

A G R E E M E N T

THIS AGREEMENT is made between the **CITY AND COUNTY OF DENVER**, a municipal corporation of the State of Colorado (the “City” or “Denver”) and **MOTOROLA SOLUTIONS, INC.**, a Delaware corporation, doing business at 1301 E Algonquin Rd, Schamburg, IL 60196 (the “Contractor” or “Motorola”), collectively “the Parties.”

R E C I T A L S

A. The U.S. Department of Homeland Security (“U.S. DHS”) awarded Urban Area Security Initiative (“UASI”) grants to City that were passed through to City by various departments of the State of Colorado, most recently the Governor’s Office of Homeland Security (“OHS”).

B. The purpose of the UASI grants is to allow the Denver Urban Area to prepare for and to enhance its capacity to prevent, mitigate, respond, and recover from all incidents and if incidents occur, to improve the ability of the State and local emergency personnel to respond to them.

C. The UASI grants contemplate that City and local governments will cooperate in the purchase of emergency responder equipment, planning, conducting and evaluating exercises, establishing training, planning associated with the completion of the Urban Area Homeland Security Strategy, and management and administration associated with the implementation of the overall Urban Area Security Initiative for the benefit of the entire urban area, including non-jurisdictional areas.

D. To that end, the City and the Contractor enter into this Agreement to provide the goods and services described herein for the benefit of the Evergreen Fire Rescue Department.

The parties agree as follows:

1. COORDINATION AND LIAISON: The Contractor shall fully coordinate all services under the Agreement with the Director of the Mayor’s Office of Emergency Management and Homeland Security (“Director”), or, the Director’s Designee.

2. SERVICES TO BE PERFORMED:

a. As the Director directs, the Contractor shall diligently undertake, perform, and complete all of the services and produce all the deliverables set forth in the VHF Radio System Upgrade Evergreen Fire Rescue System Specifications, the Scope of Work, **Exhibit A**, to the City’s satisfaction. The Contractor is ready, willing, and able to provide the services required by this Agreement.

b. The Contractor shall faithfully perform the services in accordance with the standards of care, skill, training, diligence, and judgment provided by highly competent individuals performing services of a similar nature to those described in the Agreement and in accordance with the terms of the Agreement.

3. **TERM:** The Agreement will commence on March 27, 2013 and will expire on May 31, 2014 (the “Term”). Subject to the Director’s prior written authorization, the Contractor shall complete any work in progress as of the expiration date and the Term of the Agreement will extend until the work is completed or earlier terminated by the Director.

4. **COMPENSATION AND PAYMENT:**

a. **Fee:** The City shall pay and the Contractor shall accept as the sole compensation for products delivered, services rendered and costs incurred under the Agreement amounts not to exceed \$543,729.49. Amounts billed may not exceed the amounts or rates set forth in **Exhibit B**, 6934 Final Pricing 11-27-12.

b. **Reimbursable Expenses:** There are no reimbursable expenses allowed under the Agreement. All of the Contractor’s expenses are contained in the rates in Exhibit A.

c. **Invoicing:** Contractor shall provide the City with a monthly invoice in a format and with a level of detail acceptable to the City including all supporting documentation required by the City. The City’s Prompt Payment Ordinance, §§ 20-107 to 20-118, D.R.M.C., applies to invoicing and payment under this Agreement.

d. **Maximum Contract Amount:**

(1) Notwithstanding any other provision of the Agreement, the City’s maximum payment obligation will not exceed **FIVE HUNDRED FORTY THREE THOUSAND AND SEVEN HUNDRED AND TWENTY NINE DOLLARS AND forty-nine cents** (\$543,729.49) (the “Maximum Contract Amount”). The City is not obligated to execute an Agreement or any amendments for any further services, including any services performed by Contractor beyond that specifically described in **Exhibits A and B**. Any services performed beyond those in **Exhibit A and B** are performed at Contractor’s risk and without authorization under the Agreement.

(2) The City’s payment obligation, whether direct or contingent, extends only to funds appropriated annually by the Denver City Council, paid into the Treasury of the City, and encumbered for the purpose of the Agreement. The City does not by the Agreement irrevocably pledge present cash reserves for payment or performance in future fiscal years. The Agreement does not and is not intended to create a multiple-fiscal year direct or indirect debt or financial obligation of the City.

5. **STATUS OF CONTRACTOR:** The Contractor is an independent contractor retained to perform professional or technical services for limited periods of time. Neither the Contractor nor any of its employees are employees or officers of the City under Chapter 18 of the Denver Revised Municipal Code, or for any purpose whatsoever

6. TERMINATION:

a. The City has the right to terminate the Agreement with cause upon written notice effective immediately, and without cause upon twenty (20) days prior written notice to the Contractor. However, nothing gives the Contractor the right to perform services under the Agreement beyond the time when its services become unsatisfactory to the Director. In the event of a claim for termination based on cause, the Contractor shall have twenty-one calendar days to cure any default alleged in performance after written notice of the default.

b. Notwithstanding the preceding paragraph, the City may terminate the Agreement if the Contractor or any of its officers or employees are convicted, plead nolo contendere, enter into a formal agreement in which they admit guilt, enter a plea of guilty or otherwise admit culpability to criminal offenses of bribery, kick backs, collusive bidding, bid-rigging, antitrust, fraud, undue influence, theft, racketeering, extortion or any offense of a similar nature in connection with Contractor's business. Termination for the reasons stated in this paragraph is effective upon receipt of notice.

c. Upon termination of the Agreement, with or without cause, the Contractor shall have no claim against the City by reason of, or arising out of, incidental or relating to termination, except for compensation for work duly requested and satisfactorily performed as described in the Agreement and for termination without cause, the reasonable agreed upon costs and expenses that Contractor has incurred as a result of the early termination of the Agreement such as fees associated with cancelation of the subcontracts and restocking fees.

d. If the Agreement is terminated, the City is entitled to and will take possession of all materials, equipment, tools and facilities it owns that are in the Contractor's possession, custody, or control by whatever method the City deems expedient. The Contractor shall deliver all documents in any form that were prepared under the Agreement and all other items, materials and documents that have been paid for by the City to the City. These documents and materials are the property of the City. The Contractor shall mark all copies of work product that are incomplete at the time of termination "DRAFT-INCOMPLETE."

7. EXAMINATION OF RECORDS: Any authorized agent of the City, including the City Auditor or his or her representative, has the right to access and the right to examine any pertinent books, documents, papers and records of the Contractor, involving transactions related to the Agreement until the latter of three (3) years after the final payment under the Agreement or expiration of the applicable statute of limitations.

8. WHEN RIGHTS AND REMEDIES NOT WAIVED: In no event will any payment or other action by the City constitute or be construed to be a waiver by the City of any breach of covenant or default that may then exist on the part of the Contractor. No payment, other action, or inaction by the City when any breach or default exists will impair or prejudice any right or remedy available to it with respect to any breach or default. No assent, expressed or implied, to any breach of any term of the Agreement constitutes a waiver of any other breach.

9. INSURANCE:

a. **General Conditions:** Contractor agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Contractor shall keep the required insurance coverage in force at all times during the term of the Agreement, or any extension thereof, during any warranty period. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as “A-”VIII or better. Contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the parties identified in the Notices section by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s) and referencing the City’s contract number. Contractor shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

b. **Proof of Insurance:** Contractor shall provide a copy of this Agreement to its insurance agent or broker. Contractor may not commence services or work relating to the Agreement prior to placement of coverage. Contractor certifies that the certificate of insurance attached as Exhibit D, preferably an ACORD certificate, complies with all insurance requirements of this Agreement. The City requests that the City’s contract number be referenced on the Certificate. The City’s acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor’s breach of this Agreement or of any of the City’s rights or remedies under this Agreement. The City’s Risk Management Office may require additional proof of insurance, including but not limited to policies and endorsements.

c. **Additional Insureds:** For Commercial General Liability, Auto, Contractor and subcontractor’s insurer(s) shall include the City and County of Denver, its elected and appointed officials, and employees as additional insured.

d. **Waiver of Subrogation:** Under the workmen’s compensation policy, Contractor’s insurer shall waive subrogation rights against the City.

e. **Subcontractors and Subconsultants:** Similar subcontractors and subconsultants (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) shall be subject to all of the requirements herein and shall procure and maintain the similar coverages required of the Contractor. Contractor shall include all such subcontractors as additional insured under its policies (with the exception of Workers’ Compensation) or shall ensure that all such subcontractors and subconsultants maintain the required coverages. Contractor agrees to provide proof of insurance for all such subcontractors and subconsultants upon request by the City.

f. **Workers’ Compensation/Employer’s Liability Insurance:** Contractor shall maintain the coverage as required by statute for each work location and shall maintain

Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims. Contractor expressly represents to the City, as a material representation upon which the City is relying in entering into this Agreement, that none of the Contractor's officers or employees who may be eligible under any statute or law to reject Workers' Compensation Insurance shall effect such rejection during any part of the term of this Agreement, and that any such rejections previously effected, have been revoked as of the date Contractor executes this Agreement.

g. Commercial General Liability: Contractor shall maintain a Commercial General Liability insurance policy with limits of \$1,000,000 for each occurrence, \$1,000,000 for each personal and advertising injury claim, and \$4,000,000 policy aggregate.

h. Business Automobile Liability: Contractor shall have in place coverage for automobiles through its primary policies.

i. Additional Provisions:

(a) For Commercial General Liability and Excess Liability, the policies must provide the following:

- (i) That this Agreement is an Insured Contract under the policy;
- (ii) Defense costs are in excess of policy limits;
- (iii) A severability of interests or separation of insureds provision (no insured vs. insured exclusion); and
- (iv) A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City.

(b) For claims-made coverage:

- (i) The retroactive date must be on or before the contract date or the first date when any goods or services were provided to the City, whichever is earlier

(c) Contractor shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limits. At their own expense, and where such general aggregate or other aggregate limits have been reduced below the required per occurrence limit, the Contractor will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage is in force.

10. DEFENSE AND INDEMNIFICATION:

a. Contractor hereby agrees to defend, indemnify, reimburse and hold harmless City, its appointed and elected officials, agents and employees for, from and against all liabilities, claims, judgments, suits or demands for damages to persons or property arising out of, resulting from, or relating to the work performed under this Agreement ("Claims") by or through the Contractor, unless such Claims have been specifically determined by the trier of fact to be the

negligence or willful misconduct of the City. This indemnity shall be interpreted in the broadest possible manner to indemnify City for any acts or omissions of Contractor or its subcontractors either passive or active, irrespective of fault, including City's concurrent negligence whether active or passive, except for the negligence or willful misconduct of City.

b. Contractor's duty to defend and indemnify City shall arise at the time written notice of the Claim is first provided to City regardless of whether Claimant has filed suit on the Claim. Contractor's duty to defend and indemnify City shall arise even if City is the only party sued by claimant and/or claimant alleges that City's negligence or willful misconduct was the sole cause of claimant's damages.

c. Contractor will defend any and all Claims which may be brought or threatened against City and will pay on behalf of City any expenses incurred by reason of such Claims including, but not limited to, court costs and attorney fees incurred in defending and investigating such Claims or seeking to enforce this indemnity obligation. Such payments on behalf of City shall be in addition to any other legal remedies available to City and shall not be considered City's exclusive remedy.

d. Insurance coverage requirements specified in this Agreement shall in no way lessen or limit the liability of the Contractor under the terms of this indemnification obligation. The Contractor shall obtain, at its own expense, any additional insurance that it deems necessary for the City's protection.

e. This defense and indemnification obligation shall survive the expiration or termination of this Agreement.

