

Marine	Make	Model
Hampton River Bridge	ICOM	IC-M502
Memorial Bridge	ICOM	IC-M502
Sara Mildred Long	ICOM	IC-M502
Crew-15 Spare	ICOM	IC-M502

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NHDOT Radio "Dispatch" Equipment Schedule per site for PMI

Lancaster District-1	Remote Base Station-1 Lancaster Office Remote Base Station-2	Remote Base Station-1 Mt Prospect, Lancaster Remote Base Station-2	No DOT console Bosch IP223 (only x2)
Enfield District-2	Remote Base Station-1 Enfield Office Remote Base Station-2	Remote Base Station-1 Moose Mountain, Hanover Remote Base Station-2	PC Console x2 Bosch C-soft
Gilford District -3	Local Base Station -1, and Local Base Station -2 Gilford Office	Remote Base Station -1 Mount Belknap, Gilford Remote Base Station -1	2-Remote Control RCN 1000
Swansey District-4	Remote Base Station-1 Swansey Office	Remote Base Station-1 Hyland Hill, Westmoreland Remote Base Station-1	2-Zetron DDC 100 2- RCN 1000
Bedford District-5	Remote Station Base-1 Bedford Office Remote Base Station-2	Remote Base Station-3	Console Zetron 4010
Durham District-6	Local Base Station -1 Durham Office		Console None
Portsmouth Bridge Maintenance	Local Base Station-1 Ranger Way Office		Console None
Portsmouth Bridge Maintenance	Remote Base Mildred Sara Long Bridge Marine Radio Base		Remote -Mic -1 Remote -Mic-1
Portsmouth Bridge Maintenance	Remote Base Station Memorial Bridge Marine Radio Base		Remote Mic-1 Zetron DDC-100
Concord Highway Maintenance	John O. Morton Building Remote Base Station-1	← No PMI called for	1-Remote Control Zetron DDC 100

Revised March 2016

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EXHIBIT-B

Section-7, Invoice and Billing Information

- I. Invoices shall be addressed as specified.
- A. All **Turnpike** related contract invoices

Mr. John Corcoran
Bureau of Turnpikes
PO box 2950
Concord, NH 03302-2950
 - B. All **Aeronautics** related contract invoices

Mrs. Tricia Lambert
Bureau of Aeronautics
PO Box 483
Concord, NH 03302-0483
 - C. **All Other contract** invoices for other Department Bureaus

Denise Markow
Bureau of TSMO – TMC
PO Box 483
Concord, NH 03302-0483
- II. Invoices shall be delivered by one of the following methods.
- A. Mailed via US postal Service
 - B. Hand delivered to Bureau of TSMO, 110 Smokey Bear Boulevard, Concord NH.
- III. Invoice(s) for all work performed from *first* day of each month to *last* day of each month shall be combined onto a single invoice. In addition to a letterhead identifying the Contractor by name, the invoice(s) shall contain the following information in a table or column format
- A. A common invoice number for all corresponding DOT work request numbers
 - B. Date of invoice
 - C. DOT work request numbers
 - D. Department **Bureau** work was performed for, as identified on DOT work request
 - E. A **basic** description of work performed with work **site** description.
 - F. Date the work was completed by Contractor
 - G. Contract cost per work request for **labor hours or unit cost**.
 - H. Cost per work request for **materials**
 - I. Contract cost per work request for round trip **travel hours**, if applicable

27.
5-10-16

- IV. The NHDOT, Bureau of TSMO, administrator shall make final determination of completeness maintenance or work action, per work order (number). Requested changes, revisions, deletion, or deferred payment (based upon incomplete work or continued system trouble) by the Department shall be handled in writing by the Administrator or their designee.
- V. Contractor shall establish a NET-30 terms for the Department
- VI. Successful Contractor shall provide *accounts receivable* contact information and any subsequent changes to that information as referenced below that includes; name, title, mailing address, e-mail, and telephone number for mailing purposes and the resolution of all invoicing discrepancies.

