LARAMIE COUNTY CLERK
BOARD OF COUNTY COMMISSIONERS
AGENDA ITEM PROCESSING FORM

1. DATE OF PROPOSED ACTION: December 5, 2017

2. AGENDA ITEM: ☐ Appointments ☐ Bids/Purchases ☐ Claims

☒ Contracts/agreements/leases ☐ Grants ☐ Land Use: Variances/Board App/Plats

☐ Proclamations ☐ Public Hearings/Rules & Reg's ☐ Reports & Public Petitions

☐ Resolutions ☐ Other

3. DEPARTMENT: Combined Communications

APPLICANT: Motorola Solutions, Inc. **AGENT: Glen Crumpton**

4. DESCRIPTION: Consideration of an addendum #2 to communications system agreement for two new 800 MHZ sites.

Amount **$1,488,098.00** From **12/5/2017** To **2022**

5. DOCUMENTATION: **2** Originals

RECEIVED AND APPROVED AS TO FORM ONLY BY THE DEPUTY LARAMIE COUNTY ATTORNEY

Clerks Use Only:

Commissioner	Signatures
Ash _____	Co Attny _____
Heath _____	Assist Co Attny _____
Holmes _____	Grants Manager _____
Kailey_____	Outside Agency _____
Thompson _____	
Action _____	
Postponed/Tabled_____	

ADDENDUM #2 TO COMMUNICATIONS SYSTEM AGREEMENT
FOR TWO NEW 800 MHZ SITES
between
Laramie County, WY and Motorola Solutions, Inc.

THIS #2 ADDENDUM ("Addendum") is made and entered into by and between Laramie County, 310 West 19th Street, P.O. Box 608, Cheyenne Wyoming, 82003-0608 (hereinafter referred to as "COUNTY" or "Customer") and Motorola Solutions, Inc., 7237 Church Ranch Blvd., Suite 406, Westminster, CO 80021 (hereinafter referred to as "CONTRACTOR" or "Motorola"). The parties agree as follows:

I. PURPOSE

This Addendum applies to the following documents detailing the services and equipment to be provided by CONTRACTOR to COUNTY:

- Proposal Letter dated October 28, 2014
- Communications System Agreement (17 pages);
- Exhibit A, Software License Agreement
- Exhibit B, Payment Schedule [OMITTED]
- Exhibit C, Technical and Implementation Documents (including Table of Contents and pages 1-1 to 11-1, and 12-1 and Financing Proposal dated November 24, 2014)
- Exhibit D, Service Terms and Conditions
- Exhibit E, System Acceptance Certificate
- Proposal Letter dated October 17, 2017
- Proposal for Two 800 MHZ Sites dated October 17, 2017 (93 pages)

II. TERM

This Addendum shall commence on the date the last signature is affixed hereto by the duly authorized representatives of the parties, and shall remain in full force and effect for a five (5) years term until its termination in accordance with the terms of this Addendum, unless terminated at an earlier date pursuant to the provisions of this Addendum, or pursuant to federal or state statute, rule or regulation.

III. MODIFICATIONS

A. Section 2.4 and Section 15 of the "Communications System Agreement," section 10 of the Software License Agreement, and section 13 of the Service Terms and Conditions, are modified and superseded to the extent that they are inconsistent with this Addendum, including Part III.B. and Part IV.L. "Confidential Information," below.

B. The provisions of the Communications System Agreement related to invoicing and payment, including sections 3.4 and 5.2, and section 8 of the Service Terms and Conditions, are modified and superseded to the extent they are inconsistent with this Addendum, including Part IV.J. "Limitation on Payment," below.

C. Sections 11.2, 11.3, and 11.5, and 11.4 of the Communications Service Agreement are omitted and of no further force or effect. Section 11 of the Communications Service Agreement, 13.4 of the Software License Agreement, and 17.2 of the Service Terms and Conditions are modified to the extent that they are inconsistent with the terms of this Addendum, including Part IV.G. below titled "Jurisdiction and Venue."

D. Section 13.2 of the Communications System Agreement, "General Indemnity by Customer" is excluded and of no further force or effect.

E. Section 14 of the Communications System Agreement, section 11 of the Software License Agreement, section 11 of the Service Terms and Conditions, titled "Limitation of Liability" are excluded and of no further force or effect.

IV. RESPONSIBILITIES OF CONTRACTOR

A. CONTRACTOR shall provide the COUNTY with services and equipment as more fully described in the Communications System Agreement and attachments identified in Part I above.

B. CONTRACTOR agrees to retain all required and directly pertinent records for three (3) years after the County makes final payment and all other matters relating to the Addendum are concluded. Upon thirty (30) days prior written notice from COUNTY to CONTRACTOR, CONTRACTOR agrees to permit access by the COUNTY or any of its duly authorized representatives to any books, documents, papers and records of the CONTRACTOR which are directly pertinent to this specific Addendum for purposes including but not limited to audit, examination, excerpts, and transcriptions. CONTRACTOR books and records provided to COUNTY pursuant to this provision shall not be used, duplicated or disclosed to any other third party without the express written permission of CONTRACTOR or as required by law, including the Wyoming Public Records Act. The COUNTY agrees to notify the CONTRACTOR in advance before disclosing proprietary or confidential CONTRACTOR data or information in response to a public records request. In no circumstances will CONTRACTOR be required to create or maintain documents not kept in the ordinary course of CONTRACTOR's business operations, nor will CONTRACTOR be required to disclose any information, including but not limited to product cost data, which it considers confidential or proprietary to CONTRACTOR.

V. GENERAL PROVISIONS

A. Acceptance Not Waiver: COUNTY approval of the reports, and work or materials furnished hereunder shall not in any way relieve CONTRACTOR of responsibility for the technical accuracy of the work. COUNTY approval or acceptance of, or payment for, any of the services shall not be construed to operate as a waiver of any rights under this Addendum or of any cause of action arising out of the performance of this Addendum.

B. Entire Agreement: This Addendum (5 pages), Exhibit 5 (4 pages) the Communications System Agreement (17 pages) and its attachments, the Proposal (93 pages), and all of the items identified in Part I above, represent the entire and integrated agreement and

understanding between the parties and supersede all prior negotiations, statements, representations and agreements, whether written or oral.

C. Modification: This Addendum shall be modified only by a written agreement, duly executed by all parties hereto.

D. Contingencies: CONTRACTOR certifies no gratuities, kick-backs or contingency fees were paid in connection with this Addendum, nor were any fees, commissions, gifts or other considerations made contingent upon the award of this Addendum.

E. Discrimination: All parties agree they will not discriminate against any person who performs work under the terms and conditions of this Addendum because of race, color, gender, creed, handicapping condition, or national origin.

F. ADA Compliance: All parties agree they will not discriminate against a qualified individual with disability, pursuant to a law as set forth in the Americans With Disabilities Act, P.L. 101-336, 42 U.S.C. § 12101, *et seq.*, and/or any properly promulgated rules and regulations relating thereto.

G. Jurisdiction and Venue: The parties mutually understand and agree this Agreement shall be governed by and interpreted pursuant to the laws of the State of Wyoming. If any dispute arises between the parties from or concerning this Agreement or the subject matter hereof, any suit or proceeding at law or in equity shall be brought in a court of competent jurisdiction in the State of Wyoming. The foregoing provisions of this paragraph are agreed by the parties to be a material inducement to CONTRACTOR and to COUNTY in executing this Agreement. This provision is not intended nor shall it be construed to waive COUNTY's governmental immunity as provided in this Agreement.

H. Governmental/Sovereign Immunity: COUNTY does not waive its Governmental/ Sovereign Immunity, as provided by any applicable law including WYO. STAT. §§ 1-39-101 through 121, by entering into this Addendum. Further, COUNTY fully retains all immunities and defenses provided by law with regard to any action, whether in tort, contract or any other theory of law, based on this Addendum.

I. Conflict of Interest: COUNTY and CONTRACTOR affirm, to their knowledge, no CONTRACTOR employee has any personal beneficial interest whatsoever in the Addendum described herein. No staff member of CONTRACTOR, compensated either partially or wholly with funds from this Addendum, shall engage in any conduct or activity which would constitute a conflict of interest relative to this Addendum.

J. Limitation on Payment: CONTRACTOR shall bill COUNTY by detailed invoice submitted to the Laramie County Clerk, Finance Office. Payments shall be in accordance with WYO. STAT. § 16-6-602. No payment shall be made before the last signature is affixed to this Agreement. COUNTY's payment obligation is conditioned upon the availability of funds which are appropriated or allocated for the payment of this obligation. If funds are not allocated and available for the continuance of the services and equipment provided by CONTRACTOR the Addendum may be terminated by COUNTY at the end of the period for which funds are

available. COUNTY shall notify CONTRACTOR, in writing, at the earliest possible time of the services which will or may be affected by a shortage of funds. At the earliest possible time means at least thirty (30) days before the shortage will affect payment of claims, if COUNTY knows of the shortage at least thirty (30) days in advance. No penalty shall accrue to COUNTY in the event this provision is exercised, and COUNTY shall not be obligated or liable for any future payments due or for any damages as a result of termination under this provision. This provision shall not be interpreted or construed to permit COUNTY to terminate this Addendum in order to acquire similar services from another party. If this Agreement is terminated, the COUNTY will be liable to pay CONTRACTOR for all services performed on or before the effective date of the termination. This provision (Part IV.J. Limitation on Payment), applies notwithstanding anything in the Communications System Agreement and its attachments, including ¶¶ 3.4 and 5.2 of the Communications System Agreement.

K. Insurance: The Contractor shall obtain insurance, and provide certificates, to the County's satisfaction and subject to requirements substantially similar to those set out in Exhibit 5 attached.

L. Confidentiality: The parties acknowledge and agree that this Addendum and Agreement, including their attachments, may be treated as a "public record" under the Wyoming Public Records Act. Laramie County agrees to notify the Contractor in the event that it receives a request to disclose any information deemed confidential by the Contractor. Laramie County further agrees not to oppose the Contractor's efforts to maintain confidentiality in response to any request for disclosure.

M. Addendum Controls: Where a conflict exists or arises between any provision and condition of this Addendum and the Service Agreement, the Service Terms and Conditions, or the Statement of Work, the provisions and conditions set forth in this Addendum shall control.

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ADDENDUM TO COMMUNICATIONS SYSTEM AGREEMENT
FOR TWO NEW 800 MHZ SITES
between
Laramie County, WY and Motorola Solutions, Inc.

Signature Page

LARAMIE COUNTY, WYOMING

By:_____ Date _____
Troy Thompson, Chairman, Laramie County Commissioners

ATTEST:

By:_____ Date _____
Debra Lee, Laramie County Clerk

CONTRACTOR: MOTOROLA SOLUTIONS, INC.

By:_____ Date 11/29/17
Name (printed): Larry Mabry
Title: MSSBI Vice President & Director Sales

This Addendum is effective the date of the last signature affixed to this page.

REVIEWED AND APPROVED AS TO FORM ONLY

By:_____ Date 11/29/17
Gladys Ayokosok
Deputy Laramie County Attorney

Exhibit 5
Insurance Requirements for Construction Contracts

Contractor shall procure and maintain for the duration of the contract, *and for five years thereafter,* insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

MINIMUM SCOPE AND LIMIT OF INSURANCE

Coverage shall be at least as broad as:

1. **Commercial General Liability** (CGL): Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations, property damage, bodily injury and personal and advertising injury with limits no less than **$5,000,000** per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

2. **Automobile Liability**: Insurance Service Office Form Number CA 0001 covering Code 1 (any auto), with limit no less than **$5,000,000** per accident for bodily injury and property damage.

3. **Workers' Compensation** insurance as required by the State of Wyoming with Statutory Limits, and Employers' Liability Insurance with limit of no less than **$1,000,000** per accident for bodily injury or disease.

4. **Builder's Risk** (Course of Construction) insurance utilizing an "All Risk" (Special Perils) coverage form, with limits equal to the completed value of the project and no coinsurance penalty provisions.

5. **Surety Bonds** as described below.

6. **Professional Liability** (if Design/Build) with limit no less than $1,000,000 per occurrence or claim, $2,000,000 policy aggregate.

Deductibles and Self-Insured Retentions
The deductibles under Contractor's policies shall be the sole obligation of Contractor.