11. TAXES, CHARGES AND PENALTIES: The City is not liable for the payment of taxes, late charges or penalties of any nature, except for any additional amounts that the City may be required to pay under the City's prompt payment ordinance D.R.M.C. § 20-107, et seq. The Contractor shall promptly pay when due, all taxes, bills, debts and obligations it incurs performing the services under the Agreement and shall not allow any lien, mortgage, judgment or execution to be filed against City property

12. ASSIGNMENT; SUBCONTRACTING: The Parties acknowledge that the Evergreen fire and Rescue Department will be assigned all of the beneficial use under this Agreement at Final Acceptance of the project. In such event Evergreen Fire and Rescue will assume all of the rights, title and obligations under this Agreement. The Contractor shall not voluntarily or involuntarily assign any of its rights or obligations, or subcontract performance obligations, under this Agreement without obtaining the Director's prior written consent. Any assignment or subcontracting without such consent will be ineffective and void, and shall be cause for termination of this Agreement by the City. The Director has sole and absolute discretion whether to consent to any assignment or subcontracting, or to terminate the Agreement because of unauthorized assignment or subcontracting. In the event of any subcontracting or unauthorized assignment: (i) the Contractor shall remain responsible to the City; and (ii) no contractual relationship shall be created between the City and any sub-consultant, subcontractor or assign. Notwithstanding the foregoing, Motorola may assign this Agreement to any of its

affiliates or its right to receive payment without the prior consent of the City. In addition, if Motorola separates one or more of its businesses, whether by way of a sale, establishment of a joint venture, spin off or otherwise, Motorola may, without the prior written consent of the City assign this Agreement such that it will continue to benefit the separated business and its affiliates following the separation event.

13. INUREMENT: The rights and obligations of the parties to the Agreement inure to the benefit of and shall be binding upon the parties and their respective successors and assigns, provided assignments are consented to in accordance with the terms of the Agreement.

14. NO THIRD PARTY BENEFICIARY: Enforcement of the terms of the Agreement and all rights of action relating to enforcement are strictly reserved to the parties. Nothing contained in the Agreement gives or allows any claim or right of action to any third person or entity. Any person or entity other than the City or the Contractor receiving services or benefits pursuant to the Agreement is an incidental beneficiary only.

15. NO AUTHORITY TO BIND CITY TO CONTRACTS: The Contractor lacks any authority to bind the City on any contractual matters. Final approval of all contractual matters that purport to obligate the City must be executed by the City in accordance with the City's Charter and the Denver Revised Municipal Code.

16. SEVERABILITY: Except for the provisions of the Agreement requiring appropriation of funds and limiting the total amount payable by the City, if a court of competent jurisdiction finds any provision of the Agreement or any portion of it to be invalid, illegal, or unenforceable, the validity of the remaining portions or provisions will not be affected, if the intent of the parties can be fulfilled.

17. CONFLICT OF INTEREST:

a. No employee of the City shall have any personal or beneficial interest in the services or property described in the Agreement. The Contractor shall not hire, or contract for services with, any employee or officer of the City that would be in violation of the City's Code of Ethics, D.R.M.C. §2-51, et seq. or the Charter §§ 1.2.8, 1.2.9, and 1.2.12.

b. The Contractor shall not engage in any transaction, activity or conduct that would result in a conflict of interest under the Agreement. The Contractor represents that it has disclosed any and all current or potential conflicts of interest. A conflict of interest shall include transactions, activities or conduct that would affect the judgment, actions or work of the Contractor by placing the Contractor's own interests, or the interests of any party with whom the Contractor has a contractual arrangement, in conflict with those of the City. The City, in its sole discretion, will determine the existence of a conflict of interest and may terminate the Agreement in the event it determines a conflict exists, after it has given the Contractor written notice describing the conflict.

18. NOTICES: All notices required by the terms of the Agreement must be hand delivered, sent by overnight courier service, mailed by certified mail, return receipt requested, or mailed via United States mail, postage prepaid, if to Contractor at the address first above written, and if to the City at:

City and County of Denver
Mayor's Office of Emergency Management Homeland Security
Program Administrator - Denver UASI
1437 Bannock Street Room 3
Denver, Colorado 80202
Attn: Lin Bonesteel

With copies of notices to:

Office of the Mayor
1437 Bannock Street, Room 350
Denver, Colorado 80202

Denver City Attorney's Office
1437 Bannock Street, Room 353
Denver, Colorado 80202

Notices hand delivered or sent by overnight courier are effective upon delivery. Notices sent by certified mail are effective upon receipt. Notices sent by mail are effective upon deposit with the U.S. Postal Service. The parties may designate substitute addresses where or persons to whom notices are to be mailed or delivered. However, these substitutions will not become effective until actual receipt of written notification.

19. NO EMPLOYMENT OF ILLEGAL ALIENS TO PERFORM WORK UNDER THE AGREEMENT:

a. This Agreement is subject to Division 5 of Article IV of Chapter 20 of the Denver Revised Municipal Code, and any amendments (the "Certification Ordinance").

b. The Contractor certifies that:

- (1) At the time of its execution of this Agreement, it does not knowingly employ or contract with an illegal alien who will perform work under this Agreement.
- (2) It will participate in the E-Verify Program, as defined in § 8-17.5-101(3.7), C.R.S., to confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement.

c. The Contractor also agrees and represents that:

- (1) It shall not knowingly employ or contract with an illegal alien to perform work under the Agreement.

- (2) It shall not enter into a contract with a sub-consultant or subcontractor that fails to certify to the Contractor that it shall not knowingly employ or contract with an illegal alien to perform work under the Agreement.
- (3) It has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement, through participation in either the E-Verify Program.
- (4) It is prohibited from using either the E-Verify Program procedures to undertake pre-employment screening of job applicants while performing its obligations under the Agreement, and that otherwise requires the Contractor to comply with any and all federal requirements related to use of the E-Verify Program including, by way of example, all program requirements related to employee notification and preservation of employee rights.
- (5) If it obtains actual knowledge that a sub-consultant or subcontractor performing work under the Agreement knowingly employs or contracts with an illegal alien, it will notify such sub-consultant or subcontractor and the City within three (3) days. The Contractor will also then terminate such sub-consultant or subcontractor if within three (3) days after such notice the sub-consultant or subcontractor does not stop employing or contracting with the illegal alien, unless during such three-day period the sub-consultant or subcontractor provides information to establish that the sub-consultant or subcontractor has not knowingly employed or contracted with an illegal alien.
- (6) It will comply with any reasonable request made in the course of an investigation by the Colorado Department of Labor and Employment under authority of § 8-17.5-102(5), C.R.S., or the City Auditor, under authority of D.R.M.C. 20-90.3.

d. The Contractor is liable for any violations as provided in the Certification Ordinance. If Contractor violates any provision of this section or the Certification Ordinance, the City may terminate this Agreement for a breach of the Agreement. If the Agreement is so terminated, the Contractor shall be liable for actual and consequential damages to the City. Any such termination of a contract due to a violation of this section or the Certification Ordinance may also, at the discretion of the City, constitute grounds for disqualifying Contractor from submitting bids or proposals for future contracts with the City.

20. DISPUTES: All disputes between the City and Contractor arising out of or regarding the Agreement will be resolved by administrative hearing pursuant to the procedure established by D.R.M.C. § 56-106(b)-(f). For the purposes of that administrative procedure, the City official rendering a final determination shall be the Director as defined in this Agreement. Either party may pursue the issue in the event of an adverse ruling.

21. GOVERNING LAW; VENUE: The Agreement will be construed and enforced in accordance with applicable federal law, the laws of the State of Colorado, and the Charter, Revised Municipal Code, ordinances, regulations and Executive Orders of the City and County of Denver, which are expressly incorporated into the Agreement. Unless otherwise specified, any

reference to statutes, laws, regulations, charter or code provisions, ordinances, executive orders, or related memoranda, includes amendments or supplements to same. Venue for any legal action relating to the Agreement will be in the District Court of the State of Colorado, Second Judicial District.

22. NO DISCRIMINATION IN EMPLOYMENT: In connection with the performance of work under the Agreement, the Contractor may not refuse to hire, discharge, promote or demote, or discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender variance, marital status, or physical or mental disability. The Contractor shall insert the foregoing provision in all subcontracts.

23. COMPLIANCE WITH ALL LAWS: Contractor shall perform or cause to be performed all services in full compliance with all applicable laws, rules, regulations and codes of the United States, the State of Colorado; and with the Charter, ordinances, rules, regulations and Executive Orders of the City and County of Denver.

24. LEGAL AUTHORITY: Contractor represents and warrants that it possesses the legal authority, pursuant to any proper, appropriate and official motion, resolution or action passed or taken, to enter into the Agreement. Each person signing and executing the Agreement on behalf of Contractor represents and warrants that he has been fully authorized by Contractor to execute the Agreement on behalf of Contractor and to validly and legally bind Contractor to all the terms, performances and provisions of the Agreement. The City shall have the right, in its sole discretion, to either temporarily suspend or permanently terminate the Agreement if there is a dispute as to the legal authority of either Contractor or the person signing the Agreement to enter into the Agreement.

25. NO CONSTRUCTION AGAINST DRAFTING PARTY: The parties and their respective counsel have had the opportunity to review the Agreement, and the Agreement will not be construed against any party merely because any provisions of the Agreement were prepared by a particular party.

26. ORDER OF PRECEDENCE: In the event of any conflicts between the language of the Agreement and the exhibits, the language of the Agreement controls.

27. INTELLECTUAL PROPERTY RIGHTS: SEE ATTACHED SOFTWARE LICENSE AGREEMENT, EXHIBIT D, INCORPORATED HEREIN.

28. SURVIVAL OF CERTAIN PROVISIONS: The terms of the Agreement and any exhibits and attachments that by reasonable implication contemplate continued performance, rights, or compliance beyond expiration or termination of the Agreement survive the Agreement and will continue to be enforceable. Without limiting the generality of this provision, the Contractor's obligations to provide insurance and to indemnify the City will survive for a period equal to any and all relevant statutes of limitation, plus the time necessary to fully resolve any claims, matters, or actions begun within that period.

29. ADVERTISING AND PUBLIC DISCLOSURE: The Contractor shall not include any reference to the Agreement or to services performed pursuant to the Agreement in any of the Contractor's advertising or public relations materials without first obtaining the written approval of the Director. Any oral presentation or written materials related to services performed under the Agreement will be limited to services that have been accepted by the City. The Contractor

shall notify the Director in advance of the date and time of any presentation. Nothing in this provision precludes the transmittal of any information to City officials.

30. CITY EXECUTION OF AGREEMENT: The Agreement will not be effective or binding on the City until it has been fully executed by all required signatories of the City and County of Denver, and if required by Charter, approved by the City Council.