Contractor Contact Information

Maintenance Supervisor:

- a) Name: Evelyn French
- b) Title: Office Manager
- c) Address: PO Box 10383 Swanzey, NH 03446
- d) E-mail: Evelyn259@randrcomm.com
- e) Telephone number: 603-352-1825

Accounts Receivable:

- a) Name: Evelyn French
- b) Title: Office Manager
- c) Address: PO Box 10383 Swanzey, NH 03446
- d) E-mail: Evelyn259@randrcomm.com
- e) Telephone number: 603-352-1825

Technician:

- a) Name: James Barnes
- b) Title: Service Manager
- c) Address: PO Box 10383 Swanzey, NH 03446
- d) E-mail: Jim253@randrcomm.com
- e) Telephone number: 603-352-1825
- f) Cell Phone number: 603-209-4825

AB.
5-11-16

EXHIBIT-B
Section-1 Preventive (scheduled) Maintenance Inspections

Sub-sysytem	<u>Cost Per Unit</u>	<u># of Units</u>	<u>Total Yearly Cost</u>
Generic Repeater PMI (no site)	150.00	1	150.00
Control Stations non-dispatch	75.00	88	6600.00
Desktop Remote Controls	20.00	12	240.00
Mobile radios all vehicle types with or without DC converters	20.00	360	7200.00
Portable Radios	20.00	200	4000.00
ITS Battery System	20.00	26	520.00
Sub-Total for Yearly Preventative Maintenance (PMI)			18,710.00

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 A B
 5-10-16

EXHIBIT-B

Section-2

Dispatch Equipment Complete- per Site, Equipment Schedule, and PMI Task lists

Location	Location Detail	Site (unit) Bid Price Example \$1.11	Contractor Proposed Date DOT Work Order number
Lancaster District-1	Lancaster Office and remote site	400.00	DATE: D1DISP2016
Enfield District-2	Enfield Office and remote site	300.00	DATE: D2DISP2016
Gilford District -3	Gilford Office and remote site	300.00	DATE: D3DISP2016
Swanzey District-4	Swanzey Office and remote site	200.00	DATE: D4DISP2016
Bedford District-5	Bedford Office and Local site	300.00	DATE: D5DISP2016
Durham District-6	Durham Office only	200.00	DATE: D6DISP2016
Portsmouth Bridge Maintenance	Ranger Way Office only	200.00	DATE: BMDISP2016
Portsmouth Bridge Maintenance	Portsmouth Sara Long Bridge	300.00	DATE: SLDISP2016
Portsmouth Bridge Maintenance	Portsmouth Memorial Bridge	300.00	DATE: MBDISP2016
Dispatch yearly PMI Sub-Total This Page ▶		2500.00	

A-B
5-10-16

Repeater and Antenna System Preventive Maintenance Bid Table

Site Name and Town	Equipment & Quantity	Antenna System	Unit Price per site example \$1.11
Holden Hill, W. Stewarts Town	Ericsson Mastr III, 2 each	TX / RX Combiner	320.00
Mt Washington,	Ericsson Mastr III, 2 each	TX / RX Combiner	320.00
Mt Prospect Lancaster	Ericsson Mastr III, 1 each	Duplexer	160.00
Cannon Mountain, Franconia	Ericsson Mastr III, 3 each	TX / RX Combiner	480.00
Cardigan, Orange	Kenwood + Solar power Plant	Duplexer	160.00
Mt Belknap, Gilford	Ericsson Mastr III, 3 each	TX / RX Combiner	480.00
Mt Kearsage, Warner	Ericsson Mastr III, 3 each	TX / RX Combiner	480.00
Moose Mt, Hanover	Ericsson Mastr III, 1 each	Duplexer	160.00
Mt Ascutney, Winsor VT.	Ericsson Mastr III, 2 each	3rd Party	320.00
Mt Whittier, Tamworth	Ericsson Mastr III, 2 each	TX / RX Combiner	320.00
Pitcher Mt., Stoddard	Ericsson Mastr III, 1 each	Duplexer	160.00
Hyland Hill, Westmoreland	Ericsson Mastr III, 1 each	Duplexer	160.00
Miller Park, Peterbough	Ericsson Mastr III, 3 each	TX / RX Combiner	480.00
Warner Hill, Derry	Ericsson Mastr III, 1 each	Duplexer	160.00
Mt Uncanoonuc, Goffstown	Ericsson Mastr III, 2 each	TX / RX Combiner	320.00
Mt Uncanoonuc, Goffstown	Ericsson Mastr III, 1 each		160.00
Hackett Hill, Hooksett	Ericsson Mastr III, 1 each	TX / RX Combiner	160.00
Hackett Hill, Hooksett	Ericsson Mastr III, 1 each		160.00
Mt Bluejob, Strafford	Ericsson Mastr III, 2 each	TX / RX Combiner	320.00
Mt Bluejob, Strafford	Ericsson Mastr III, 1 each		160.00
Sub-Total for Yearly Repeater Site Preventive Maintenance Inspections ►			5440.00