Other Insurance Provisions

The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. **The Entity, its officers, officials, employees, and volunteers are to be covered as additional insured's** on the CGL policy with respect to liability arising out of with respect to liability arising out of work or operations performed by or on behalf of the Contractor including

materials, parts, or equipment furnished in connection with such work or operations and automobiles owned, leased, hired or borrowed by or on behalf of the Contractor. General liability coverage can be provided in the form of an endorsement to the Contract's insurance (at least as broad as ISO Form CG 20 10, CG 11 85 or both CG 20 10 and CG 20 37 forms if later revisions used.)

2. For any claims related to this project, the **Contractor's insurance coverage shall be primary** insurance as respects the Entity, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the Entity, its officer, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

3. Each insurance policy required by this clause shall provide that coverage shall not be cancelled, except with notice to the Entity.

Builder's Risk (Course of Construction) Insurance

Contractor may submit evidence of Builder's Risk insurance in the form of Course of Construction coverage. Such coverage shall **name the Entity as a loss payee** as their interest may appear.

If the project does not involve new or major reconstruction, at the option of the Entity, an Installation Floater may be acceptable. For such projects, a Property Installation Floater shall be obtained that provides for the improvement, remodel, modification, alteration, conversion or adjustment to existing buildings, structures, processes, machinery and equipment. The Property Installation Floater shall provide property damage coverage for any building, structure, machinery or equipment damaged, impaired, broken or destroyed during the performance of the Work, including during transit, installation, and testing at the Entity's site.

Claims Made Policies

If any of the coverage required is written on claims-made coverage form:

1. The retroactive date must be shown, and must be before the date the execution date of the contract or the beginning of contract work.

2. Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of the contract work.

3. If coverage is cancelled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective, or start of work date, the Contractor must purchase extended reporting period coverage for a minimum of five (5) years after completion of contract work.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the Entity.

Waiver of Subrogation

Contractor hereby agrees to waive rights of subrogation under the General Liability which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. **The Workers' Compensation policy shall be endorsed with a waiver of subrogation** in favor of the Entity for all work performed by the Contractor and its employees.

Verification of Coverage

Contractor shall furnish the Entity with original certificates and amendatory endorsements or copies of the applicable insurance language effecting coverage required by this contract. All certificates and endorsements are to be received and approved the Entity before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the Contractor's obligation to provide them.

Subcontractors

Contractor shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and Contractor shall ensure that Entity is an additional insured on insurance required from subcontractors. For CGL coverage subcontractors shall provide coverage with a format least as broad as CG 20 38 04 13.

Surety Bonds

Contractor shall provide the following Surety Bonds:

1. Bid bond
2. Performance bond
3. Payment bond
4. Maintenance bond

The Payment Bond and the Performance Bond shall be a sum equal to the contract price. If the Performance Bond provides for a one-year warranty a separate Maintenance Bond is not necessary. If the warranty period specified in the contract is for longer than one year a Maintenance Bond equal to 10% of the contract price is required. Bonds shall be duly executed by a responsible corporate surety, authorized to issue such bonds in the State of Wyoming and secured through an authorized agent with an office in Wyoming.

Special Risks or Circumstances

Entity reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

MOTOROLA SOLUTIONS

Motorola Solutions, Inc.
7237 Church Ranch Blvd Suite 306
Westminster, CO 80021

October 17, 2017

Glen Crumpton
Communications Director
Laramie County Combined Communications Center
309 West 20th Street
Cheyenne, WY 82001

RE: New 800 MHz GTR Sites for the Antelope and Burns Water Locations

Dear Mr. Crumpton:

Motorola Solutions, Inc. ("Motorola") is pleased to have the opportunity to provide Laramie County with quality communications equipment and services. The Motorola project team has taken great care to propose a solution to provide unsurpassed value.

Motorola's solution includes a combination of hardware, software, and services. Specifically, this solution provides the following:

- (1) 800 MHz RF Site with 7 channels for the Antelope Site
- (1) 800 MHz RF Site with 7 channels for Burns Water Tank Site
- (1) One Hop of 11GHz Cambium PTP for Antelope to Burns Water Tank
- (1) One Hop of 11GHz Cambium PTP for Burns Water to Archer Water Tank
- Frequency Identification and Coordination Services for 7 channels at each Site
- Civil improvements for both the Antelope and Burns Sites
- Project Management, Engineering, Installation, Programming and Optimization Services

Laramie County and Motorola previously entered into a Communications System Agreement effective December 17, 2014 (the "CSA"). Section 3.4 of the CSA permits Laramie County to make additional purchases of Equipment, Software, and services using the CSA as the underlying agreement. This proposal is based on the assumption that Laramie County will use its rights under Section 3.4 for the proposed transaction(s) and that the terms and conditions of the CSA apply. To accept Motorola's proposal, Laramie County may simply issue a purchase order that incorporates by reference Motorola's proposal dated October 17, 2017. This proposal shall remain valid for a period of 60 days from the date of this cover letter. Motorola would be pleased to address any concerns Laramie County may have regarding the proposal. Any questions can be directed to Jose Crespo, Motorola Senior Account Manager, at 303-591-7620.

MOTOROLA SOLUTIONS

Motorola Solutions, Inc.
7237 Church Ranch Blvd Suite 450
Westminster, CO 80021

We thank you for the opportunity to furnish Laramie County with our communications solutions and we hope to strengthen our relationship by implementing this project. Our goal is to provide you with the best products and services available in the communications industry.

Sincerely,
MOTOROLA SOLUTIONS, INC.

Larry Mabry
MSSSI Vice President & Director Sales

MOTOROLA SOLUTIONS

LARAMIE COUNTY

TWO 800 MHZ SITES OCTOBER 17, 2017

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SECTION 1

SYSTEM DESCRIPTION

1.1 PROJECT OVERVIEW

The primary intent of this proposal is to provide Laramie County with two new repeater sites, each equipped with seven channels. The two new sites, Burns Water Tank and Antelope, are intended to provide portable and mobile coverage in the eastern portion of Laramie County where the WyoLink system currently lacks adequate coverage for the County's requirements.

Each of the two RF sites will be furnished with two, 800MHz, GTR Expandable Site Subsystem (ESS) racks; the first equipped with 5 FDMA channels and the second equipped with 2 FDMA channel. These seven radios will utilize an antenna system comprised of one transmit antenna and one TTA-equipped receive antenna. An SDM 3000 is also included to provide remote site alarm notifications in line with existing WyoLink sites.

Connectivity between each site will be achieved via Cambium PTP820G with RFU-C TDM based microwave hops. These non-redundant 1+0 links will connect the Burns Water Tank site to Antelope and Antelope to the existing Archer Water Tower RF site. The endpoint of the link at the Archer Water Tower site will be presented to the existing TDM based link between Archer and 85 South. At 85 South cross connects between the 2 sites and the State of Wyoming's existing MUX will be established to achieve connectivity to the WyoLink Zone 1 Core.

Each site will be equipped with backup power systems to ensure that in the event of main power loss the site will continue to operate until power is restored by each site's generator systems. The first five channel GTR rack will be supplied with a complement of four sets of 48VDC 18AH batteries, while the second will be supplied by two sets of 48VDC 18AH batteries. Additionally, a 1440W Eaton SPS 5PX UPS unit will reside at each site to provide backup power for the AC powered SDM 3000 and Cambium PTP 8000 equipment. Both locations will also be equipped with a generator to provide extended backup operations.

This proposal includes a set of spare equipment to support the new Cambium PTP820G links. However, spare equipment to support the GTR ESS and associated RF equipment is not included in this proposal as a complement of these spares had been purchased previously by the County.

1.2 LARAMIE COUNTY MICROWAVE ARCHITECTURE

1.2.1 Laramie County Site Connectivity

In order to provide the new sites with connectivity to the existing WyoLink network and core two Cambium PTP820G with RFU-C microwave links will be furnished. Spur based microwave links will be established between the new Burns and Antelope site and the Antelope and existing Archer site. No additional paths will be added as a part of this proposal. The proposed links and their relative positions to one another are depicted in the following diagram.

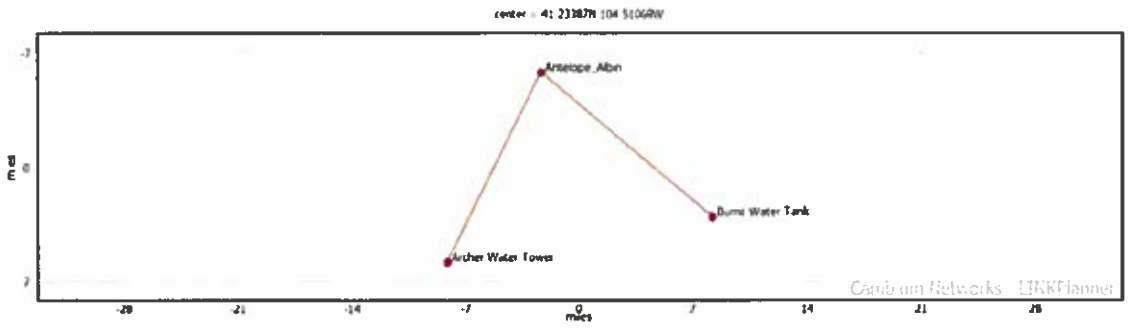


Figure 1-1: Diagram of Proposed Laramie County PTP connections.

The new PTP 800 link will operate in the 6 GHz licensed band, and is licensed for up to 100 Mbps of throughput (full duplex). Additionally, this link has been designed to provide a minimum of 50 Mbps of Ethernet throughput in addition to 3 T1 links at five 9s (99.999%) or greater availability. Cambium's LinkPlanner software currently estimates that both of the proposed links will surpass these minimum requirements with a greater level of throughput at a higher level of availability.

When deployed, the dish/antenna and Outdoor Unit (ODU) are both mounted outside on the tower. The Indoor Unit (IDU), located inside the site structure, is then connected to the ODU via a coax cable. Finally, the IDU is connected to the co-located RF network's equipment. Each of the proposed PTP820G based links is currently designed with a 1+0 configuration. This means that each link lacks any form of redundancy in the event of an antenna or other failure.

At the Archer endpoint the system will leverage the existing PTP connection from Archer to the 85 South site which ultimately provides a path to the WyoLink Zone 1 Core.

1.2.2 Path Profiles and Antenna Network Placement

The following provides information regarding the antenna placement and microwave paths as predicted by Cambium's LinkPlanner tool. The terrain profile depicted in each of the path profiles includes an additional 20' buffer to account for potential ground-cover obstructions.

Burns Water Tower to Antelope Link

The path depicted below is based on the deployment of 6' 6GHz microwave dishes at each endpoint of the link. The dish located at the Burns Water Tower is expected to be at or above a 90' elevation and mounted on a leg of the Water Tower. The associated 6' microwave dish at the Antelope site will be placed at a 110' elevation on the tower.

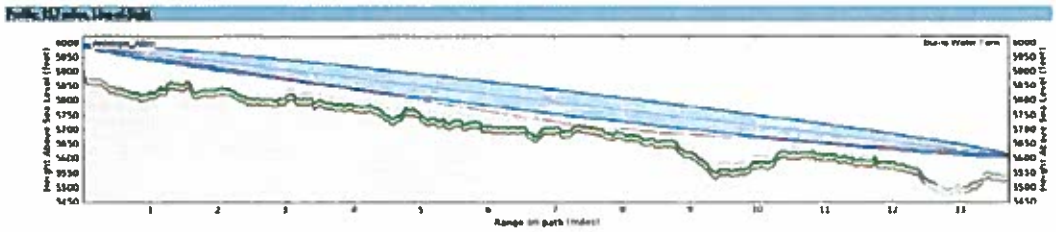


Figure 1-2: Burns to Antelope Site Link Path

Antelope to Archer Water Tower Link

The path depicted below is based on the deployment of 6' 6GHz microwave dishes at each endpoint of the link. The dish located at the Antelope tower is expected to be at a 60' elevation. The associated 6' microwave dish at the Archer site will be placed at a 75' elevation on the cylinder of the tower.