31. AGREEMENT AS COMPLETE INTEGRATION-AMENDMENTS: The Agreement is the complete integration of all understandings between the parties as to the subject matter of the Agreement. No prior, contemporaneous or subsequent addition, deletion, or other modification has any force or effect, unless embodied in the Agreement in writing. No oral representation by any officer or employee of the City at variance with the terms of the Agreement or any written amendment to the Agreement will have any force or effect or bind the City.

32. USE, POSSESSION OR SALE OF ALCOHOL OR DRUGS: The Contractor shall cooperate and comply with the provisions of Executive Order 94 and its Attachment A concerning the use, possession or sale of alcohol or drugs. Violation of these provisions or refusal to cooperate with implementation of the policy can result in contract personnel being barred from City facilities and from participating in City operations.

33. COUNTERPARTS OF THE AGREEMENT: The Agreement may be executed in counterparts, each of which is an original and constitute the same instrument.

34. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS: Contractor consents to the use of electronic signatures by the City. The Agreement, and any other documents requiring a signature hereunder, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Agreement solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Agreement in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

35. FREIGHT, TITLE, AND RISK OF LOSS: Motorola will pre-pay and add all freight charges to the invoices. Title to the equipment will pass to City upon shipment. Title to software will not pass to City at any time. Risk of loss will pass to City upon final acceptance of the equipment to the City. Motorola will pack and ship all equipment in accordance with good commercial practices.

36. SYSTEM ACCEPTANCE

a. Motorola will provide to City at least ten days notice before the Acceptance Tests commence. System testing will occur only in accordance with the Acceptance Test Plan.

b. System Acceptance will occur upon successful completion of the Acceptance Tests. Upon System Acceptance, the Parties will memorialize this event by promptly executing a System Acceptance Certificate. If the Acceptance Test Plan includes separate tests for individual Subsystems or phases of the System, acceptance of the individual Subsystem or phase will occur upon the successful completion of the Acceptance Tests for the Subsystem or phase,

and the Parties will promptly execute an acceptance certificate for the Subsystem or phase. If City believes the System has failed the completed Acceptance Tests, City will provide to Motorola a written notice that includes the specific details of the failure. If City does not provide to Motorola a failure notice within thirty days after completion of the Acceptance Tests, System Acceptance will be deemed to have occurred as of the completion of the Acceptance Tests. Minor omissions or variances in the System that do not materially impair the operation of the System as a whole will not postpone System Acceptance or Subsystem acceptance, but will be corrected according to a mutually agreed schedule.

c. City acknowledges that Motorola's ability to perform its implementation and testing responsibilities may be impeded if City begins using the System before System Acceptance. Therefore, City will not commence Beneficial Use before System Acceptance without Motorola's prior written authorization, which will not be unreasonably withheld. Motorola is not responsible for System performance deficiencies that occur during unauthorized Beneficial Use. Upon commencement of Beneficial Use, City assumes responsibility for the use and operation of the System.

d. Final Project Acceptance will occur after System Acceptance when all deliverables and other work have been completed. When Final Project Acceptance occurs, the parties will promptly memorialize this final event by so indicating on the System Acceptance Certificate.

37. REPRESENTATIONS AND WARRANTIES

a. Motorola represents that the System will perform in accordance with the specifications set forth in the exhibits in all material respects. Upon System Acceptance or Beneficial Use, whichever occurs first, this System functionality representation is fulfilled. Motorola is not responsible for System performance deficiencies that are caused by ancillary equipment not furnished by Motorola which is attached to or used in connection with the System or for reasons or parties beyond Motorola's control, such as natural causes; the construction of a building that adversely affects the microwave path reliability or radio frequency (RF) coverage; the addition of frequencies at System sites that cause RF interference or intermodulation; or City changes to load usage or configuration outside the Specifications.

b. The Warranty Period is one year from the date of System Acceptance or Beneficial Use, whichever occurs first. During the Warranty Period, Motorola warrants that the equipment under normal use and service will be free from material defects in materials and workmanship. If System Acceptance is delayed beyond six months after shipment of the equipment by events or causes within City's control, this warranty expires eighteen months after the shipment of the Equipment.

c. During the Warranty Period, Motorola warrants the Motorola Software in accordance with the terms of the Software License Agreement and the provisions of this Section 37 that are applicable to the Motorola Software. If System Acceptance is delayed beyond six months after shipment of the Motorola Software by events or causes within City's control, this warranty expires eighteen months after the shipment of the Motorola Software.

d. These warranties do not apply to: (i) defects or damage resulting from: use of the equipment or Motorola software in other than its normal, customary, and authorized manner; accident, liquids, neglect, or acts of God; testing, maintenance, disassembly, repair, installation, alteration, modification, or adjustment not provided or authorized in writing by Motorola; City's failure to comply with all applicable industry and OSHA standards; (ii) breakage of or damage to antennas unless caused directly by defects in material or workmanship; (iii) equipment that has had the serial number removed or made illegible; (iv) batteries (because they carry their own separate limited warranty) or consumables; (v) freight costs to ship equipment to the repair depot; (vi) scratches or other cosmetic damage to equipment surfaces that does not affect the operation of the equipment; and (vii) normal or customary wear and tear.

e. To assert a warranty claim, City must notify Motorola in writing of the claim before the expiration of the Warranty Period. Upon receipt of this notice, Motorola will investigate the warranty claim. If this investigation confirms a valid warranty claim, Motorola will (at its option and at no additional charge to City) repair the defective equipment or Motorola software, replace it with the same or equivalent product, or refund the price of the equipment or Motorola software. That action will be the full extent of Motorola's liability for the warranty claim. If this investigation indicates the warranty claim is not valid, then Motorola may invoice City for responding to the claim on a time and materials basis using Motorola's then current labor rates. Repaired or replaced product is warranted for the balance of the original applicable warranty period. All replaced products or parts will become the property of Motorola.

f. These express limited warranties are extended by Motorola to the original user purchasing the System for commercial, industrial, or governmental use only, and are not assignable or transferable, except to the Evergreen Fire/Rescue Department

g. THESE WARRANTIES ARE THE COMPLETE WARRANTIES FOR THE EQUIPMENT AND MOTOROLA SOFTWARE PROVIDED UNDER THIS AGREEMENT AND ARE GIVEN IN LIEU OF ALL OTHER WARRANTIES. MOTOROLA DISCLAIMS ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

38. DELAYS: Neither Party will be liable for its non-performance or delayed performance if caused by a Force Majeure. A Party that becomes aware of a Force Majeure that will significantly delay performance will notify the other Party promptly (but in no event later than fifteen days) after it discovers the Force Majeure. If a Force Majeure occurs, the Parties will execute a change order to extend the Performance Schedule for a time period that is reasonable under the circumstances.

39. PERFORMANCE SCHEDULE DELAYS CAUSED BY CITY: If City is solely responsible for (including its other contractors) delays in the Performance Schedule, it will make the promised payments according to the Payment Schedule as if no delay occurred; and the Parties will execute a change order to extend the Performance.

40. LIMITATION OF LIABILITY: Except for personal injury or death, Motorola's total liability, whether for breach of contract, warranty, negligence, strict liability in

tort, or otherwise, will be limited to the direct damages recoverable under law, but not to exceed the Contract Price or insurance coverages, whichever is greater. ALTHOUGH THE PARTIES ACKNOWLEDGE THE POSSIBILITY OF SUCH LOSSES OR DAMAGES, THEY AGREE THAT MOTOROLA WILL NOT BE LIABLE FOR ANY COMMERCIAL LOSS; INCONVENIENCE; LOSS OF USE, TIME, DATA, GOOD WILL, REVENUES, PROFITS OR SAVINGS; OR OTHER SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO OR ARISING FROM THIS AGREEMENT, THE SALE OR USE OF THE EQUIPMENT OR SOFTWARE, OR THE PERFORMANCE OF SERVICES BY MOTOROLA PURSUANT TO THIS AGREEMENT. This limitation of liability provision survives the expiration or termination of the Agreement and applies notwithstanding any contrary provision.

41. COMPLIANCE WITH APPLICABLE LAWS. Each Party will comply with all applicable federal, state, and local laws, regulations and rules concerning the performance of this Agreement or use of the System. City will obtain and comply with all Federal Communications Commission ("FCC") licenses and authorizations required for the installation, operation and use of the System before the scheduled installation of the Equipment. Although Motorola might assist City in the preparation of its FCC license applications, neither Motorola nor any of its employees is an agent or representative of City in FCC or other matters.

42. BONDING REQUIREMENTS: The Payment and Performance Bond required in this Section must be issued by a corporate surety authorized to do business in the State of Colorado and approved by the Mayor, the Manager of Safety and the Office of the City Attorney. Contractor shall pay for and furnish a corporate surety payment and performance bond as a guarantee of the faithful performance of the Agreement (the "Bond"). The Bond shall be in the amount of not less than THREE HUNDRED THOUSAND DOLLARS and no/100 Dollars (\$300,000.00) which, when executed by the Contractor and surety, shall be a guarantee for the faithful performance and completion of the Contractor's obligations in strict accordance with the terms of this Agreement. The Bond shall be substantially in the form contained in Exhibit E. The fully executed and approved Bond shall be provided within thirty (30) days of the Contract Effective Date.

- EXHIBIT A SCOPE OF WORK
- EXHIBIT B-PRICING
- EXHIBIT C-SOFTWARE LICENSE AGREEMENT
- EXHIBIT D CERTIFICATE OF INSURANCE
- EXHIBIT E BOND

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EXHIBIT A
SCOPE OF WORK

EXHIBIT E

CITY AND COUNTY OF DENVER

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____

_____,
a corporation organized and existing under and by virtue of the laws of the State of _____,
hereafter referred to as the "Contractor", and _____,
a corporation organized and existing under and by virtue of the laws of the State of _____,
and authorized to transact business in the State of Colorado, as Surety, are held and firmly bound

unto the CITY AND COUNTY OF DENVER, a municipal corporation of the State of Colorado,
hereinafter referred to as the "City", in the penal sum of _____

_____ Dollars (\$ _____),
lawful money of the United States of America, for the payment of which sum, well and truly to
be made, we bind ourselves and our heirs, executors, administrators, successors and assigns,
jointly and severally, firmly by these presents;

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bounden Contractor has entered into a written contract with the aforesaid
City for furnishing all labor and tools, supplies, equipment, superintendence, materials and
everything necessary for and required to do, perform and complete the construction of
CONTRACT NO. «CONTRACT_NO» «PROJECT_NAME», Denver, Colorado, and has
bound itself to complete the project within the time or times specified or pay liquidated damages,
all as designated, defined and described in the said Contract and Conditions thereof, and in
accordance with the Plans and Technical Specifications therefore, a copy of said Contract being
made a part hereof;

NOW, THEREFORE, if the said Contractor shall and will, in all particulars well and truly and
faithfully observe, perform and abide by each and every Covenant, Condition and part of said
Contract, and the Conditions, Technical Specifications, Plans, and other Contract Documents
thereto attached, or by reference made a part thereof and any alterations in and additions thereto,
according to the true intent and meaning in such case, then this obligation shall be and become
null and void; otherwise, it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor shall satisfy all claims and demands incurred
by the Contractor in the performance of said Contract, and shall fully indemnify and save
harmless the City from all damages, claims, demands, expense and charge of every kind
(including claims of patent infringement) arising from any act, omission, or neglect of said
Contractor, its agents, or employees with relation to said work; and shall fully reimburse and
repay to the City all costs, damages, and expenses which it may incur in making good any

default based upon the failure of the Contractor to fulfill its obligation to furnish maintenance, repairs or replacements for the full guarantee period provided in the Contract Documents, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if said Contractor shall at all times promptly make payments of all amounts lawfully due to all persons supplying or furnishing it or its subcontractors with labor and materials, rental machinery, tools or equipment used or performed in the prosecution of work provided for in the above Contract and that if the Contractor will indemnify and save harmless the City for the extent of any and all payments in connection with the carrying out of such Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor fails to duly pay for any labor, materials, team hire, sustenance, provisions, provender, gasoline, lubricating oils, fuel oils, grease, coal, or any other supplies or materials used or consumed by said Contractor or its subcontractors in performance of the work contracted to be done, or fails to pay any person who supplies rental machinery, tools or equipment, all amounts due as the result of the use of such machinery, tools or equipment in the prosecution of the work, the Surety will pay the same in any amount not exceeding the amount of this obligation, together with interest as provided by law;

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to contracts with others in connection with this project, or the work to be performed thereunder, or the Technical Specifications and Plans accompanying the same, shall in any way affect its obligation on this bond and it does hereby waive notice of any change, extension of time, alteration or addition to the terms of the Contract, or contracts, or to the work, or to the Technical Specifications and Plans.