A.B.
5-10-16

EXHIBIT B

SECTION - 4

TOWER ANTENNA SYSTEM INSTALLATION, REPLACEMENT, or INSPECTION

Personnel	Estimated Hours Per Year	Cost per Hour	Total Cost Per Year
Tower Climber-1	35	80.00	2800.00
Tower Climber -2	35	80.00	2800.00
Installation Technician	2	60.00	120.00
System Technician	2	80.00	160.00
Subtotal yearly cost for Antenna System Work			5880.00

Exhibit-B, Page 6 of 9

*D.B.
5-10-16*

EXHIBIT-B

Section-5 Installation Rates for Mobile Radios with Accessories (per unit)

Vehicle Type	Radio type	Estimated Number of Units Per Year	Cost per unit
Light Truck or Car	Trunk / Remote Mount	1	175.00
Light Truck or Car	Dash Mount	1	125.00
Light Truck or Car	Dual-Band / Remote	1	200.00
3-5 Ton Truck	Trunk / Remote Mount	1	175.00
Heavy Equipment 24-volt	Dash Mount w/ 24 volt converter	1	150.00
Radio removal all types	Both Dash and Remote mount	1	75.00
Sub-total yearly cost of Page-5 ▶			900.00

Accessories: Antennae, Standard Option Cables, Standard DC Power Cables, External and / or Internal Speaker(s), and Microphone(s)

A.B.
5-10-16

EXHIBIT-B

Section-6 Unscheduled Maintenance

Repairs & Misc.	Cost per Hour	Estimated number of Hours / Yearly	Estimated Yearly Total
Repeaters	75.00	56	4200.00
(Control) Base Stations	75.00	30	2250.00
Dispatch Locations	75.00	24	1800.00
Remote Controls, Telco lines	75.00	10	750.00
Mobile Radios	75.00	100	7500.00
Portable Radios	75.00	25	1875.00
Aeronautics / Marine	75.00	4	300.00
file Preparation	30.00	2	60.00
Radio Programming	30.00	8	240.00
	Price Per Night	Estimated # of Nights Yearly	Estimated Yearly Cost
Lodging	125.00	1	125.00
	Price Adjusted for Minimum Hrs & OT	Estimated number of 4-hr Callouts Yearly	Estimated Yearly Cost
Emergency Callout	112.50	2	225.00
			Yearly Cost for replacement parts
Replacement Parts	This fixed cost shall be included in your Bid		\$15,000.00
	Cost Per Hour	Estimated Yearly Hours	
Travel Rate for Vehicle	40.00	100	4000.00
	Cost Per Hour	Estimated Yearly Hours	
Travel Rate for Tech's	40.00	100	4000.00
Sub-total yearly Unscheduled Maintenance ►			42,325.00

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EXHIBIT-B

Section-7 Bid Tabulation Table

Subtotal from Section-1	Page 1 of 7	Preventive Maintenance (PMI)	18,710.00
Subtotal from Section-2	Page 2 of 7	Dispatch Preventive Maintenance	2,500.00
Subtotal from Section-3	Page 3 of 7	Repeater "Site" PMI	5,440.00
Subtotal from Section-4	Page 4 of 7	"Antenna" System Work	5,880.00
Subtotal from Section-5	Page 5 of 7	Mobile radio Installations	900.00
Subtotal from Section-6	Page 6 of 7	Unscheduled Maintenance	42,325.00
Annual contract amount, This is Your Bid			75,755.00

*A.B.
5/10/02*

EXHIBIT-C

Section-14. Insurance and Bond

To include automobile insurance in an amount not less than a combined single limit of \$ 1,000,000 (amend 14.1.1).