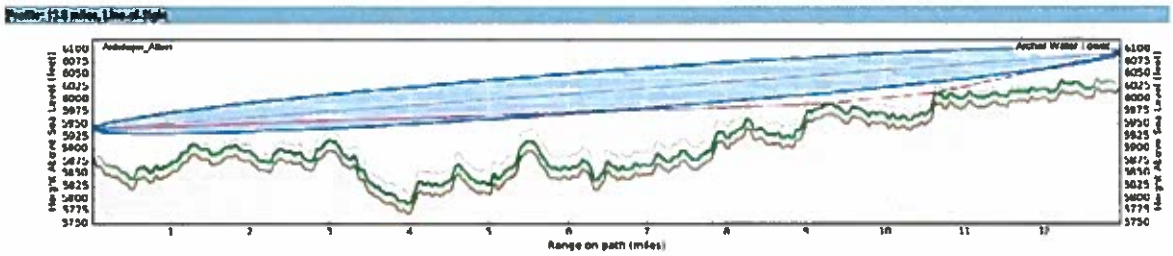


Figure 1-3: Antelope to Archer Site Link Path

1.2.2.1 Assumptions

All microwave paths must be Line-of-Site (LOS) verified prior to implementation. Only a physical path survey can definitively confirm there is a clear LOS path. An initial virtual LOS visualization was generated by using the PTP LINKPlanner design tool, providing the first step in determining a link's viability. Although this tool attempts to predict LOS paths through the use of elevation and clutter profiles it may not include all current natural or man-made obstructions that may exist along the link's path. If a physical path survey determines any of the paths do not have LOS, then an alternative path design may be required.

It is also assumed that both sites will be capable of supporting the dishes at or near the elevations defined in the above section. As a detailed diagram of the Burns Water Tank is currently unavailable an assumption has been made that the dish can be placed at a 90' elevation. This is based on the tank's noted low water line at a 111' elevation and the observation that the lowest portion of the tank falls below the top of the tank's supporting legs. It is additionally assumed that the Town of Burns will allow a chain mounted 6' dish to be applied to the northwest leg of the tank, as high as possible.

1.3 COVERAGE DESIGN

Motorola Solutions has worked with Laramie County to both understand coverage requirements and to determine appropriate RF sites within the county. Of the suitable sites identified in the area the Burns Water Tank and Antelope sites have been determined to provide the greatest level of coverage to supplement the existing WyoLink system's sites in the region. Motorola Solutions's proprietary RF prediction tool "HYDRA Stratus" was utilized to perform coverage predictions for this effort. Hydra uses a proprietary form of the Okumura 1.0 propagation model dubbed Okumura HQAI to predict RF coverage.

The maps included in the appendix of this proposal depict roundtrip coverage estimates for the two proposed repeater sites. Coverage predictions for both portable and mobile subscribers have been included for consideration. These coverage predictions are based upon currently known and assumed design inputs which may differ from the final installation. As such, coverage maps are informational only. Motorola Solutions is not making any coverage guarantees. Additionally, this proposal does not include Coverage Acceptance Testing to verify coverage predictions.

1.4 PROPOSED SITE EQUIPMENT

The following provides a summary of the primary pieces of equipment and software proposed for the proposed RF sites

1.4.1 New P25 800MHz Repeater Site – Burns Water Tank

- Qty One (1) SDM 3000 MOSCAD RTU
- Qty One (1) GTR 8000 ESS, Equipped with:
  - One (1) Site Gateway/Router
  - Five (5) FDMA CH
  - Two (2) Site Controllers
  - Primary 6 Port Combining System
  - Primary Receive Multicoupler, capable of up to 24 CH
  - 7.5' Rack
- Qty One (1) GTR 8000 ESS Expansion Rack, Equipped with:
  - Two (2) FDMA CH
  - Two (2) XHUB Switches
  - 6 Port Combining System with Phasing Harness for Expansion Rack
  - Cabinet Receive Multicoupler for Expansion Rack
  - 7.5' Rack
- Qty One (1) 428E-Series TTA
- Qty One (1) 428E-Series CMU, 110VAC
- Qty Two (2) Antenna Systems
- Qty Six (6) 18AH 48VDC Battery Strings
- Qty One (1) 1440W Eaton SPS 5PX UPS
- Qty One (1) PTP 820G w/ RFU-C unit and 6' Dish
- Qty One (1) Generac 35kW Natural Gas Generator w/ ATS

1.4.2 New P25 800MHz Repeater Site – Antelope RF Site

- Qty One (1) SDM 3000 MOSCAD RTU
- Qty One (1) GTR 8000 ESS, Equipped with:
  - One (1) Site Gateway/Router
  - Five (5) FDMA CH
  - Two (2) Site Controllers
  - Primary 6 Port Combining System
  - Primary Receive Multicoupler, capable of up to 24 CH
  - 7.5' Rack
- Qty One (1) GTR 8000 ESS Expansion Rack, Equipped with:
  - Two (2) FDMA CH
  - Two (2) XHUB Switches
  - 6 Port Combining System with Phasing Harness for Expansion Rack
  - Cabinet Receive Multicoupler for Expansion Rack
  - 7.5' Rack
- Qty One (1) 428E-Series TTA
- Qty One (1) 428E-Series CMU, 110VAC
- Qty Two (2) Antenna Systems

- Qty Six (6) 18AH 48VDC Battery Strings
- Qty One (1) 1440W Eaton SPS 5PX UPS
- Qty Two (2) PTP 820G w/ RFU-C units and 6' Dishes
- Qty One (1) Generac 35kW Liquid Propane Generator w/ ATS

1.4.3 Existing P25 800MHz Repeater Site – Archer Water Tower

- Qty One (1) PTP 820G w/ RFU-C unit and 6' Dish

1.5 BACKHAUL REQUIREMENTS

The following figure is the estimated throughput requirements for the proposed sites. Site links are currently TDM based T1 links. However, Ethernet throughput requirements are also included for future consideration.

Burns Water Tank RF Site Throughput Requirement:

- T1/TDM: 3 DS0s or Ethernet: 384 Kbps

Antelope RF Site Throughput Requirement:

- T1/TDM: 3 DS0s or Ethernet: 384 Kbps

1.6 POWER & HVAC REQUIREMENTS/RECOMMENDATIONS

Power Requirements

The following figures detail the estimated maximum power draw requirements for the equipment proposed at each of the three sites. All proposed equipment will require an AC based power source. A figure including a +25% buffer is also provided for the new sites in order to properly size site power services for potential future site expansion.

Burns Water Tank: 3471 W/Hr; +25% Buffer - 4339 W/Hr

Antelope Site: 3493 W/Hr; +25% Buffer – 4336 W/Hr

Archer Water Tower: 22 W/Hr

HVAC Recommendations

In order to provide adequate cooling for the backroom devices the heat dissipation values of all equipment to be located in that area has also been calculated. It is highly recommended that A/C units installed in the equipment rooms are sized appropriately per the information below in order to avoid premature equipment failure or other negative impacts on equipment related to overheating.

Burns Water Tank: 11843 BTU/Hr; +25% Buffer – 14804 BTU/Hr

Antelope Site: 11918 BTU/Hr; +25% Buffer – 14898 BTU/Hr

Archer Water Tower: 75 BTU/Hr

1.7 ASSUMPTIONS

Motorola Solutions has made several assumptions in preparing this proposal, which are noted below.

1.7.1 Coverage Design Assumptions

- Predicted coverage represented in the provided maps is at 95% Covered Area Reliability as defined by Motorola Solutions's Coverage Standards.
- Predicted coverage is modeled at Delivered Audio Quality (DAQ): 3.4
- All GTR ESS base stations have been ran at full 100W Tx power.
- The sites will be licensed at or above the following ERPs utilized in the provided coverage maps, as listed below. Please note that FCC ERP licensing is recommended at a higher level than these estimates (200W or above is recommended) as measured RF system losses tend to be lower than estimated figures utilized to calculate the ERPs in the provided coverage estimates.
  - Burns Water Tank – 167 W / 52.22 dBm
  - Antelope RF Site – 187 W / 52.72 dBm
- Motorola Solutions modeled the coverage assuming the following subscribers:
  - Portable, APX 6000: 3W transmit power, transmit and receive at hip level in swivel case with speaker mic
  - Mobile, APX 6500: 35 W transmit power, trunk center-mount antenna
- Base Station antennas are assumed to be at the following heights (base of the antenna) for each site:
  - Burns Water Tank – Tx at 140', Rx at 140'
  - Antelope RF Site – Tx at 120', Rx at 140'
- Antenna line losses have been assumed based on estimated cable lengths, actual line losses are
- Any significant deviation from this information will require the generation of new coverage models and may result in a change order if additional sites are required.

1.7.2 System Design Assumptions

- The Antelope and Burns Water Tank sites will each be capable of supporting three (3) 19" 7.5' equipment racks
- FCC licensing of the seven (7) new Tx/Rx pairs of 800MHz frequencies for both sites will be completed prior to activation of the seven (7) new channels.
- The Burns Water Tank's shelter can and will be modified per this proposal's recommendations in order to provide an appropriate space for the RF equipment.
- At the Burns site it's assumed that a natural gas generator can be placed on the west side of the shelter to provide backup site power.
- The Burns Water Tank is assumed to be capable of supporting the following:
  - Two Sinclair SC479 Antennas and associated cabling to be placed on the apex of the tank. It is assumed that the guardrail will be capable of supporting these two antennas.
  - One 6' Microwave dish chain mounted on the NW leg of the water tank at or above 90'AGL
- It is assumed that boring through the cylinder of the Archer Water Tower will be approved at the 75' AGL on the North face of the tower to support the proposed microwave link to Antelope.
- The proposed PTP microwave link will require a line of site survey in order to determine the link's viability. Any obstructions may result in alterations to the project's scope
- The proposed microwave link design is dependent upon successful FCC licensing of the required 6 GHz frequencies.

- It is assumed that the State of Wyoming's T1 Multiplexer (MUX) at the 85 South site has sufficient capacity to perform necessary cross connects for the new T1/TDM based links presented to it from the new Antelope and Burns Water Tank sites.

SECTION 2

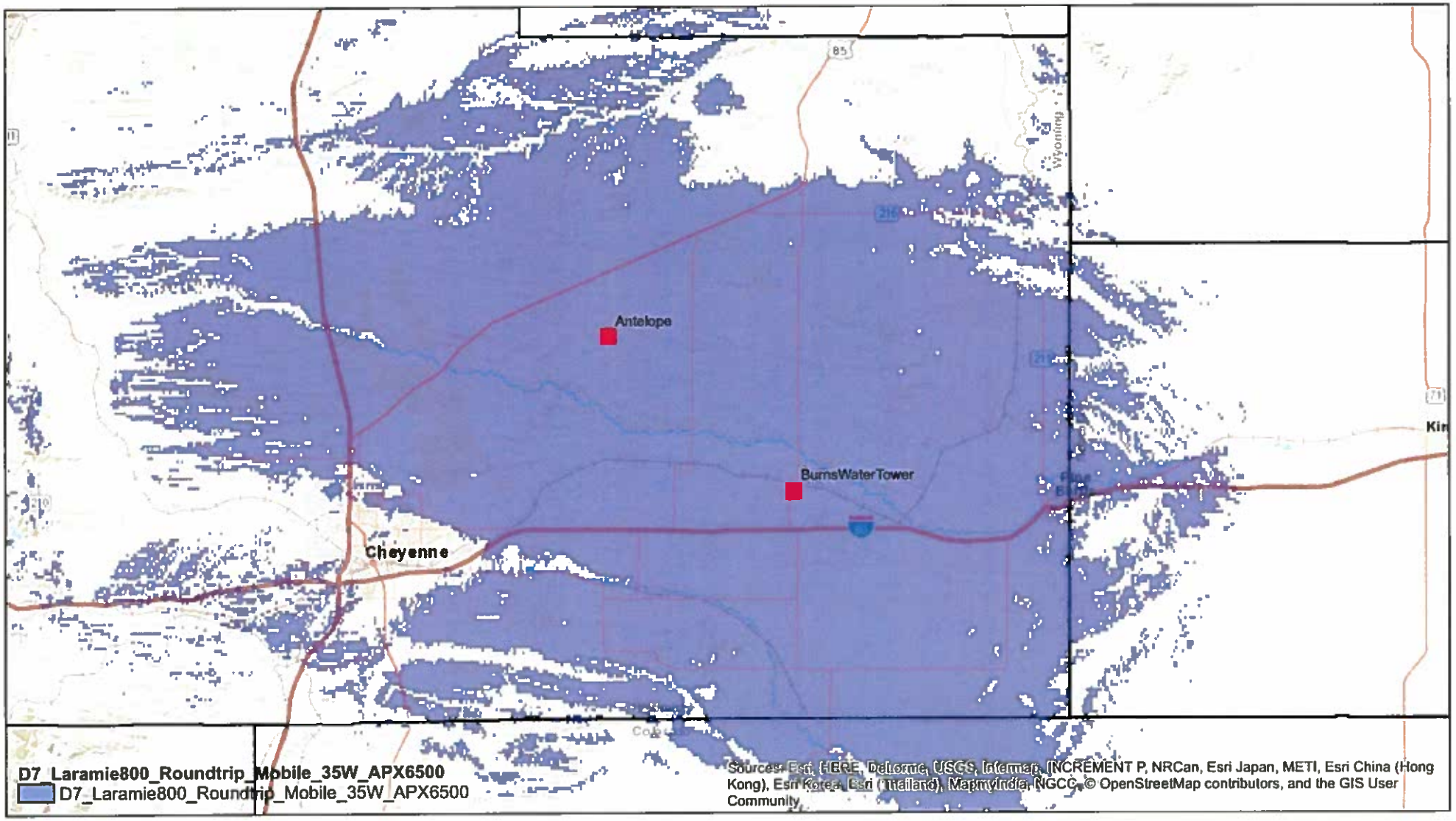
COVERAGE MAPS

Coverage Maps are included on the following pages.