IN WITNESS WHEREOF, said Contractor and said Surety have executed these presents as of this _____ day of _____, 20__.

Attest:

Secretary

Contractor

By: _____

President

Surety

By: _____

Attorney-In-Fact

(Accompany this bond with Attorney-in-Fact's authority from the Surety to execute bond, certified to include the date of the bond).

APPROVED AS TO FORM:
Attorney for the City and County of
Denver

By: _____
Assistant City Attorney

APPROVED FOR THE CITY AND
COUNTY OF DENVER

By: _____
MAYOR

By: _____
MANAGER OF SAFETY



**PERFORMANCE AND PAYMENT BOND
SURETY AUTHORIZATION**

22 (SAMPLE)

FAX NUMBER: 720-913-3183
TELEPHONE NUMBER: 720-913-3267

Assistant City Attorney
201 W. Colfax Ave. Dept 1207
Denver, Colorado 80202

RE: (Company name)

Contract No: «Contract_No»

Project Name: «Project_Name»

Contract Amount:

Performance and Payment Bond No.:

Dear Assistant City Attorney,

The Performance and Payment Bonds covering the above captioned project were executed by this agency, through

_____ insurance
company, on _____, 20__.

We hereby authorize the City and County of Denver, Department of Public Works, to date all bonds and powers of attorney to coincide with the date of the contract.

If you should have any additional questions or concerns, please don't hesitate to give me a call at

_____.

Thank you

Sincerely

**VHF Radio System Upgrade
Evergreen Fire Rescue
System Specifications**

Prepared by:

Pericle Communications Company
1910 Vindicator Drive, Suite 100
Colorado Springs, CO 80919
(719) 548-1040

Prepared for:

Evergreen Fire Rescue

VHF Radio System Upgrade for Evergreen Fire Rescue System Specifications

1.0 Background

Evergreen Fire Rescue is seeking proposals from qualified vendors to design, test and furnish a 3 channel, two site VHF simulcast radio system. The mountainous terrain poses a particular challenge to radio coverage in the deep valleys of the district. The authority has decided to migrate from the existing UHF radio channels operating on Bear Mountain, Squaw Mountain and Fire Station 2. The improved radio system shall be interoperable with agencies in the North Central Homeland Security Region, provide seamless wide area coverage that will optimize existing tower site radio footprints, and provide a path to meet below 512 MHz narrowband requirements by the FCC.

The implementation plan identifies sites, frequencies, equipment and tasks necessary to achieve the requirements. Specifically, the plan calls for a three channel, two site simulcast analog and Project 25 (P25) Phase I digital capable VHF radio system with receive voting. The backbone for this system is a microwave radio network linking the sites.

Additionally, an analog VHF paging channel will be implemented. The two tone paging system operation is the preferred method of alerting the first responders. Since the main dispatch channel will be capable of operating in the digital mode, this analog alerting frequency will be simulcast and multicast with the main dispatch channel. In this way, all of the conversations will be received by the new VHF pagers. These devices will be capable of storing the transmissions to be reviewed at a later time. The current UHF equipment will be removed once the VHF system is accepted.

2.0 Introduction ---

Evergreen Fire Rescue new radio system will consist of a three channel, two site conventional simulcast with voting system. The network will be connected by T1 microwave radio equipment to the dispatch center console at Fire Station 2.

An analog two tone VHF paging channel will provide for alerting first responders. This frequency will be transmitting from both tower sites (Squaw and Bear Mountains) and controlled with the same simulcast hardware as the voice system.

A microwave system will provide the proper number of T1 connections to support the VHF simulcast radios, future expansion for backup dispatch operations and T1 connections to support ethernet operation and future data requirements. The microwave acquisition, installation and licensing is outside the scope of this request.

The voting hardware for each channel will provide an analog connection to the existing Moducom Ultracom dispatch console. The interface for this console will consist of providing operational capabilities (tone and/or relay keying information) so the console can be configured properly.

Subscriber radios or pagers will not be part of the scope of this request.

3.0 Specifications and Requirements ---

3.1 Evergreen Fire Rescue Simulcast Configuration. Evergreen Fire Rescue has identified the need for a replacement district-wide radio system to support the needs of the fire district. The response must include the system design, and an installation and optimization plan.

The district will provide the shelters, power, VHF frequencies, mobile radios, portables and pagers unless specified. Details of the locations, existing equipment and channels will be provided in the next section.

The submission must include an acceptable plan to verify district-wide performance. This shall be via drive testing that shows signal strength and voice tests in overlapping coverage areas with mobile and portable radios provided by the district.

Provide a technical description of the products and services offered. Implementation plan that includes milestones for

- System design
- Equipment delivery
- Installation per site
- Optimization
- Performance testing
- Supporting documentation including brochures

The replacement radio system must:

- Operate in the VHF band to:
 - Provide adequate coverage using two transmitter sites; Bear and Squaw Mountains
 - Selected vendor must provide appropriate computer model estimates
 - Drive testing (according to TSB-88) after installation must confirm the map estimates
 - Interoperate with other VHF partner agencies
- Use existing sites at Bear Mountain and Fire Station 2
- Use the State of Colorado tower site at Squaw Mountain as a replacement site for the current Lower Squaw location
- Operate Simulcast since frequencies are limited
- Operate in analog or P25 digital mode on all channels
- Connect to and operate with the existing dispatch console equipment.
 - Moducom Ultracom with tone control and Aux I/O capability
 - Provide interface method (tone and/or local control) and audio and control level requirements for proper operation
 - Demarcation points will be provided
- Maximize radio coverage in the district using the tower locations and Effective Radiated Power (ERP) provided
 - Optimize timing for optimal operation
 - Optimize coverage by antenna pattern

Evergreen Fire Rescue district coverage area is shown in Figure 1.

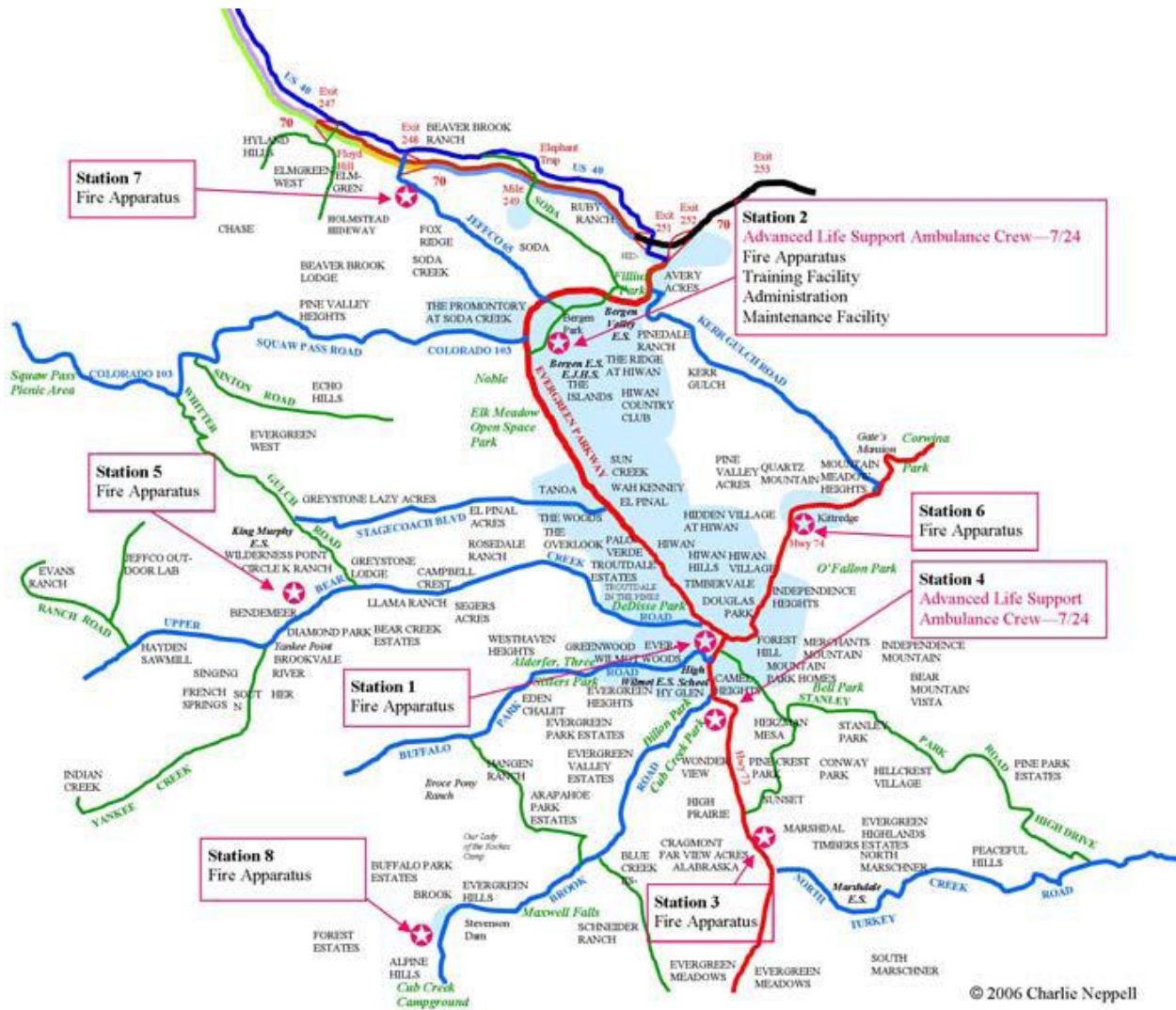


Figure 1 – Evergreen Fire Rescue Service District

- A. Coverage Maps.
 - a. Include information of the models chosen to create the map
 - b. Include mobile and portable coverage maps developed with the software.
- B. Demonstrate how the system timing would be adjusted to optimize time domain interference in overlap areas
- C. Demonstrate how the antennas would be adjusted to optimize overlap areas (including downtilt).
- D. Main-Alternate GPS clocking source for accuracy of the carrier signal must be the reference for each transmitter and be compatible with all system hardware. E.g., transmitters, channel banks, simulcast support devices.
- E. Migration of legacy radios must be taken into consideration. The installation plan must follow requirements to provide new VHF radio system before the old UHF radio system is removed. See Communications Site details.
- F. All channels will be capable of analog and (APCO Project 25 phase I) digital operation. All channels will start in analog mode. The digital mode must be demonstrated on each

channel. If hardware changes are necessary to test the digital operation, they must be provided in the response. An analog connection to the dispatch console at Fire Station 2 must be tested in both technologies.