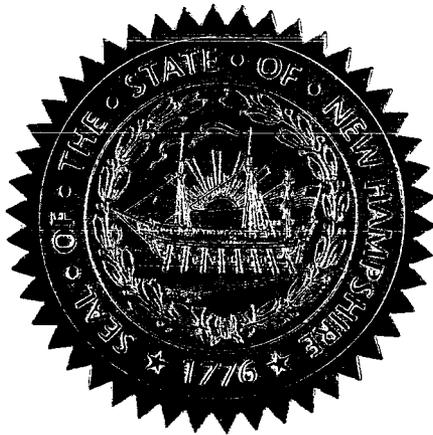
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State of New Hampshire Department of State

CERTIFICATE

I, William M. Gardner, Secretary of State of the State of New Hampshire, do hereby certify that R. & R. COMMUNICATIONS, INC. is a New Hampshire corporation duly incorporated under the laws of the State of New Hampshire on January 21, 1975. I further certify that all fees and annual reports required by the Secretary of State's office have been received and that articles of dissolution have not been filed.

In TESTIMONY WHEREOF, I hereto
set my hand and cause to be affixed
the Seal of the State of New Hampshire,
this 9th day of May, A.D. 2016



A handwritten signature in cursive script, appearing to read "William M. Gardner".

William M. Gardner
Secretary of State

CERTIFICATE OF VOTE

I, **Judith M. Barden**, Secretary of **R&R Communications, Inc.**, hereby **CERTIFY** I am the Duly Elected Secretary of R&R Communications, Inc. and that the following is a true copy of a vote taken at a meeting of the Board of Directors of said corporation duly called and held on May 10, 2016, at which meeting a quorum of the directors being present and voting, it was

“VOTED: To authorize Jeffrey A. Barden, President, to meet with officials of New Hampshire Department of Transportation including the Communications Supervisor to discuss a contract to maintain and repair all State of New Hampshire Department of Transportation radio communication equipment and to execute any and all documents, contracts and agreements regarding said services. This authorization shall remain in full force and effect from May 10, 2016 through June 30, 2016.

I further certify that said vote has not been amended or repealed and that Jeffrey A. Barden is the duly elected President of R&R Communications, Inc.

DATED this 10th day of May 2016.


Judith M. Barden, Secretary

(corporate seal)

R & R Communications, Inc.

P.O. BOX 10383 Swanzey, New Hampshire 03446

603.352.1825 800.339.1825 FAX: 603.352.5697

office@randrcomm.com



Jeffrey A. Barden – President - 35 years' experience servicing, maintaining and installing GE, Motorola, TX/RX, Kenwood and various other brands of consoles, mobiles and portables. Vega VOIP certified. Experienced tower climber. RF system design and site management.

Edward Cunningham – Technician – 47 years' experience servicing, maintaining and installing GE, Motorola, TX/RX, Kenwood and various other brands of consoles, mobiles and portables. FCC certified # PG-01-16868

James Barnes – Technician - 20+ years' experience servicing, maintaining and installing GE, Motorola, TX/RX, Kenwood and various other brands of consoles, mobiles and portables. Motorola ASTRO (APCO25) Certified. Experienced tower climber.

James Wilder – 45 years' experience servicing, maintaining and installing GE, Motorola, Kenwood and various other brands of mobiles and portables. *Certified tower climber.*

Mark LeClerc – 12+ years' – *Certified Tower Climber.*

Scott Spreadsbury – 12+ years' – *Certified Tower Climber.*

Michael Striker – Technician – 32 years' experience servicing, maintaining and installing GE, Motorola, TX/RX, Kenwood and various other brands of consoles, mobiles and portables. Motorola ASTRO (APCO25) Certified. Motorola trained. CETa Certified. Experienced tower climber.

Jackson Stone – Installer/Technician – 16 years' experience installing GE, Motorola, Kenwood and various other LMR radio equipment. Project 54 Certified.

Evelyn French – Office Manager – 38 years' experience managing day-to-day operations of the service center.

References:

Carroll Concrete, Inc.
Contact: Shaun Carroll, Jr.
Phone: 1.603.863.1000

Advanced Transit, Inc.
Contact: Chris Andreasson
Phone: 1.802.295.1824