MOTOROLA

WY_Laramie Co
800MHz, P25/Digital, 2 Site ASR Coverage

This map is a coverage estimate based upon currently known details and should be used for informational purposes only. This coverage estimate in no way constitutes a coverage guarantee and Motorola is not responsible for any deviation between the estimated and actual system performance.



0 4.5 9 18 Miles

1 inch = 7.32 miles

Apr 04, 2017 Hydra 4.5.3048.0 R3

Roundtrip Coverage
Mobile, 35W, Trunk Center Ant, 95% Reliability, DAQ 3.4

Run_16_WY_LaramieCo_Wyolink_Print

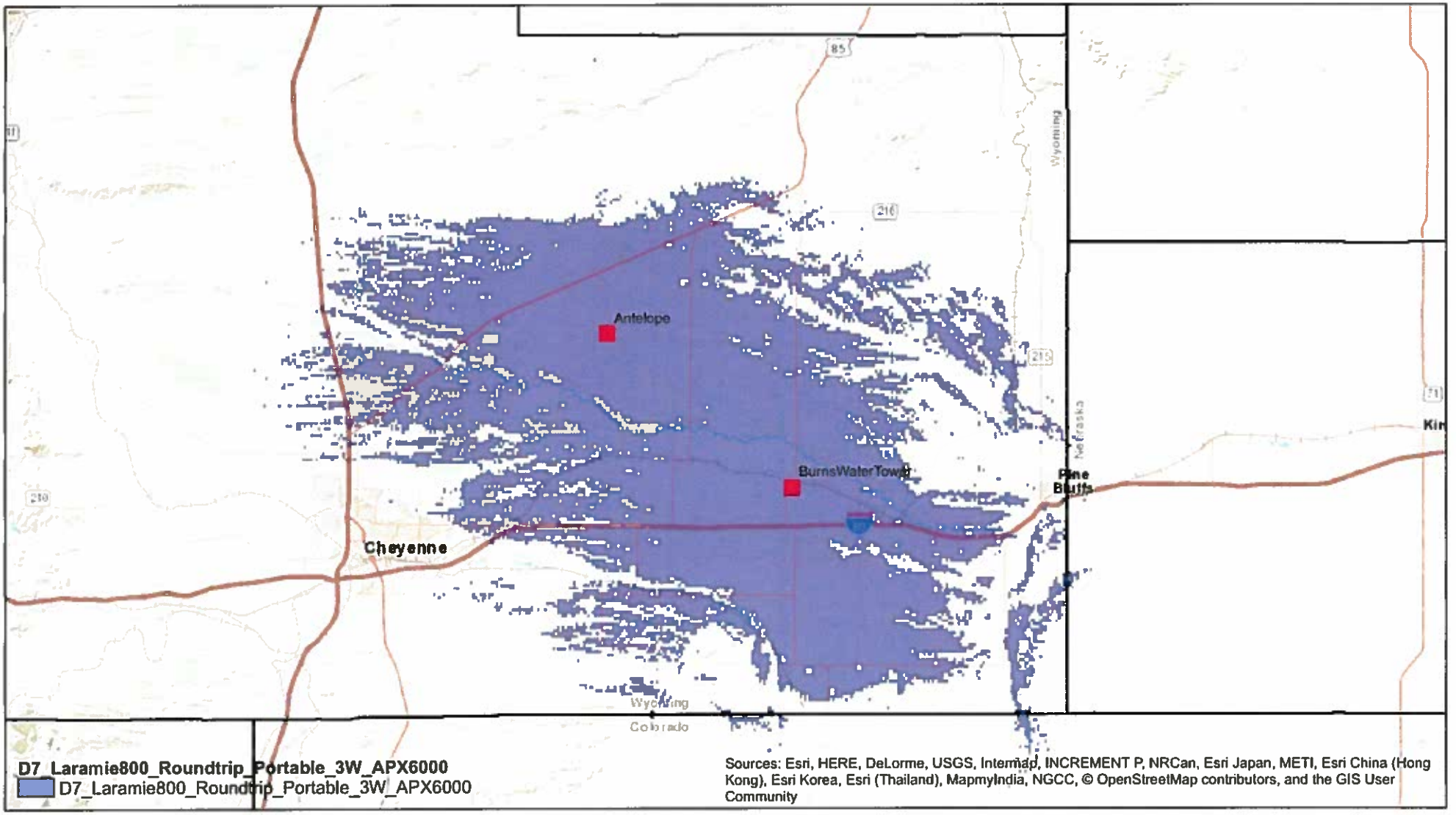
Jeremiah Freese

88012420.10.000.1.16

MOTOROLA

WY_Laramie Co
800MHz, P25/Digital, 2 Site ASR Coverage

This map is a coverage estimate based upon currently known details and should be used for informational purposes only. This coverage estimate in no way constitutes a coverage guarantee and Motorola is not responsible for any deviation between the estimated and actual system performance.



0 4.5 9 18 Miles

1 inch = 7.32 miles

Roundtrip Coverage
Portable, 3W, Swivel Case, 95% Reliability, DAQ 3.4

Run_16_WY_LaramieCo_Wyolink_Print

Jeremiah Freese

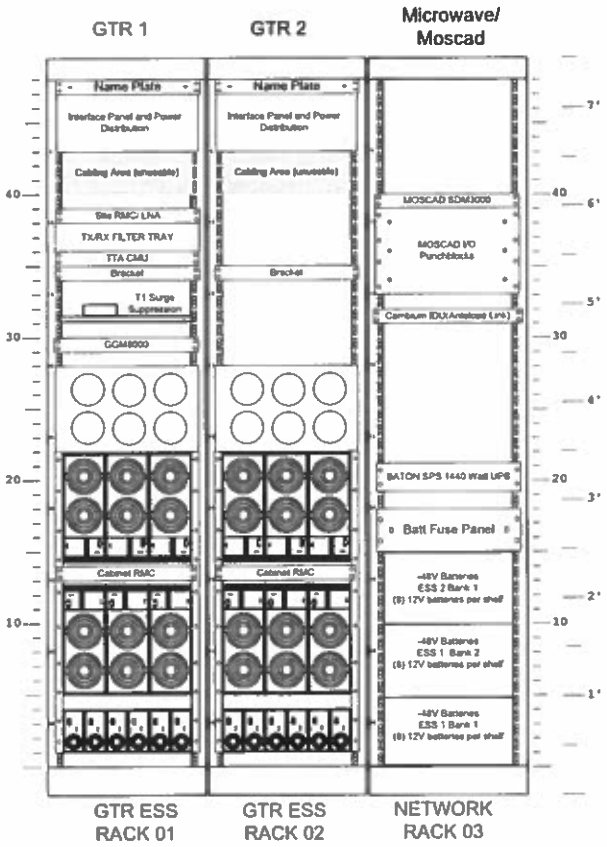
Apr 04, 2017 Hydra 4.5.3048.0 R3

88012420.10.000.1.16

SECTION 3

SYSTEM DIAGRAMS

System Diagrams are included on the following pages.



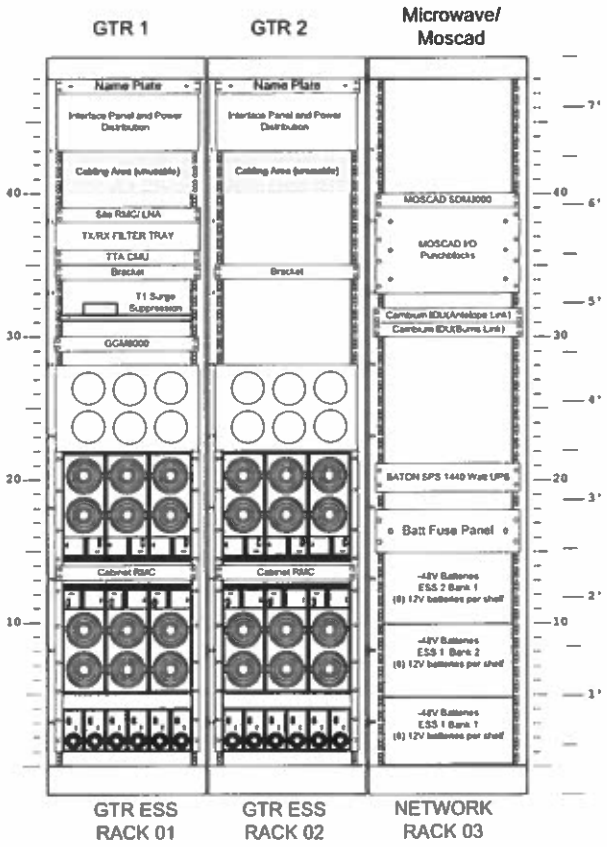
MOTOROLA

LCCCC ASTRO 25 2 SITE EXPANSION

RACK LAYOUT

BURNS WATER TANK

CONTRACT	DESIGNED JLF	REV	SCALE NONE
PROGRAM MS VISIO 2007	DRAWN JLF	CHECKED	SHEET 1 OF 1
FILE NAME LCCCC DIAGRAMS	DATE 5/9/2017	CAGE IDENT	DRAWING NO



MOTOROLA

LCCCC ASTRO 25 2 SITE EXPANSION

RACK LAYOUT

ANTELOPE

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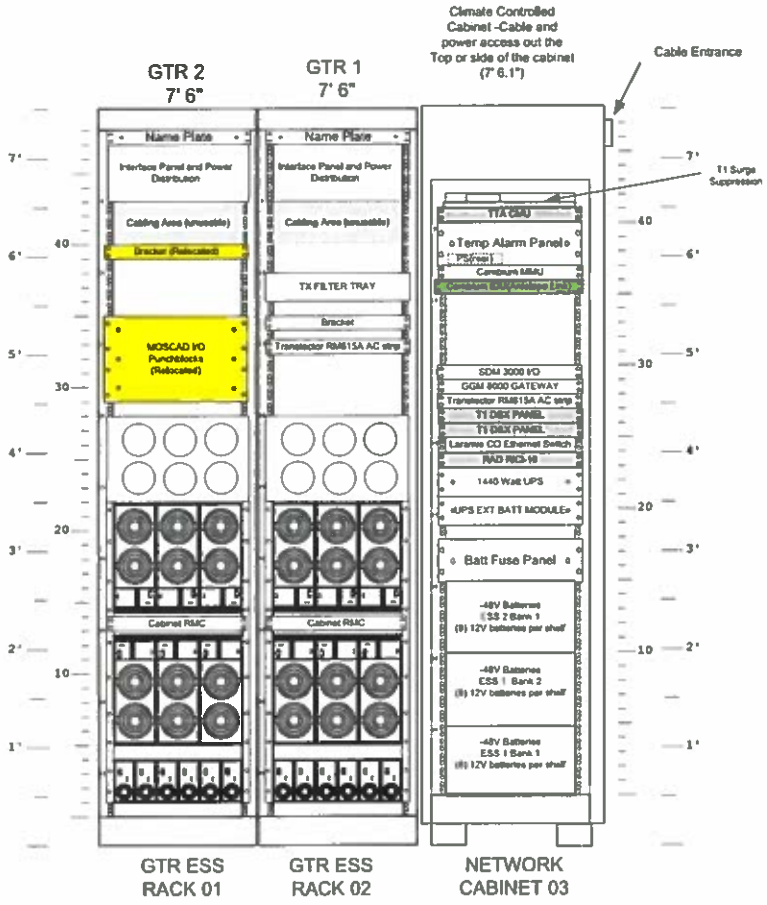
PROGRAM: MS VISIO 2007	DESIGN: JLF	CHECKED:	SHEET: 1 OF 1
FILE Insert LCCCC DIAGRAMS	DATE: 5/9/2017	CODE IDENT:	DRAWING NO:



Notes:

Relocated Existing Equipment

New/Proposed Equipment

MOTOROLA

LCCCC ASTRO 25 2 SITE EXPANSION

RACK LAYOUT

ARCHER WATER TOWER

CONTRACT:	WTH		SCALE: NONE
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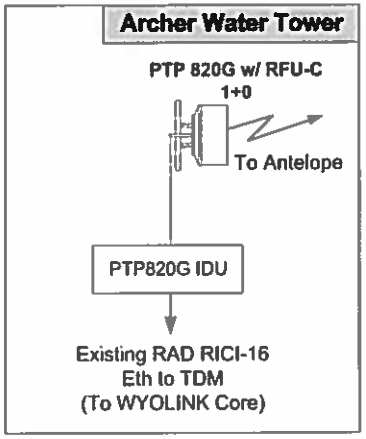
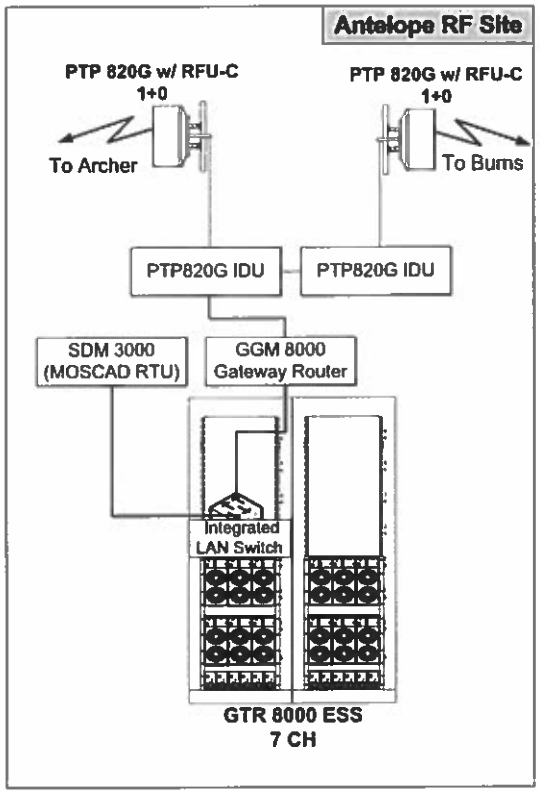
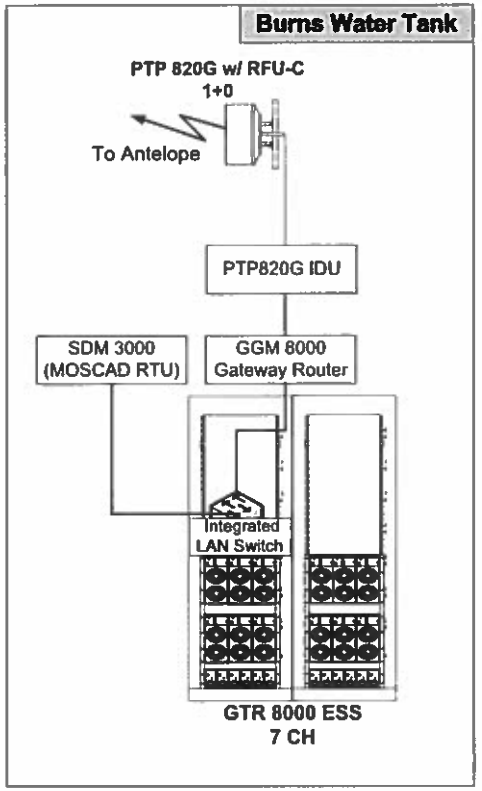
FILE NAME: LCCCC DIAGRAMS	DATE: 5/9/2017	CODE IDENT:	DRAWING NO:

Laramie County, WY
800MHz ASR 2 Site Expansion







Ethernet

T1

5/10/2017	MOTOROLA			
ENGINEER: Jeremiah Freese	Laramie County, WY 800MHz ASR 2 Site Expansion			
SOURCE: Engineering				
DRAWN BY: Jeremiah Freese				
CUSTOMER APPROVAL: None	MOTOROLA AUTH: Jeremiah Freese	SCALE: Not to scale	DRAWING NUMBER: 100-001	REV: A

Cambium Networks

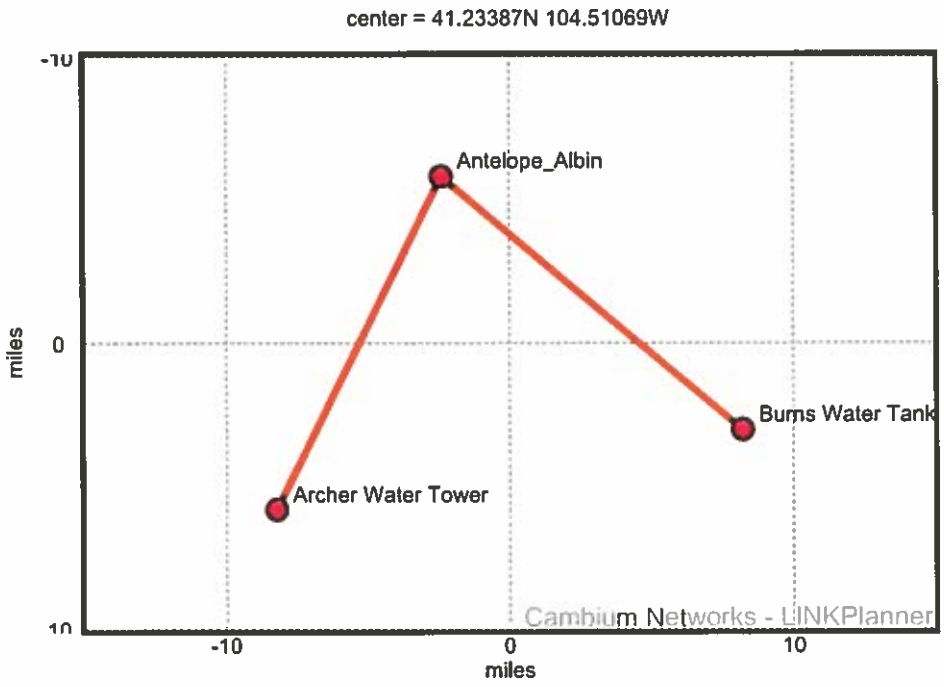
Project WY_LaramieCoLinks_Cambium 2017-03-30JF

LINKPlanner PTP Installation Report

24 May 2017

Jeremiah Freese
Organization: Motorola Solutions
Phone: 8478941727
Email: jeremiah.freese@motorolasolutions.com

Cambium Networks™



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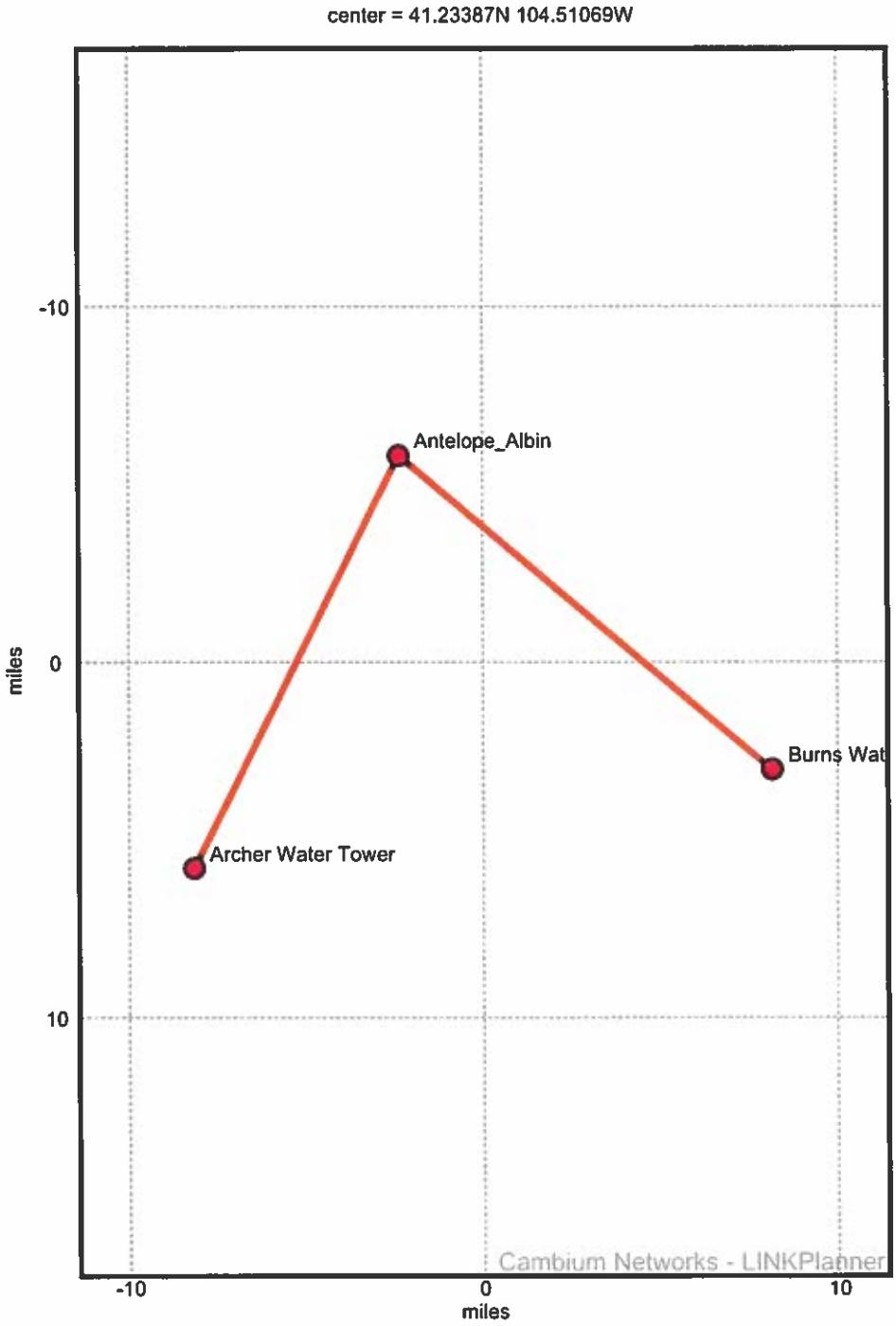
1. Project Summary

Project: WY_LaramieCoLinks_Cambium 2017-03-30JF

Description: Links for 2 new Laramie sites to join up with existing WYOLINK PTP backhaul to achieve connectivity to core. 5-9's availability, 45Mbps or at least 3 T1 equivalent, split mount 1+0 6GHz

General Information	
Customer Name	WY_Laramie Co
Company Name	
Address	
Phone	
Cell Phone	
Email	

Network Map

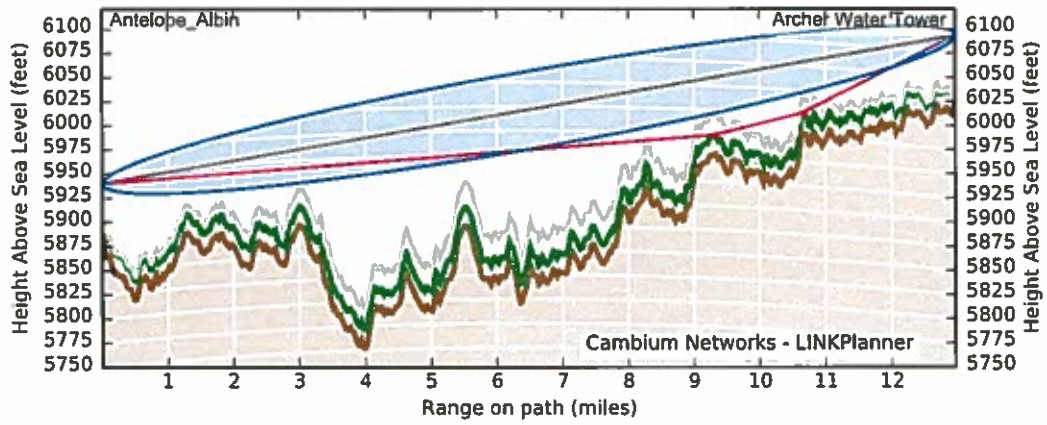

center = 41.23387N 104.51069W
-10
0
10
miles
Antelope_Albin
Burns Wat
Archer Water Tower
Cambium Networks - LINKPlanner
-10
0
10
miles