- G. The maximum number of channels at each site will be four (includes the analog paging channel).
- H. The number of sites to be involved will be four: Squaw Mtn (Simulcast), Bear Mtn (Simulcast), Fire Station 2/Dispatch, and Evergreen Parks and Recreation – Buchanan Recreation Center (microwave only)

1.1.1 Antennas. Provide a price to develop the site antenna design to include:

- A. Squaw Mountain
 - Single transmit antenna with an adjustable pattern that minimizes signal overlap for the simulcast transmitters and provides downtilt per system design. Must be rated for 125 MPH minimum (no ice) and handle 300 watts minimum. 150-160 MHz. It must be rated for low passive intermodulation (PIM)
- B. Bear Mountain
 - A single transmit antenna with an adjustable pattern that minimizes signal overlap for the simulcast transmitters and provides downtilt per system design. Must be rated for 125 MPH minimum (no ice) and handle 300 watts minimum. 150-160 MHz. It must be rated for low passive intermodulation (PIM)
- C. An omni-directional antenna for the receivers at each site. Must be rated for 125 MPH minimum (no ice) 150-160 MHz.
- D. Fire Station 2 control station antennas shall be fiberglass omnidirectional capable of operating from 150-160 MHz. Unity gain is preferred.

3.1.2 Tower Site Combiners. Transmit combiners and receive multicouplers must:

- A. Maximize channel to channel isolation
- B. Have dual stage isolators before the transmit filters
- C. Must be expandable without replacement
- D. Minimize insertion loss.
- E. Provide proper documentation indicating insertion loss and filter specifications and measurements
- F. A receiver multicoupler system shall include a bandpass filter and low noise amplifier. A notch filter shall be installed to minimize interference from the local transmitters.

Note: The channel list displayed in the frequency search results will be used to determine the combiner configuration. See Table 1.

Table 1 - Frequency List		
Channel	Transmitter (MHz)	Receiver (MHz)
1	155.7750	158.1900
2	155.9775	156.1500
3	151.2500	158.8725
4	157.4500	Paging

3.1.3 Base Stations/Repeaters. The simulcast channel equipment used at the sites:

- A. Must all match in software and hardware. This is important in a simulcast situation because the modulated information must have the same filtering, amplification and alignment. Must provide programming cables and configuration software.
- B. These stations must be APCO Project 25 Phase I compliant (P25). The application of this system will be narrowband analog and P25 digital. The stations must be capable of P25 without station replacement.
- C. These stations must also be capable of transmitting at full power one hundred percent of the time (100% duty cycle). Output power adjustable from 25W to 100W. Analog sensitivity of at least .25uv per TIA-603-TIA- 102.CAAA.
- D. They must operate as a voted receiver (analog and digital) and remote controlled transmitter. In the event of control link failure, the station must have the capability to revert to a standalone repeater through control over-the-air. Describe method of stand-alone repeater operation without causing interference from other transmitters on same frequency.
- E. The stations must be capable of an external reference oscillator source for an accurate transmit carrier.
- F. The receiver must be programmable for multiple receiver narrow bandwidth settings.
- G. Each repeater must operate from 120 VAC and have battery backup allowing operation for 8 hours of backup power at Squaw Mountain and 4 hours for Bear Mountain (at reduced power levels).
- H. Transmitter and receiver specifications must be provided for review and verification.

3.1.4 Link Connectivity must match the technology offered and connect to interface provided by EFR

- A. Bear Mountain has a limited backhaul connection to Fire Station 2.
 - 1. 768 kHz Total bandwidth – current radio system will use 256 kHz this leaves 512 kHz for the Bear Mtn simulcast system
 - 2. An ethernet connection will be provided through a RAD Model FCD-IP
- B. Squaw Mountain will have a dedicated full T-1 provided by an Alcatel microwave path provided by EFR.
 - 1. An ethernet connection will be provided through a RAD Model RICi-T1

3.1.5 Voting Comparators.

- A. There shall be a voting comparator on each channel. The submittal shall include a three channel two site simulcast system. The voting method must support continuous voting capability.
- B. Each voter shall be configured for at least three receiver inputs (two will be active).
- C. Voting comparators shall be centralized at a single prime site - Fire Station 2/Dispatch.

- D. The transmit baseband (analog audio) lines must have some form of parallel impedance matching.
- E. Must have an analog console connection to the existing Moducom Ultracom dispatch console per channel.
- F. Must all match in software and hardware. Must provide programming cables and configuration software.

3.1.6 Master Oscillator. A Main-Alternate Master oscillator must be incorporated into the system design at each tower site to support the simulcast system to each tower site and dispatch. This device shall be used to minimize carrier phase cancellation in overlap areas. Specifications noted shall be minimums.

- A. The Main-Alternate GPS timing hardware shall be located at each site for use by the transmitters and channel bank/multiplexers.
- B. Must support the simulcast system offered.
 - 1. Each manufacturer recommends a specific device with 5 MHz and 1PPS or 10 MHz 1PPS.
 - 2. Must have minimum of 8 outputs
- C. Must have backup power through battery or UPS for 8 hours at Squaw and 4 hours for Bear.
- D. Antenna system must be mounted away from interference sources and be surge protected per R56 guidelines.
- E. Must all match in software and hardware. Must provide programming cables and configuration software.

3.2 Communications Sites. See Appendix A

3.2.2 Grounding

- A. Internal Grounding – grounding shall be compliant with “R56 Installation Standards and Guidelines”, Chapter 5.
 - 1. Rack Ground system must connect to internal grounding system
 - 2. Lightning protection must be provided for transmission lines, AC power and telephone line connectivity
- B. External Grounding – Coaxial ground kits must be installed on any new cable installation. Any cable under 100 foot (installed on a tower) must have a ground kit at the top then at the bottom of the tower and a third at the building entrance. External building grounding is not part of this procurement. Vendors may comment on any inadequacies which may be addressed at the discretion of Evergreen Fire Rescue.

3.4 Performance and Acceptance Testing. Performance testing must be measured and recorded to verify conformance.

- A. Tower work will be accepted on a per site basis.

1. Vendor will provide antenna sweeps to include Return Loss and Distance to Fault measurements for each antenna.
- B. The simulcast system will be accepted in its entirety.
 1. Performance testing results
 - Analog - Demonstrate comparators ability to vote the strongest signal between sites during a single inbound call.
 - Provide output power measurements
 - Transmitter out port
 - Transmit combiner output
 - Reflected power at antenna
 - Provide receiver sensitivity measurements
 - From multicoupler/combiner system input
 - From antenna port of radio
 2. Performance drive tests
 - EFR service area per TSB-88-C
 - Major access roads used by mutual aid responders
 3. Subscriber Demonstrations – from overlap areas shown in map
 - Analog voice tests
 - Digital voice tests
 - Two tone paging tests
- C. Base Station.
 1. Performance testing results
 - Transmitter power measurements
 - Forward and reflected readings
 - Before and after combiner readings
 - Receiver sensitivity measurements
 - Before and after combiner-multicoupler readings
 2. Subscriber and dispatch console demonstrations
 - Paging
 - VHF channel 1 in analog and digital mode
 - Voice testing on new channels

3.5 Equipment Specifications, Installation and Optimization Standards References.

- A. APCO Project 25 Phase I Common Air Interface
- B. Drive Test per TIA TSB-88¹.
- C. Receive Sensitivity per EIA 603 and EIA/TIA/IS 102.CAAA²
 1. Perform during optimization testing
- D. Downlink Power-EIA 603 and EIA/TIA/IS 102.CAAA
 1. Perform during optimization testing

¹ Telecommunications Industries Association - **TIA TSB-88** – Wireless Communications Systems – Performance in Noise and Interference – Limited Situations – Recommended Methods for Technology – Independent Modeling, Simulations and Verifications.

² **TIA 603** – Land Mobile FM or PM – Communications Equipment – Measurement and Performance Standards
TIA IS-102.CAAA – Digital C4FM/CQPSK Transceiver Measurement Methods

- E. Grounding and Lightning Protection-R56 Standards and Guidelines for Communications Sites
 - 1. Inspection checklist
- F. Tower Structural
 - 1. R56 Standards and Guidelines for Communications Sites
 - 2. ANSI/EIA/TIA-222G³ In Force if not specified by building department
- G. Shelter requirements
 - 1. Local codes, National Electric Code, Uniform Building Code
 - 2. Per R56 Standards and Guidelines for Communications Sites available through Motorola Accessories and Parts (9880384V84)
- H. Demonstrate Simulcast Optimization
 - 1. Present optimization plan
 - 2. Performance testing demonstrated by drive test
- I. Demonstrate Seamless Interoperability
 - 1. Make calls on each channel across site coverage areas
- J. Reliability (Warranty and Maintenance/Training)
- K. Bit Error Rate testing on Microwave links
 - 1. BER 10^{-6} 24 hour performance data
 - 2. Main links > 99.999% Path Reliability from path profile
 - 3. Secondary links > 99.999% Path Reliability from path profile
- L. Signal to Noise measurements from Microwave
 - 1. Signal strength (dBm)
 - 2. Output power (dBm)
 - 3. BER 10^{-6} measurements from receivers
- M. Configuration Control – all sites
 - 1. Software and Firmware Versions and Upgrades
 - Release Notes
 - 2. Final Installation Documentation
 - 3. Ensure licensing/support or periodic upgrades during warranty term
 - 4. Ensure all software and firmware versions match
 - All transmitter site radios
 - Simulcast timing devices
 - All voting devices
 - Microwave radios
 - 5. Hard jumper configuration if changed from defaults
- N. System Documentation
 - 1. Original designs
 - 2. As-Built Documents
 - 3. Hardware and software configurations- Jumpers and software versions
 - 4. Updated documents with red line updates
 - 5. Level setting optimization adjustments

3.6 Operations Training-Demonstration.

³ Structural Standards for Steel Antenna Towers and Antenna Supporting Structures (ANSI/TIA 222-G-2005)

- Dispatch Console Operation for link failure condition of choosing a transmitter to use as stand-alone repeater

3.7 Warranty. A full warranty statement for all devices shall be provided and performance period starts at least one year from system acceptance.

3.8 Acquisition Strategy.

- The Purchasing agent will be Denver UASI – All purchasing requirements of that office will be followed.