Link name	Product	Local antenna	Remote antenna	Max aggregate IP throughput
Antelope_Albin to Burns Water Tank	PTPL6820G with RFU-C	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct	117.29 Mbps
Antelope_Albin to Archer Water Tower	PTPL6820G with RFU-C	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct	117.29 Mbps

2. Antelope_Albin to Archer Water Tower

Summary	
Link Name	Antelope_Albin to Archer Water Tower
Profile Type	Line-of-Sight
Equipment Type	PTPL6820G with RFU-C
Maximum Obstruction	20 feet
Link Distance	12.968 miles
Free Space Path Loss	134.65 dB
Excess Path Loss	0.00 dB
User IP Throughput Expectation Aggregate	Aggregate 117.29 Mbps assuming PTP-820 Series running the Release 9.0 software
RF Frequency Band	Lower 6 GHz (5925 to 6425 MHz)
RF Channel Bandwidth	10 MHz
Description	Add N000081L002 PTP810 AC to DC power adapter (Qty 2) to BOM
TDM Channels	3 T1 with a reliability of 100.0000 %
optional	No

Path Profile



Link Configuration	
Link Type	1+0
T/R Spacing	252.04 MHz
Bandwidth	10 MHz
Modulation Mode	Adaptive
Maximum Mod Mode	7 - 512QAM
Minimum Mod Mode	5 - 128QAM
Polarization	Vertical
ATPC	Disabled

Link Configuration (continued)	
TDM Type	T1
Hi	Antelope_Albin
Lo	Archer Water Tower

Physical Installation Notes for Antelope_Albin	
Link Name	Antelope_Albin to Archer Water Tower
Latitude	41.31799N
Longitude	104.55620W
Site Elevation	5880 feet AMSL
Polarization	Vertical
Hardware Platform	PTPL6820G with RFU-C
Antenna Type	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct
Antenna Beamwidth	1.9°
Antenna Gain	38.91 dBi
Antenna Height	60.0 feet AGL
Antenna Tilt angle	0.1° (uptilt)
Bearing to Archer Water Tower	206.50° from True North 198.32° from Magnetic North
Magnetic Declination	8.18° E ±0.36° changing by 0.10° W per year
RF Feeder Loss	0.2 dB

Physical Installation Notes for Archer Water Tower	
Link Name	Antelope_Albin to Archer Water Tower
Latitude	41.14976N
Longitude	104.66711W
Site Elevation	6018 feet AMSL
Polarization	Vertical
Hardware Platform	PTPL6820G with RFU-C
Antenna Type	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct
Antenna Beamwidth	1.9°
Antenna Gain	38.91 dBi
Antenna Height	75.0 feet AGL
Antenna Tilt angle	-0.2° (downtilt)
Bearing to Antelope_Albin	26.42° from True North 18.20° from Magnetic North
Magnetic Declination	8.22° E ±0.36° changing by 0.10° W per year
RF Feeder Loss	0.2 dB

Radio Commissioning Notes for Antelope_Albin	
TDM Type	ANSI
Radio Interface	Radio:Slot 1, port 2
Tx Frequency	Unknown
Rx Frequency	Unknown
Tx to Rx Frequency Separation	252.040 MHz
Tx Level	24 dBm
MRMC Script	FCC 1020
MRMC Script Operational Mode	Adaptive
MRMC Script Maximum Profile	7, 512QAM
MRMC Script Minimum Profile	5, 128QAM
Adaptive Tx Power Admin	Enable
ATPC Configuration	Disabled
Header Compression	Disabled
BNC Voltage	1.29 to 1.37 Volts
Predicted Receive Power	-33 dBm ± 4 dB while aligning
County	Harris
Fiber Site	
LTE Ant Height	120
Status	Planning

Radio Commissioning Notes for Archer Water Tower	
TDM Type	ANSI
Radio Interface	Radio:Slot 1, port 2
Tx Frequency	Unknown
Rx Frequency	Unknown
Tx to Rx Frequency Separation	252.040 MHz

Radio Commissioning Notes for Archer Water Tower (continued)	
Tx Level	24 dBm
MRMC Script	FCC 1020
MRMC Script Operational Mode	Adaptive
MRMC Script Maximum Profile	7, 512QAM
MRMC Script Minimum Profile	5, 128QAM
Adaptive Tx Power Admin	Enable
ATPC Configuration	Disabled
Header Compression	Disabled
BNC Voltage	1.29 to 1.37 Volts
Predicted Receive Power	-33 dBm ± 4 dB while aligning
County	Harris
Fiber Site	
LTE Ant Height	120
Status	Planning

Regulatory Conditions	
Regulation	FCC
Band	Lower 6 GHz
Max EIRP	62.71 dBm
Output Power	24.00 dBm

Installation Instruction

Perform the following checks during the installation (Check the deployment guide and the User Guide.)

1. Check with a GPS that you are installing at the correct location.

2. Check carefully the direction to the other end of the link. Either use a corrected compass or use the GPS waypoint feature about 300 meters from the installation location.

3. When aligning antennas, it is important to find the centre of the main beam. This is done by adjusting the antenna at each end of the link in turn and monitoring the receive level until the peak is found. Once the peak level is found, it should be checked against the prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after alignment is complete, if ATPC is disabled, check that the mean value for the RSL is as predicted (see previous tables). Also check that the received power is not greater than -30dBm with ATPC enabled or disabled.

Antelope_Albin Performance *	
Frame Size	1518 Bytes
Mean IP Throughput Predicted	58.65 Mbps
Mean IP Throughput Required	50.00 Mbps
Minimum IP Throughput Required	50.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 29 secs/year)

Archer Water Tower Performance *	
Frame Size	1518 Bytes

Archer Water Tower Performance * (continued)	
Mean IP Throughput Predicted	58.65 Mbps
Mean IP Throughput Required	50.00 Mbps
Minimum IP Throughput Required	50.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 29 secs/year)

* Multipath availability calculated using Vigants-Barnett

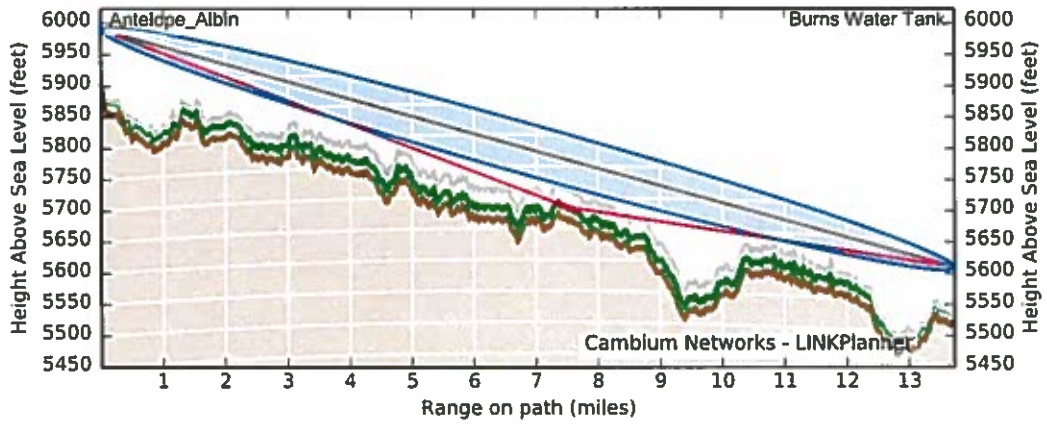
Mode	Max Aggregate User IP Throughput (Mbps)	Max User IP Throughput in Either Direction (Mbps)	Antelope_Albin			Archer Water Tower		
			Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
7	117.29	58.65	32.38	99.9998	99.9998	32.38	99.9998	99.9998
6	106.08	53.04	34.88	99.9999	0.0001	34.88	99.9999	0.0001
5	91.08	45.54	44.13	100.0000	0.0001	44.13	100.0000	0.0001

* Multipath availability calculated using Vigants-Barnett

3. Antelope_Albin to Burns Water Tank

Summary	
Link Name	Antelope_Albin to Burns Water Tank
Profile Type	Line-of-Sight
Equipment Type	PTPL6820G with RFU-C
Maximum Obstruction	20 feet
Link Distance	13.733 miles
Free Space Path Loss	135.15 dB
Excess Path Loss	0.00 dB
User IP Throughput Expectation Aggregate	Aggregate 117.29 Mbps assuming PTP-820 Series running the Release 9.0 software
RF Frequency Band	Lower 6 GHz (5925 to 6425 MHz)
RF Channel Bandwidth	10 MHz
Description	Add N000081L002 PTP810 AC to DC power adapter (Qty 2) to BOM
TDM Channels	3 T1 with a reliability of 100.0000 %
optional	No

Path Profile



Link Configuration	
Link Type	1+0
T/R Spacing	252.04 MHz
Bandwidth	10 MHz
Modulation Mode	Adaptive
Maximum Mod Mode	7 - 512QAM
Minimum Mod Mode	5 - 128QAM
Polarization	Vertical
ATPC	Disabled

Link Configuration (continued)	
TDM Type	T1
Hi	Antelope_Albin
Lo	Burns Water Tank

Physical Installation Notes for Antelope_Albin	
Link Name	Antelope_Albin to Burns Water Tank
Latitude	41.31799N
Longitude	104.55620W
Site Elevation	5880 feet AMSL
Polarization	Vertical
Hardware Platform	PTPL6820G with RFU-C
Antenna Type	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct
Antenna Beamwidth	1.9°
Antenna Gain	38.91 dBi
Antenna Height	110.0 feet AGL
Antenna Tilt angle	-0.4° (downtilt)
Bearing to Burns Water Tank	129.96° from True North 121.78° from Magnetic North
Magnetic Declination	8.18° E ±0.36° changing by 0.10° W per year
RF Feeder Loss	0.2 dB

Physical Installation Notes for Burns Water Tank	
Link Name	Antelope_Albin to Burns Water Tank
Latitude	41.19001N
Longitude	104.35427W
Site Elevation	5520 feet AMSL
Polarization	Vertical
Hardware Platform	PTPL6820G with RFU-C
Antenna Type	Cambium Networks 6ft Single Pol (NA & CALA Only) N060082D153 - Direct
Antenna Beamwidth	1.9°
Antenna Gain	38.91 dBi
Antenna Height	90.0 feet AGL
Antenna Tilt angle	0.2° (uptilt)
Bearing to Antelope_Albin	310.09° from True North 302.04° from Magnetic North
Magnetic Declination	8.05° E ±0.36° changing by 0.10° W per year
RF Feeder Loss	0.2 dB

Radio Commissioning Notes for Antelope_Albin	
TDM Type	ANSI
Radio Interface	Radio:Slot 1, port 2
Tx Frequency	Unknown
Rx Frequency	Unknown
Tx to Rx Frequency Separation	252.040 MHz
Tx Level	24 dBm
MRMC Script	FCC 1020
MRMC Script Operational Mode	Adaptive
MRMC Script Maximum Profile	7, 512QAM
MRMC Script Minimum Profile	5, 128QAM
Adaptive Tx Power Admin	Enable
ATPC Configuration	Disabled
Header Compression	Disabled
BNC Voltage	1.30 to 1.38 Volts
Predicted Receive Power	-34 dBm ± 4 dB while aligning
County	Harris
Fiber Site	
LTE Ant Height	120
Status	Planning

Radio Commissioning Notes for Burns Water Tank	
TDM Type	ANSI
Radio Interface	Radio:Slot 1, port 2
Tx Frequency	Unknown
Rx Frequency	Unknown
Tx to Rx Frequency Separation	252.040 MHz

Radio Commissioning Notes for Burns Water Tank (continued)	
Tx Level	24 dBm
MRMC Script	FCC 1020
MRMC Script Operational Mode	Adaptive
MRMC Script Maximum Profile	7, 512QAM
MRMC Script Minimum Profile	5, 128QAM
Adaptive Tx Power Admin	Enable
ATPC Configuration	Disabled
Header Compression	Disabled
BNC Voltage	1.30 to 1.38 Volts
Predicted Receive Power	-34 dBm ± 4 dB while aligning
County	Harris
Fiber Site	
LTE Ant Height	120
Status	Planning

Regulatory Conditions	
Regulation	FCC
Band	Lower 6 GHz
Max EIRP	62.71 dBm
Output Power	24.00 dBm

Installation Instruction

Perform the following checks during the installation (Check the deployment guide and the User Guide.)