4.0 Scope of Work

The project goal is to have an operational system before the weather limits access to the mountaintop sites. To this end the equipment implementation will concentrate on these sites first. Squaw Mountain, Bear Mountain, Buchanan Recreation Center then Fire Station 2 respectively will be installed. All installations shall be performed according to accepted practices using R56 Standards and Guidelines. See Appendix A for details

5.0 Schedule

The project schedule will be weather dependent. The mountain top sites are the most affected by weather. Site equipment shall be tested in advance.

Selected vendor must interface with current system maintenance provider for interface to existing dispatch console, interface to microwave T1's and Bear Mtn FT1 upgrade. Scheduling details must be provided in advance to allow for mutual preparation.

5.1 Installation Schedule – See Appendix A for details

Appendix A

3.2 Communications Sites.

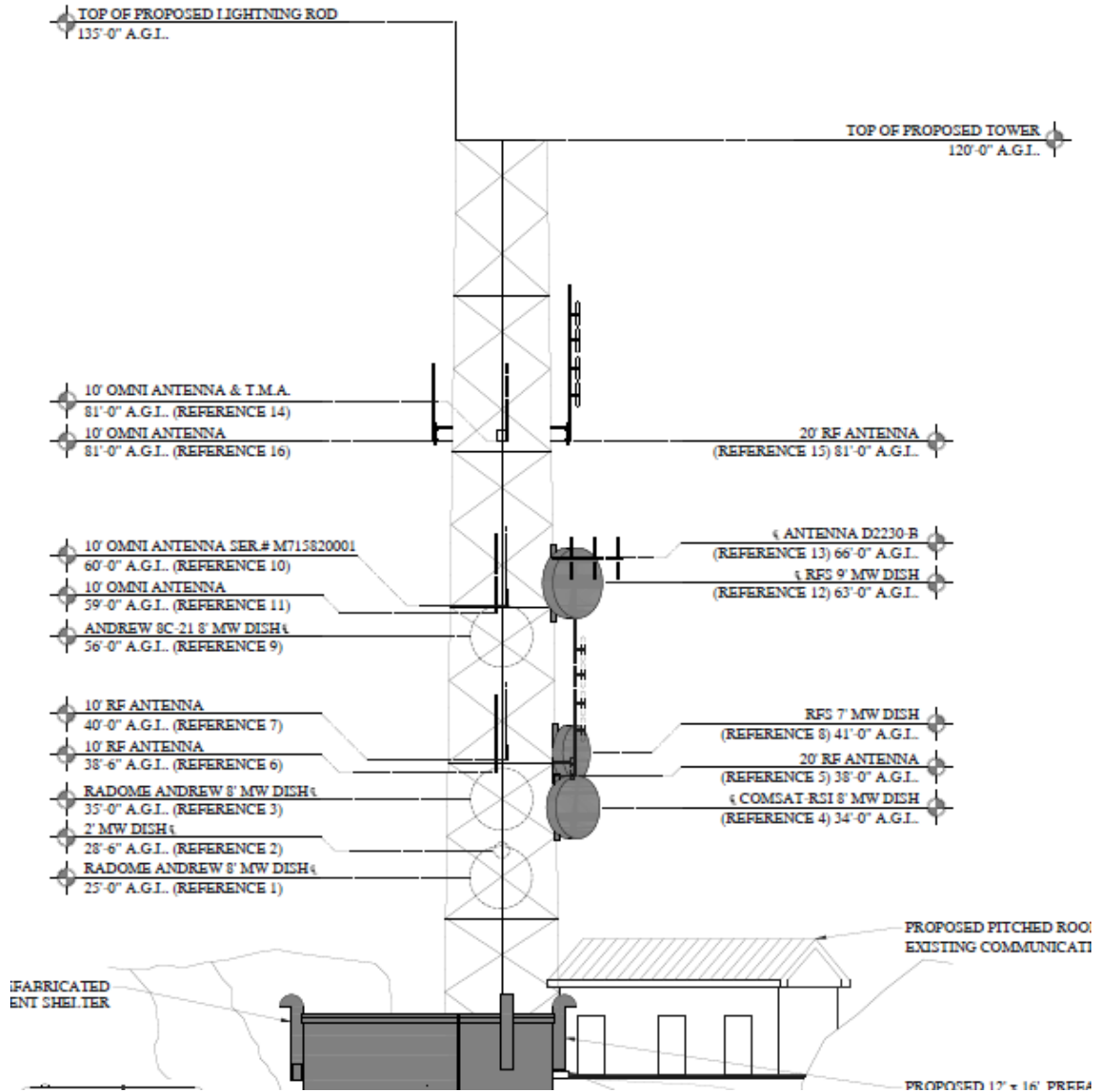
3.2.1 Locations. The following site locations have been identified.

A. Squaw Mountain. The State of Colorado and the North Central Region has offered to work with Evergreen Fire Rescue to house the microwave equipment, the dishes and VHF system hardware on the State of Colorado tower at 39° 40' 52.30 N, 105° 29' 46.46 W. The State of Colorado tower site is currently preparing for the Evergreen Fire Rescue hardware, the new equipment will be installed there. Floor space and diagrams will be provided.

1. Hardware

- Four new VHF simulcast radios, a new microwave path to the Buchanan Recreational Center microwave repeater (not part of this request), transmitter and receiver combining equipment, GPS receiver hardware, and ethernet support equipment will be installed at this location.
- Antenna tower space will be provided by the North Central region and State of Colorado.

Squaw Tower



- B. Bear Mountain. This site located at 39° 37' 23.6 N, 105° 17' 24.2 W. It is the current location of 2 Kenwood UHF repeaters, 2 – MDS LEDR900S 900 MHz licensed links for Squaw Mountain and Fire Station 2, an MDS MX2100 multiplexer.
- LEDR900S 900 MHz licensed links will be upgraded from RS-530 outputs to FT-1 (not part of this request).
 - The ethernet equipment will connect to a RAD Model FCD-IP interface with a single standard 10/100BaseT IEEE 802.3 RJ-45 ethernet connector.

- During this upgrade the current UHF radio system must remain in operation until the antennas are replaced. Proper planning must take place.
2. Old UHF antennas will be replaced with new VHF at the same locations. The antenna brackets can be reused as long as the antenna manufacture recommendations are followed.
 3. The existing ½ inch antenna transmission line between the bulkhead and the antenna must be replaced with 7/8 inch solid shield transmission line. Braided cable must not be installed on the tower. New in-line lightning suppression must be provided.
 4. The path between Lower Squaw Mountain and Bear Mountain must remain connected to the MX2100 until the new VHF system is in place (not part of this project).
 5. Due to tower limitations, the new VHF antennas must replace the existing UHF antennas. This will cause the UHF channels to operate on the Squaw Mountain site only.
 6. Floor space is limited. The current radio rack will be temporarily moved to the front of the building until the new equipment is accepted.
 7. A new 10 kVA generator and updated breaker panel will be installed to support the new equipment.
 8. The building and tower grounds will be tied together.
 9. A single #2 ground bus will be provided to attach racks
 10. Existing Air conditioner will be replaced
 11. New equipment racks must fit into existing building (6 ft rack suggested) maximum height of 6.5 feet.
 12. Four new simulcast radios, GPS receiver hardware, a transmitter and receiver combiner and multicoupler, channel bank hardware and ethernet support equipment shall be installed at this location.
- C. Fire Station 2/ Dispatch. The prime or master site shall be at dispatch located in Fire Station 2, 1802 Bergen Parkway, Evergreen, Colorado 80439.
1. Three voters shall be installed for the three new VHF radio channels.
 2. A main-alternate GPS receiver shall be installed to provide the simulcast timing source.
 3. Two radios must be replaced due to inability to operate in the narrowband environment.
 - FERN radio MASTRII must be replaced with a multichannel tone remote controlled control station radio referred in paragraph 3.1.3. The channel list will be provided.
 - Clear Creek Green radio MASTRIII must be replaced with a multichannel tone remote controlled control station radio referred in paragraph 3.1.3. The channel list will be provided.
 4. The ethernet equipment will connect to a RAD Model FCD-IP interface with a single standard 10/100BaseT IEEE 802.3 RJ-45 ethernet connector.
 5. New antennas for control stations as appropriate. See paragraph 3.1.1 - E.

6. New equipment will be grounded to existing grounding system in the equipment room.

4.0 Scope of Work

The project goal is to have an operational system before the weather limits access to the mountaintop sites. To this end the equipment implementation will concentrate on these sites first. Squaw Mountain, Bear Mountain, then Fire Station 2 respectively will be installed. All installations shall be performed according to accepted practices using R56 Standards and Guidelines.

4.1 Squaw Mountain

- A. Antennas – Two VHF antennas will be installed on the tower as appropriate at an azimuth and downtilt recommended in the simulcast design. GPS receiver antennas will be installed attached to the side of the building.
- B. Transmission Line – Transmission line should be installed with surge suppression and supported in accordance with manufacturer’s recommendations. It shall be terminated above the equipment rack with flexible jumpers to equipment. The cable shall be supported at intervals recommended by the manufacturer by stacking cable hangers (the cable tray will be full). Sweeps will be performed according to specifications identified in paragraph 3.4 of this document.
- C. Equipment Layout - One rack with four VHF repeaters, GPS receiver, analog audio interface and ethernet communications equipment will be installed according to the floor plan and rack elevation in Appendix (Note: floor plan will be worked out with the North Central Region). One rack with VHF combining equipment will be installed according to the floor plan in Appendix.

4.2 Bear Mountain

- A. Antennas – Two VHF antennas will be installed on the existing tower replacing the existing UHF antennas. The azimuth and downtilt of the antennas will be determined by the simulcast design. The GPS antenna shall be attached to the building.
- B. Transmission Line – Transmission line should be installed with surge suppression and supported in accordance with manufacturer’s recommendations. The cable shall be supported at intervals recommended by the manufacturer by proper hardware. It shall be terminated above the equipment rack with flexible jumpers to equipment. Sweeps will be performed according to specifications identified in paragraph 3.4 of this document
- C. Equipment Layout - One rack with four VHF repeaters, GPS receiver, analog audio interface and ethernet communications equipment will be installed according to the floor plan and rack elevation in Appendix. Two racks with VHF combining equipment will be installed according to the floor plan in Appendix. Existing equipment will be moved to the front of the building as shown in the floor plan.
- D. Grounding. A ground bus of stranded #2 wire will be supplied for rack bonds.

4.4 Fire Station 2 – See Appendix for the rack elevations and floor plan described in this section.

- A. Antennas – The Fire Station 2 location is considered the prime site. There will be 3 new VHF control station antennas for the 3 new repeater channels per paragraph 3.1.1. There shall be another antenna installed for the simulcast timing radio. These antennas will be

mounted at the 60 foot, 50 foot and 40 foot levels. A rooftop antenna will be installed using a ballast mount with a roof pad. The tower mounted antennas shall have appropriate stand-off brackets. The antennas for the 2 backup UHF repeaters will be removed after VHF system is operational (not part of this request). A new GPS receiver antenna shall be installed on the second ballast mount.

- B. Transmission line – There will be new transmission line paths from the tower or roof to the dispatch center. The cable shall be supported at intervals recommended by the manufacturer by proper hardware. Additional cable entry ports must be installed to accommodate the new cables. The remaining transmission lines shall be ½” cable. Surge/Lightning suppression shall be installed according to R56 standards. Sweeps will be performed according to specifications identified in paragraph 3.4 of this document.
- C. Simulcast Hardware – The new rack 6 described in the previous page for the wall mounted base stations shall house the simulcast timing radio, two new AC power strips, a channel bank for Bear and Squaw Mountain sites, three voting comparators for the new VHF channels, and a power supply for the 5 control stations. The locations are described in the rack 6 elevation. The new GPS receiver and simulcast audio delay equipment if necessary shall be located in rack 3.
- D. Control Stations for FERN and Clear Creek County Green Channel will be replaced. Equipment will be installed outside of this procurement.
- E. Moducom console connections will be available on a 66 block demarcation point. These connections will be provided. The provided equipment must be capable of operation from the tone remote control of the dispatch console. Any connection must be available at this point.

5.0 Schedule

The project schedule will be weather dependent. All installation of equipment must be completed by April 30, 2012. The mountain top sites are the most affected by weather. Site equipment shall be tested in advance.

Selected vendor must interface with current system maintenance provider for interface to existing dispatch console, interface to Squaw and Bear Mtn ethernet. Scheduling details must be provided in advance to allow for mutual preparation.

Appendix

EQUIPMENT:

QTY	NOMENCLATURE	DESCRIPTION	Unit Price with Discount	Extended Price with Discount
		Evergreen VHF - Analog Conv Simulcast		
		Prime/Dispatch Site - Fire Station 2		
		Simulcast Comparator Site Equipment		
		Frequency Reference		
1	DSTRAK91009E	REMOTE SITE REDUNDANT MODULAR FREQUENCY TIMING SYSTEM AC	\$ 22,202.74	\$ 22,202.74
1	DSTRAK91061	FOUR PORT DDM	\$ 531.70	\$ 531.70
		Network		
2	CLN1856	2620-24 ETHERNET SWITCH	\$ 1,721.61	\$ 3,443.21
2	SQM01SUM0205	GGM 8000 GATEWAY	\$ 3,213.67	\$ 6,427.33
2	CA01616AA	ADD: AC POWER		
2	CLN1856	2620-24 ETHERNET SWITCH	\$ 1,721.61	\$ 3,443.21
		MLC8000 - v.24 Gateways OR Analog Comparators		
4	F2979	SM,MLC8000 MOD	\$ 738.47	\$ 2,953.87
4	VA00783AA	ADD: ANALOG CONVENTIONAL SIMULCAST COMPARATOR/GATEWAY	\$ 738.47	\$ 2,953.87
4	VA00012AA	ADD: 120/240VAC TO +12VDC POWER ADAPTER	\$ 36.92	\$ 147.69
4	VA00011AA	ADD: 19INCH RACK MOUNT HARDWARE KIT CABINET OR RACK	\$ 36.92	\$ 147.69
		Rack & Surge		
1	TRN7343	SEVEN AND A HALF FOOT RACK	\$ 343.52	\$ 343.52
1	3182602Y06	GROUNDING BUS BAR	\$ 70.27	\$ 70.27
4	DSRMP615A	SPD, TYPE 3, 120V RACK MOUNT, 15A PLUG-IN WITH (6) 15A OUTLETS	\$ 220.06	\$ 880.25
		Control Stations		
2	L30KSS9PW1 N	APX7500 SINGLE BAND VHF MID POWER	\$ 2,868.28	\$ 5,736.55
2	G806	ENH: ASTRO DIGITAL CAI OP APX	\$ 458.21	\$ 916.41
2	G48	ENH: CONVENTIONAL OPERATION	\$ 711.78	\$ 1,423.55
2	L998	ADD: LIMITED FRONT PANEL W/CLOCK/VU	\$ 345.92	\$ 691.85
2	CA01598	ADD: AC LINE CORD US		
2	G90	ADD: NO MICROPHONE NEEDED		
2	G77	ENH: 1 YR REPAIR SERVICE ADVANTAGE	\$ 73.85	\$ 147.69
1	HKN6184C	CABLE CH, PROGRAMMING, USB	\$ 36.75	\$ 36.75
2	HKN6233	ASSEMBLY,ACCESSORY,APX CONSOLETTA RACK MOUNT TRAY HARDWARE KIT	\$ 144.13	\$ 288.27
1	DLN6455	CONFIGURATION/SERVICE SOFTWARE	\$ 22.24	\$ 22.24
		Control Station Antennas		
		Bundled Mainline & Jumpers (Est 15ft Upper 25 Lower Superflex)		
300	L1705	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$ 2.58	\$ 775.39
75	L1702	CABLE: 1/2" SUPERFLEX POLY JKT PER FOOT	\$ 3.47	\$ 260.31
		ANTENNA SYSTEMS - 80' 1/2 Mainline Ea		
1	DSBA10122	ANTENNA BASE STA OMDIR 154-174 MHZ FROM DENMARK	\$ 439.39	\$ 439.39
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
2	DDN1089	TYPE N FEMALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 19.20	\$ 38.40
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
3	DSGKSUNV	SMALL UNIVERSAL GROUNDING KIT	\$ 7.94	\$ 23.82
1	DSIS50NXC2MA	COAX PROTECTOR FLANGE MT	\$ 57.60	\$ 57.60
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
1	DSL4SGRIP	SUPPORT HOIST GRIP 1/2" LDF	\$ 13.48	\$ 13.48
1	DSBA10122	ANTENNA BASE STA OMDIR 154-174 MHZ FROM DENMARK	\$ 439.39	\$ 439.39
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
2	DDN1089	TYPE N FEMALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 19.20	\$ 38.40
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
3	DSGKSUNV	SMALL UNIVERSAL GROUNDING KIT	\$ 7.94	\$ 23.82
1	DSIS50NXC2MA	COAX PROTECTOR FLANGE MT	\$ 57.60	\$ 57.60
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
1	DSL4SGRIP	SUPPORT HOIST GRIP 1/2" LDF	\$ 13.48	\$ 13.48
1	DSBA10122	ANTENNA BASE STA OMDIR 154-174 MHZ FROM DENMARK	\$ 439.39	\$ 439.39
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
2	DDN1089	TYPE N FEMALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 19.20	\$ 38.40
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
3	DSGKSUNV	SMALL UNIVERSAL GROUNDING KIT	\$ 7.94	\$ 23.82
1	DSIS50NXC2MA	COAX PROTECTOR FLANGE MT	\$ 57.60	\$ 57.60
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
1	DSL4SGRIP	SUPPORT HOIST GRIP 1/2" LDF	\$ 13.48	\$ 13.48

6934 Evergreen Fire Rescue VHF Radio System Upgrade FINAL PRICING

QTY	NOMENCLATURE	DESCRIPTION	Unit Price with Discount	Extended Price with Discount
		Optimization Radio		
1	AAM25KKD9AA2 N	CDM1250 136-174 MHZ 64 CH 25-45W 12.5/25 KHZ	\$ 588.79	\$ 588.79
1	GLN7326	DESKTOP TRAY W/SPKR	\$ 54.05	\$ 54.05
1	HAD4008	ANTENNA, VHF (150.8-162 MHZ) 1/4 WAVE ROOF TOP	\$ 14.05	\$ 14.05
		Remote Site - Squaw Mtn		
		Network		
1	CLN1856	2620-24 ETHERNET SWITCH	\$ 1,721.61	\$ 1,721.61
1	SQM01SUM0205	GGM 8000 GATEWAY	\$ 3,213.67	\$ 3,213.67
1	CA01616AA	ADD: AC POWER		
1	CLN1856	2620-24 ETHERNET SWITCH	\$ 1,721.61	\$ 1,721.61
		AGUs - MLC 8000		
4	F2979	SM,MLC8000 MOD	\$ 738.47	\$ 2,953.87
4	VA00783AA	ADD: ANALOG CONVENTIONAL SIMULCAST COMPARATOR/GATEWAY	\$ 738.47	\$ 2,953.87
4	VA00012AA	ADD: 120/240VAC TO +12VDC POWER ADAPTER	\$ 36.92	\$ 147.69
4	VA00011AA	ADD: 19INCH RACK MOUNT HARDWARE KIT CABINET OR RACK	\$ 36.92	\$ 147.69
		GTR 8000 BRs		
4	T7039	GTR 8000 BASE RADIO	\$ 4,430.80	\$ 17,723.20
4	X530BG	ADD: VHF (136-174 MHZ)	\$ 4,652.34	\$ 18,609.36
4	CA01949AA	ADD: ANALOG CONVENTIONAL SOFTWARE		
4	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE		
4	CA01954AA	ADD: WILDCARD W/GPIO	\$ 886.16	\$ 3,544.64
4	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	\$ 443.08	\$ 1,772.32
4	X265AM	BR PRESECTOR, 150-174 MHZ	\$ 369.23	\$ 1,476.93
4	X153AW	ADD: RACK MOUNT HARDWARE	\$ 36.92	\$ 147.69
4	DSWL4EM12CE75	48V, 75AH battery	\$ 1,056.01	\$ 4,224.03
1	302718	19" RM Battery Shelf Bla New N	\$ 166.16	\$ 166.16
		Rack & Surge		
1	TRN7343	SEVEN AND A HALF FOOT RACK	\$ 343.52	\$ 343.52
1	3182602Y06	GROUNDING BUS BAR	\$ 70.27	\$ 70.27
3	DSRMP615A	SPD, TYPE 3, 120V RACK MOUNT, 15A PLUG-IN W/ (6) 15A NEMA 5-15 OUTLETS	\$ 220.06	\$ 660.19
		Combining System		
1	DQ743712259TA4BM	4 CH CMBNR RCVR MCPLR	\$ 30,994.93	\$ 30,994.93
		UPS - 20 Hr		
1	DQ070512BEC	Eaton 9170+ 3kVA / 2.5kW Tower UPS, 1PH, 240V input, 120/240V output + 2 Cabinet	\$ 40,530.16	\$ 40,530.16
		Frequency Reference		
1	DSTRAK91009E	REMOTE SITE REDUNDANT MODULAR FREQUENCY TIMING SYSTEM AC	\$ 22,202.74	\$ 22,202.74
2	DSTRAK91061	FOUR PORT DDM	\$ 531.70	\$ 1,063.39
		Bundled Mainline & Jumpers (Est 15ft Upper 25 Lower) Superflex for lower RX		
340	L3323	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$ 6.28	\$ 2,134.17
85	L1705	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$ 2.58	\$ 219.69
25	L1702	CABLE: 1/2" SUPERFLEX POLY JKT PER FOOT	\$ 3.47	\$ 86.77
		Tx ANT SYS 1 - 100' 7/8" Mainline		
1	DSSD214SF2P2LDF	LOW PIM 4 DIPOLE ANTENNA, 7.0 DBD GAIN, ELLIPTICAL, 138-174 MHZ, DIN	\$ 3,019.59	\$ 3,019.59
2	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
1	DDN9496	7/8" 7-16 DIN FEMALE POSITIVE STOP CONNECTOR	\$ 29.35	\$ 29.35
1	DDN9497	7/8" 7-16 DIN MALE POSITIVE STOP CONNECTOR	\$ 29.35	\$ 29.35
3	DSSG7806B2A	GROUNDING KIT FOR 7/8 IN COAXIAL CABLE	\$ 16.62	\$ 49.85
1	DSL5SGRIP	7/8" SUPPORT HOIST GRIP	\$ 21.05	\$ 21.05
1	DSVHF50DPGR	SPD, 100 TO 512MHZ, FEMALE/FEMALE CONNECTOR, PIM RATED	\$ 110.77	\$ 110.77
2	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
		Tx ANT SYS 2 - 100' 7/8" Mainline		
1	DSSD214SF2P2LDF	LOW PIM 4 DIPOLE ANTENNA, 7.0 DBD GAIN, ELLIPTICAL, 138-174 MHZ, DIN	\$ 3,019.59	\$ 3,019.59
2	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
1	DDN9496	7/8" 7-16 DIN FEMALE POSITIVE STOP CONNECTOR	\$ 29.35	\$ 29.35
1	DDN9497	7/8" 7-16 DIN MALE POSITIVE STOP CONNECTOR	\$ 29.35	\$ 29.35
3	DSSG7806B2A	GROUNDING KIT FOR 7/8 IN COAXIAL CABLE	\$ 16.62	\$ 49.85
1	DSL5SGRIP	7/8" SUPPORT HOIST GRIP	\$ 21.05	\$ 21.05
1	DSVHF50DPGR	SPD, 100 TO 512MHZ, FEMALE/FEMALE CONNECTOR, PIM RATED	\$ 110.77	\$ 110.77