1. Check with a GPS that you are installing at the correct location.

2. Check carefully the direction to the other end of the link. Either use a corrected compass or use the GPS waypoint feature about 300 meters from the installation location.

3. When aligning antennas, it is important to find the centre of the main beam. This is done by adjusting the antenna at each end of the link in turn and monitoring the receive level until the peak is found. Once the peak level is found, it should be checked against the prediced receive power to ensure that the antennas have not been aligned on a side lobe.

4. An hour after alignment is complete, if ATPC is disabled, check that the mean value for the RSL is as predicted (see previous tables). Also check that the received power is not greater than -30dBm with ATPC enabled or disabled.

Antelope_Albin Performance *	
Frame Size	1518 Bytes
Mean IP Throughput Predicted	58.65 Mbps
Mean IP Throughput Required	50.00 Mbps
Minimum IP Throughput Required	50.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 24 secs/year)

Burns Water Tank Performance *	
Frame Size	1518 Bytes

Burns Water Tank Performance * (continued)	
Mean IP Throughput Predicted	58.65 Mbps
Mean IP Throughput Required	50.00 Mbps
Minimum IP Throughput Required	50.00 Mbps
Minimum IP Throughput Availability Predicted	99.9999% (unavailable for 24 secs/year)

* Multipath availability calculated using Vigants-Barnett

Mode	Max Aggregate User IP Throughput (Mbps)	Max User IP Throughput in Either Direction (Mbps)	Antelope_Albin			Burns Water Tank		
			Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)	Fade Margin (dB)	IP Throughput Availability (%) *	Receive time in Mode (%)
7	117.29	58.65	31.88	99.9999	99.9999	31.88	99.9999	99.9999
6	106.08	53.04	34.38	99.9999	0.0001	34.38	99.9999	0.0001
5	91.08	45.54	43.63	100.0000	0.0001	43.63	100.0000	0.0001

* Multipath availability calculated using Vigants-Barnett

Disclaimer

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SECTION 4

EQUIPMENT LIST

QTY	NOMENCLATURE	DESCRIPTION
Master Site Licensing for Wyolink - 7.16		
1	SQM01SUM0273	MASTER SITE CONFIGURATION
1	CA02629AB	ADD: EXPAND 7.16 MCORE
2	UA00153AA	ADD: ASTRO 25 FDMA SITE LICENSE
Antelope RF Site - 7CH 800MHz Site		
		MOSCAD
1	F4544	SITE MANAGER ADVANCED
1	V266	ADD: 90VAC TO 260VAC PS TO SM
1	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO REL
3	V592	AAD TERM BLCK & CONN WI
1	6406066M02	PANEL PUNCH BLOCK
1	F2463	RTU_PER_DEVICE_SW_LICENSES
1	V839	RTU_SW_LIC_PER_NFM-RTU_I-O
7	VA00315	RTU_SW_LIC_PER_GTR8000_RS_BR
2	VA00318	RTU_SW_LIC_PER_GCP8000_S_CONTR
		GTR ESS - 7CH
1	SQM01SUM7054	GTR 8000 EXPANDABLE SITE SUBSYSTEM
1	CA01706AA	ADD: ADD: GGM 8000 GATEWAY
1	CA00855AA	ADD: 700/800 MHZ
1	X305AC	ADD: QTY (5) GTR 8000 BASE RADIOS
5	X591AE	ENH: ASTRO 25 SITE REPEATER SW
1	CA00862AA	ADD: SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS
1	CA00879AA	ADD: PRIMARY 6 PORT CAVITY COMBINER
1	CA00883AA	ADD: 800 MHZ TX FILTER W/PMU
2	CA00303AA	ADD: QTY (1) SITE CONTROLLER
2	CA02212AA	ADD: ASTRO 25 SITE REPEATER SITE CONTROLLER SOFTWARE VOICE ONLY
1	X882AH	ADD: 7.5 FT OPEN RACK, 48RU
1	CA02686AA	ADD: AC DC POWER DISTRIBUTION
1	SQM01SUM7054	GTR 8000 EXPANDABLE SITE SUBSYSTEM
1	CA00855AA	ADD: 700/800 MHZ
1	X302AE	ADD: QTY (2) GTR 8000 BASE RADIOS
2	X591AE	ENH: ASTRO 25 SITE REPEATER SW
1	CA00877AA	ADD: CABINET RMC FOR EXPANSION RACK
1	CA00880AA	ADD: EXPANSION 6 PORT CAVITY COMBINER

QTY	NOMENCLATURE	DESCRIPTION
1	CA01058AA	ADD: 700/800 PHASING HARNESS
2	CA00884AA	ADD: QTY (1) XHUB
1	X882AH	ADD: 7.5 FT OPEN RACK, 48RU
1	CA02686AA	ADD: AC DC POWER DISTRIBUTION
1	DSTSJ48CLT	SPD, RJ-45 OR HARDWIRE CONNECTED FOR T1/E1, PROTECTS 4 WIRES
1	DSTSJADP	RACK MOUNT GROUND BAR, 19 IN FOR TSJ AND WPH SERIES DATA SPDS
1	DS428E83I01C110	CONTROL MONITORING UNIT, NON-DIVERSITY, 796-824 MHZ, SNMP,110 VAC
1	DS428E83I01T	TTA, NON-DIVERSITY, 796-824 MHZ, REDUNDANT LNA, TEST PORT, BYPASS
7	3085194Y06	LINE CORD W/RECP AND PLUG 12' W18
3	DSU2MS	MID ATLANTIC 2U, 3 - 1/2 IN MID MOUNT BATTERY RACKSHELF
6	DSWL4EMI2CE18	BATTERY, 48V, 18AH STRING
		Power Dist & AC UPS
1	DS11011188	PDU, 120/240 SPLIT PH OR N+1 REDUNDANT, 60A MAX PER PHASE, SIX DEDICAT
12	DS3750297	BREAKER, 15 AMP, CB UL 489 LISTED FOR AC EDGE II (1101-1188)
1	DS5PXR14401021	SPS, 5PX, 1440W, RACK MOUNT, 120V, SOFTWIRED, 21 MIN RUNTIME
1	DSRMP615A	SPD, TYPE 3, 120V RACK MOUNT, 15A PLUG-IN W/ (6) 15A NEMA 5-15 OUTLETS
		RACKS AND ACCYS
1	TRN7343	SEVEN AND A HALF FOOT RACK
9	0784469Y04	BRKT, CBL SUPPORT
3	3182602Y06	GROUNDING BUS BAR
1	0310909C91	SCR LCK M6X1X13 STARPAN STL
		Tx Antenna@ 125' - 15' 1/2" Upper, 25' 1/2" Lower
1	DSSC479HF1LDF	COLLINEAR OMNI ANTENNA, 9.5 DBD GAIN, LOW PIM, HD, 746-869 MHZ
15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
150	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SOLUTIONS SPECIFIC)
4	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
2	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
1	DSTSXDFMBF	RF SPD, 698-2700MHZ DC BLOCK HIGH PWR, DIN FEM/MALE BI-DIR W/ BRACKET
1	DSGSAKITD	GROUND STRAP KIT - DIN
25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
		Rx Antenna@ 145' - 15' 1/2" Upper, 25' 1/2" SFlex Lower
1	DSSC479HF1LDF	COLLINEAR OMNI ANTENNA, 9.5 DBD GAIN, LOW PIM, HD, 746-869 MHZ
15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT

QTY	NOMENCLATURE	DESCRIPTION
1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
5	TDN9289	221213 CABLE WRAP WEATHERPROOFING
5	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
170	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
2	DDN1079	78EZNF-MN FEMALE MDT CONNECTOR (MOTOROLA SOLUTIONS SPECIFIC)
5	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
2	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
170	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
1	DDN1089	L4TNF-PSA TYPE N FEMALE PS FOR 1/2 IN CABLE
5	DSSG1206B2A	SG12-06B2A 1/2IN SURE GROUND GROUNDING KIT
2	DSL4SGRIP	L4SGRIP SUPPORT HOIST GRIP 1/2" LDF
1	DS1090501WA	RF SPD, 700-1000MHZ BROADBAND 15 VDC PASS NM ANT, NF EQUIP PIP, ASIG
1	DS1090501WA	RF SPD, 700-1000MHZ BROADBAND 15 VDC PASS NM ANT, NF EQUIP PIP, ASIG
25	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY JKT PER FOOT
2	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTOR FOR FSJ1-50A CABLE
25	L1702	FSJ4-50B CABLE: 1/2" SUPERFLEX POLY JKT PER FOOT
2	DDN9682	F4PNMV2-HC 1/2" TYPE N MALE PLATED CONNECTOR
		Generator and Transfer Switch
1	DSSG035ODVP	GENERATOR, 35KW LP VAPOR, 120/240V 1-PH, OUTDOOR HOUSING
1	DSGTS200OD	AUTOMATIC TRANSFER SWITCH, 200A, 120/240V 1-PH, NEMA 3R (GTS SERIES)
1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
		Cambium PTP Links - Antelope to Archer
1	DS01010419001	CABLE GROUNDING KITS FOR 1/4 INCH AND 3/8 INCH CABLE
2	DS07009304001	HOISTING GRIP FOR CNT-400 CABLE
2	DS30010194001	50 OHM BRAIDED COAXIAL CABLE - 75 METER
2	DSC000082M002A	PTP 820G, Single Modem, Eth + 16 E1/T1
1	DSC060082R085A	PTP 820 RFU-C,6LGHZ,TR252A,CH1 W4,HI,6181.74-6301.69MHZ
1	DSC060082R086A	PTP 820 RFU-C,6LGHZ,TR252A,CH1 W4,LO,5929.7-6049.65MHZ
2	DSN000081L006	TNC MALE RIGHT ANGLE FOR CNT-400 BR
2	DSN000082L082A	PTP 820G ACT.KEY - CAPACITY 100M WITH ACM ENABLED, PER TX CHAN
2	DSN060082D153A	PTP 820 6FT ANT,SP,6GHZ,RFU-C TYPE&UDR70 - RADIOWAVE
2	DSWB3616A	COAXIAL CABLE INSTALLATION ASSEMBLY KITS (W/O SURGE ARRESTOR)
2	DSWB3657A	LPU END KIT PTP800 (1 KIT REQUIRED PER COAXIAL CABLE)
2	DSN000081L002	PTP810 AC TO DC POWER ADAPTER

QTY	NOMENCLATURE	DESCRIPTION
		Frequency Coordination
2	DSWB3659	FCC M/W FREQ COORDINATION SERVICE
Burns Water Tank RF Site - 7CH 800MHz Site		
		MOSCAD
1	F4544	SITE MANAGER ADVANCED
1	V266	ADD: 90VAC TO 260VAC PS TO SM
1	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO REL
3	V592	AAD TERM BLCK & CONN WI
1	6406066M02	PANEL PUNCH BLOCK
1	F2463	RTU_PER_DEVICE_SW_LICENSES
1	V839	RTU_SW_LIC_PER_NFM-RTU_I-O
7	VA00315	RTU_SW_LIC_PER_GTR8000_RS_BR
2	VA00318	RTU_SW_LIC_PER_GCP8000_S_CONTR
		GTR ESS - 7CH
1	SQM01SUM7054	GTR 8000 EXPANDABLE SITE SUBSYSTEM
1	CA01706AA	ADD: ADD: GGM 8000 GATEWAY
1	CA00855AA	ADD: 700/800 MHZ
1	X305AC	ADD: QTY (5) GTR 8000 BASE RADIOS
5	X591AE	ENH: ASTRO 25 SITE REPEATER SW
1	CA00862AA	ADD: SITE & CABINET RMC W/CAPABILITY OF 7-24 BRS
1	CA00879AA	ADD: PRIMARY 6 PORT CAVITY COMBINER
1	CA00883AA	ADD: 800 MHZ TX FILTER W/PMU
2	CA00303AA	ADD: QTY (1) SITE CONTROLLER
2	CA02212AA	ADD: ASTRO 25 SITE REPEATER SITE CONTROLLER SOFTWARE VOICE ONLY
1	X882AH	ADD: 7.5 FT OPEN RACK, 48RU
1	CA02686AA	ADD: AC DC POWER DISTRIBUTION
1	SQM01SUM7054	GTR 8000 EXPANDABLE SITE SUBSYSTEM
1	CA00855AA	ADD: 700/800 MHZ
1	X302AE	ADD: QTY (2) GTR 8000 BASE RADIOS
2	X591AE	ENH: ASTRO 25 SITE REPEATER SW
1	CA00877AA	ADD: CABINET RMC FOR EXPANSION RACK
1	CA00880AA	ADD: EXPANSION 6 PORT CAVITY COMBINER
1	CA01058AA	ADD: 700/800 PHASING HARNESS
2	CA00884AA	ADD: QTY (1) XHUB
1	X882AH	ADD: 7.5 FT OPEN RACK, 48RU
1	CA02686AA	ADD: AC DC POWER DISTRIBUTION
1	DSTSJ48CLT	SPD, RJ-45 OR HARDWIRE CONNECTED FOR T1/E1, PROTECTS 4 WIRES
1	DSTSJADP	RACK MOUNT GROUND BAR, 19 IN FOR TSJ AND WPH SERIES DATA SPDS