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QTY	NOMENCLATURE	DESCRIPTION	Unit Price with Discount	Extended Price with Discount
2	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
		Rx ANT SYS 1 - 140' 7/8 Mainline		
1	DSSD214SF2P2LDF	LOW PIM 4 DIPOLE ANTENNA, 7.0 DBD GAIN, ELLIPTICAL, 138-174 MHZ, DIN	\$ 3,019.59	\$ 3,019.59
1	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 20.12
1	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 20.12
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
2	DDN9498	7/8" TYPE N FEMALE POSITIVE STOP CONNECTOR	\$ 27.88	\$ 55.75
4	DSSG7806B2A	GROUNDING KIT FOR 7/8 IN COAXIAL CABLE	\$ 16.62	\$ 66.46
1	DSL5SGRIP	7/8" SUPPORT HOIST GRIP	\$ 21.05	\$ 21.05
1	DSIS50NXC2MA	COAX PROTECTOR FLANGE MT	\$ 57.60	\$ 57.60
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
		Remote Site - Bear Mtn		
		Network		
1	CLN1856	2620-24 ETHERNET SWITCH	\$ 1,721.61	\$ 1,721.61
1	SQM01SUM0205	GGM 8000 GATEWAY	\$ 3,213.67	\$ 3,213.67
1	CA01616AA	ADD: AC POWER		
1	CLN1856	2620-24 ETHERNET SWITCH	\$ 1,721.61	\$ 1,721.61
		AGUs - MLC 8000		
4	F2979	SM,MLC8000 MOD	\$ 738.47	\$ 2,953.87
4	VA00783AA	ADD: ANALOG CONVENTIONAL SIMULCAST COMPARATOR/GATEWAY	\$ 738.47	\$ 2,953.87
4	VA00012AA	ADD: 120/240VAC TO +12VDC POWER ADAPTER	\$ 36.92	\$ 147.69
4	VA00011AA	ADD: 19INCH RACK MOUNT HARDWARE KIT CABINET OR RACK	\$ 36.92	\$ 147.69
		GTR 8000 BRs		
4	T7039	GTR 8000 BASE RADIO	\$ 4,430.80	\$ 17,723.20
4	X530BG	ADD: VHF (136-174 MHZ)	\$ 4,652.34	\$ 18,609.36
4	CA01949AA	ADD: ANALOG CONVENTIONAL SOFTWARE		
4	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST SOFTWARE		
4	CA01954AA	ADD: WILDCARD W/GPIO	\$ 886.16	\$ 3,544.64
4	CA01503AA	ADD: FALL BACK IN SIMULCAST CABINET REPEAT	\$ 443.08	\$ 1,772.32
4	X265AM	BR PRESELECTOR, 150-174 MHZ	\$ 369.23	\$ 1,476.93
4	X153AW	ADD: RACK MOUNT HARDWARE	\$ 36.92	\$ 147.69
4	DSWL4EM12CE26	48V, 26AH battery	\$ 414.28	\$ 1,657.12
1	302718	19" RM Battery Shelf Bla New N	\$ 166.16	\$ 166.16
		Rack & Surge		
1	DQ46053702	CHATSWORTH 6.5 IN BLACK RACK	\$ 394.34	\$ 394.34
1	3182602Y06	GROUNDING BUS BAR	\$ 70.27	\$ 70.27
3	DSRMP615A	SPD, TYPE 3, 120V RACK MOUNT, 15A PLUG-IN W/ (6) 15A NEMA 5-15 OUTLETS	\$ 220.06	\$ 660.19
		Combining System		
1	DQ743712259TA4SQ	4 CH CMBNR RCVR MCPLR	\$ 29,783.10	\$ 29,783.10
		UPS - 10 Hr		
1	DQ070512BEB	Eaton 9170+ 3kVA / 2.5kW Tower UPS, 1PH, 240V input, 120/240V output	\$ 16,862.89	\$ 16,862.89
		Frequency Reference		
1	DSTRAK91009E	REMOTE SITE REDUNDANT MODULAR FREQUENCY TIMING SYSTEM AC	\$ 22,202.74	\$ 22,202.74
2	DSTRAK91061	FOUR PORT DDM	\$ 531.70	\$ 1,063.39
		Bundled Mainline & Jumpers (Est 15ft Upper 25 Lower) Superflex for lower RX		
200	L3323	CABLE: 7/8" AVA HELIAX POLY JKT PER FOOT	\$ 6.28	\$ 1,255.39
50	L1705	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT	\$ 2.58	\$ 129.23
25	L1702	CABLE: 1/2" SUPERFLEX POLY JKT PER FOOT	\$ 3.47	\$ 86.77
		Tx ANT SYS 1 - 80' 7/8" Mainline		
1	DSSD214SF2P2LDF	LOW PIM 4 DIPOLE ANTENNA, 7.0 DBD GAIN, ELLIPTICAL, 138-174 MHZ, DIN	\$ 3,019.59	\$ 3,019.59
2	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
1	DDN9496	7/8" 7-16 DIN FEMALE POSITIVE STOP CONNECTOR	\$ 29.35	\$ 29.35
1	DDN9497	7/8" 7-16 DIN MALE POSITIVE STOP CONNECTOR	\$ 29.35	\$ 29.35
3	DSSG7806B2A	GROUNDING KIT FOR 7/8 IN COAXIAL CABLE	\$ 16.62	\$ 49.85
1	DSL5SGRIP	7/8" SUPPORT HOIST GRIP	\$ 21.05	\$ 21.05
1	DSVHF50DPGR	SPD, 100 TO 512MHZ, FEMALE/FEMALE CONNECTOR, PIM RATED	\$ 110.77	\$ 110.77
2	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
		Rx ANT SYS 1 - 120' 7/8 Mainline		
1	DSSD214SF2P2LDF	LOW PIM 4 DIPOLE ANTENNA, 7.0 DBD GAIN, ELLIPTICAL, 138-174 MHZ, DIN	\$ 3,019.59	\$ 3,019.59
1	DDN1090	7-16 DIN MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 20.12

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QTY	NOMENCLATURE	DESCRIPTION	Unit Price with Discount	Extended Price with Discount
1	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 20.12
2	TDN9289	CABLE WRAP WEATHERPROOFING	\$ 16.25	\$ 32.49
2	DDN9498	7/8" TYPE N FEMALE POSITIVE STOP CONNECTOR	\$ 27.88	\$ 55.75
4	DSSG7806B2A	GROUNDING KIT FOR 7/8 IN COAXIAL CABLE	\$ 16.62	\$ 66.46
1	DSL5SGRIP	7/8" SUPPORT HOIST GRIP	\$ 21.05	\$ 21.05
1	DSIS50NXC2MA	COAX PROTECTOR FLANGE MT	\$ 57.60	\$ 57.60
2	DDN1088	TYPE N MALE PS FOR 1/2 IN LDF4-50A CABLE	\$ 20.12	\$ 40.25
		Torque Wrenches - 1 Per Site		
2	DDN9743	TORQUE WRENCH KIT FOR 7-16 DIN & TYPE N COUPLING NUTS	\$ 146.95	\$ 293.91

EQUIPMENT SUBTOTAL:	\$ 362,933.80
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Performance Bond	4,165.66
Total Project Management	108,770.82
Total Installation Labor	67,872.21
Grand Total:	\$ 543,742.49



CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
01/10/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Aon Risk Services Central, Inc. Chicago IL Office 200 East Randolph Chicago IL 60601 USA	CONTACT NAME: PHONE (A/C. No. Ext): (866) 283-7122 FAX (A/C. No.): (847) 953-5390		
	E-MAIL ADDRESS:		
INSURED Motorola Solutions, Inc. Attn Karen Napier 1303 East Algonquin Road Schaumburg IL 60196 USA	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A: Liberty Insurance Corporation		42404
	INSURER B: Liberty Mutual Fire Ins Co		23035
	INSURER C:		
	INSURER D:		
	INSURER E:		
INSURER F:			

Holder Identifier :

COVERAGES	CERTIFICATE NUMBER: 570048820244	REVISION NUMBER:
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THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			TB2641005169072	07/01/2012	07/01/2013	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$250,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$4,000,000 PRODUCTS - COMP/OP AGG Included
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			AS2-641-005169-012	07/01/2012	07/01/2013	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
	UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION						EACH OCCURRENCE AGGREGATE
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			WA764D005169082 All other States WC7641005169092 OR, WI	07/01/2012	07/01/2013	<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE-EA EMPLOYEE \$1,000,000 E.L. DISEASE-POLICY LIMIT \$1,000,000

Certificate No : 570048820244

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

City and County of Denver Attn: Jessica Skibo 601 W. Colfax Ave., Department 304 Denver CO 80202 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Aon Risk Services Central, Inc.</i>
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Contract Control Number:

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of

SEAL

CITY AND COUNTY OF DENVER

ATTEST:

By _____

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

By _____

By _____

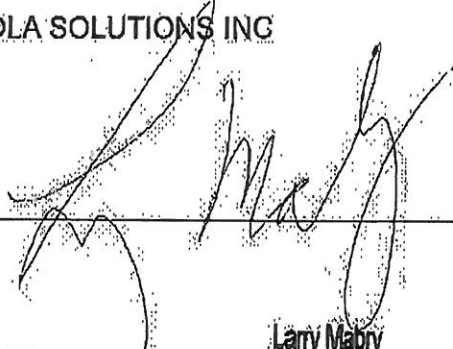
By _____



Contract Control Number: MOOEM-201309791-00

Contractor Name: MOTOROLA SOLUTIONS INC

By: _____



Name: Larry Mabry
(please print) (MSSSI Vice President & Director Sales)

Title: _____
(please print)

ATTEST: [if required]

By: _____

Name: _____
(please print)

Title: _____
(please print)