QTY	NOMENCLATURE	DESCRIPTION
1	DS428E83I01C110	CONTROL MONITORING UNIT, NON-DIVERSITY, 796-824 MHZ, SNMP,110 VAC
1	DS428E83I01T	TTA, NON-DIVERSITY, 796-824 MHZ, REDUNDANT LNA, TEST PORT, BYPASS
7	3085194Y06	LINE CORD W/RECP AND PLUG 12' W18
3	DSU2MS	MID ATLANTIC 2U, 3 - 1/2 IN MID MOUNT BATTERY RACKSHELF
6	DSWL4EM12CE18	BATTERY, 48V, 18AH STRING
		Power Dist & AC UPS
1	DS11011188	PDU, 120/240 SPLIT PH OR N+1 REDUNDANT, 60A MAX PER PHASE, SIX DEDICAT
12	DS3750297	BREAKER, 15 AMP, CB UL 489 LISTED FOR AC EDGE II (1101-1188)
1	DS5PXR14401021	SPS, 5PX, 1440W, RACK MOUNT, 120V, SOFTWIRED, 21 MIN RUNTIME
1	DSRMP615A	SPD, TYPE 3, 120V RACK MOUNT, 15A PLUG-IN W/ (6) 15A NEMA 5-15 OUTLETS
		RACKS AND ACCYS
1	TRN7343	SEVEN AND A HALF FOOT RACK
9	0784469Y04	BRKT, CBL SUPPORT
3	3182602Y06	GROUNDING BUS BAR
1	0310909C91	SCR LCK M6X1X13 STARPAN STL
		Tx Antenna@ 140' - 15' 1/2" Upper, 25' 1/2" Lower
1	DSSC479HF1LDF	COLLINEAR OMNI ANTENNA, 9.5 DBD GAIN, LOW PIM, HD, 746-869 MHZ
15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
240	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SOLUTIONS SPECIFIC)
4	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
2	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
1	DSTSXDFMBF	RF SPD, 698-2700MHZ DC BLOCK HIGH PWR, DIN FEM/MALE BI-DIR W/ BRACKET
1	DSGSAKITD	GROUND STRAP KIT - DIN
25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
		Rx Antenna@ 140' - 15' 1/2" Upper, 25' 1/2" SFlex Lower
1	DSSC479HF1LDF	COLLINEAR OMNI ANTENNA, 9.5 DBD GAIN, LOW PIM, HD, 746-869 MHZ
15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
5	TDN9289	221213 CABLE WRAP WEATHERPROOFING
5	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
240	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER

QTY	NOMENCLATURE	DESCRIPTION
2	DDN1079	78EZNF-MN FEMALE MOT CONNECTOR (MOTOROLA SOLUTIONS SPECIFIC)
5	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
2	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
240	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
1	DDN1089	L4TNF-PSA TYPE N FEMALE PS FOR 1/2 IN CABLE
5	DSSG1206B2A	SG12-06B2A 1/2IN SURE GROUND GROUNDING KIT
2	DSL4SGRIP	L4SGRIP SUPPORT HOIST GRIP 1/2" LDF
1	DS1090501WA	RF SPD, 700-1000MHZ BROADBAND 15 VDC PASS NM ANT, NF EQUIP PIP, ASIG
1	DS1090501WA	RF SPD, 700-1000MHZ BROADBAND 15 VDC PASS NM ANT, NF EQUIP PIP, ASIG
25	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY JKT PER FOOT
2	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTOR FOR FSJ1-50A CABLE
25	L1702	FSJ4-50B CABLE: 1/2" SUPERFLEX POLY JKT PER FOOT
2	DDN9682	F4PNMV2-HC 1/2" TYPE N MALE PLATED CONNECTOR
		Generator and Transfer Switch
1	DSSG035SANG	GENERATOR, 35KW NAT GAS, 120/240V 1-PH, SOUND ATTENUATED HOUSING (OD)
1	DSOTEC225OD	AUTO TRANSFER SWITCH, 225A, 120/240V 1PH, OUTDOOR ENCLOSURE
1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
		Cambium PTP Links - Burns to Antelope
1	DS01010419001	CABLE GROUNDING KITS FOR 1/4 INCH AND 3/8 INCH CABLE
2	DS07009304001	HOISTING GRIP FOR CNT-400 CABLE
3	DS30010194001	50 OHM BRAIDED COAXIAL CABLE - 75 METER
2	DSC000082M002A	PTP 820G, Single Modem, Eth + 16 E1/T1
1	DSC060082R085A	PTP 820 RFU-C,6LGHZ,TR252A,CH1 W4,HI,6181.74-6301.69MHZ
1	DSC060082R086A	PTP 820 RFU-C,6LGHZ,TR252A,CH1 W4,LO,5929.7-6049.65MHZ
2	DSN000081L006	TNC MALE RIGHT ANGLE FOR CNT-400 BR
2	DSN000082L082A	PTP 820G ACT.KEY - CAPACITY 100M WITH ACM ENABLED, PER TX CHAN
2	DSN060082D153A	PTP 820 6FT ANT,SP,6GHZ,RFU-C TYPE&UDR70 - RADIOWAVE
2	DSWB3616A	COAXIAL CABLE INSTALLATION ASSEMBLY KITS (W/O SURGE ARRESTOR)
2	DSWB3657A	LPU END KIT PTP800 (1 KIT REQUIRED PER COAXIAL CABLE)
2	DSN000081L002	PTP810 AC TO DC POWER ADAPTER
		Frequency Coordination
2	DSWB3659	FCC M/W FREQ COORDINATION SERVICE
		Cambium PTP820G Spares
1	DSC060082R085A	PTP 820 RFU-C,6LGHZ,TR252A,CH1 W4,HI,6181.74-6301.69MHZ
1	DSC060082R086A	PTP 820 RFU-C,6LGHZ,TR252A,CH1 W4,LO,5929.7-6049.65MHZ

QTY	NOMENCLATURE	DESCRIPTION
1	DSC000082M002A	PTP 820G, Single Modem, Eth + 16 E1/T1
1	DSN000082L082A	PTP 820G ACT.KEY - CAPACITY 100M WITH ACM ENABLED, PER TX CHAN
2	DSN000081L002	PTP810 AC TO DC POWER ADAPTER

SECTION 5

STATEMENT OF WORK

5.1 OVERVIEW

This Statement of Work (SOW) describes the deliverables to be furnished to Laramie County. The tasks described herein will be performed by Motorola Solutions, its subcontractors, and Laramie County to implement the solution described in the System Description. It describes the actual work involved in installation, identifies the installation standards to be followed, and clarifies the responsibilities for both Motorola Solutions and Laramie County during the project implementation. Specifically, this SOW provides:

- A summary of the phases and tasks to be completed within the project lifecycle.
- A list of the deliverables associated with the project.
- A description of the responsibilities for both Motorola Solutions and Laramie County.
- The qualifications and assumptions taken into consideration during the development of this project.

This SOW provides the most current understanding of the work required by both parties to ensure a successful project implementation. In particular, Motorola Solutions has made assumptions of the sites to be used for the new system. Should any of the sites change, a revision to the SOW and associated pricing will be required. It is understood that this SOW is a working document, and that it will be revised as needed to incorporate any changes associated with contract negotiations, Contract Design Review (CDR), and any other change orders that may occur during the execution of the project.

The primary intent of this proposal is to provide Laramie County with two new repeater sites, each equipped with seven channels. The two new sites, Burns Water Tank and Antelope, are intended to provide portable and mobile coverage in the eastern portion of Laramie County where the WyoLink system currently lacks coverage.

Each of the two RF sites will be furnished with two 800MHz GTR Expandable Site Subsystem (ESS) racks; the first equipped with 5 FDMA channels and the second equipped with 2 FDMA channel. These seven radios will utilize an antenna system comprised of one transmit and one TTA-equipped receive antenna. A MOSCAD SDM 3000 is also included to provide remote site alarm notifications in line with existing County sites.

Connectivity between each site will be achieved via Cambium PTP820G with RFU-C TDM based microwave hops. These, non-redundant, 1+0 links will connect the Burns Water Tank site to Antelope and Antelope to the existing Archer Water Tower RF site. From the Archer Water Tower site the two sites will be transported to the Wyolink Zone 1 master site using a combination of existing PTP and State of WY provided microwave.

Each site will be equipped with backup power systems to ensure that in the event of main power loss the site will continue to operate until power is restored by each site's generator systems. The first five CH GTR rack will be supplied with a complement of four sets of 48VDC 18AH batteries, while the second will be supplied by two sets of 48VDC 18AH batteries. Additionally, a 1440W Eaton SPS 5PX UPS unit will reside at each site to provide backup power for the AC powered SDM 3000 and Cambium PTP 820 equipment.

5.2 ASSUMPTIONS

Motorola Solutions has based the system design on information provided by Laramie County and an analysis of their system requirements. All assumptions have been listed below for review. Should Motorola Solutions's assumptions be deemed incorrect or not agreeable to Laramie County, a revised proposal with the necessary changes and adjusted costs may be required. Changes to the equipment or scope of the project after contract may require a change order,

- The County is responsible for negotiating the use of the Antelope, Burns Water tank and Archer Water tank sites with the site owners. The County will notify Motorola Solutions when site agreements are in place and Motorola Solutions can commence working at the sites.
- The existing Antelope site has sufficient primary power to support the loading of the site equipment that is included in this proposal.
- The County will provide a structural report for the existing Antelope tower that shows the loading that the tower is capable of supporting. If the existing tower is not structurally capable of holding the loading associated with the RF site and PTP antenna systems identified in this proposal, tower improvements will be required. Any costs associated with tower improvements are the responsibility of the County. Motorola Solutions can provide a quote for improvements as a Change Order.
- The County will provide a structural report for the existing Burns water tower that shows the loading that the water tower is capable of supporting. If the existing water tower is not structurally capable of holding the loading associated with the RF site and PTP antenna systems identified in this proposal, tower improvements will be required. Any costs associated with tower improvements are the responsibility of the County. Motorola Solutions can provide a quote for improvements as a Change Order.
- The County will provide a structural report for the existing Archer water tower that shows the loading that the water tower is capable of supporting. If the existing water tower is not structurally capable of holding the loading associated with the PTP antenna system identified in this proposal, tower improvements will be required. Any costs associated with tower improvements are the responsibility of the County. Motorola Solutions can provide a quote for improvements as a Change Order.
- Laramie County will be responsible for providing the additional electrical service to the Burns Water Tank shelter to support the proposed equipment.
- Laramie County and their site provider Action Communications are responsible for the following tasks at the Antelope site. These tasks shall be completed prior to commencement of any work by Motorola Solutions or its subcontractors.
  - Shall remove or relocate 2 rows of existing microwave racks near the cable entry ports.
  - Shall remove the decommissioned cables/wiring from cable trays.
  - Shall remove the waveguide from the cable boots.
  - Shall remove any unused antennas/dishes from the tower including all transmission line and waveguide.
  - Shall add a cable management tray to the south face of the tower.
  - Shall provide a new HVAC unit for the building.
- FCC licensing of the seven (7) new Tx/Rx pairs of 800MHz frequencies for both sites will be completed prior to activation of the seven (7) new channels.
- The Burns Water Tank's shelter can and will be modified per this proposal's SOW in order to provide an appropriate space for the RF equipment.
- At the Burns site, a natural gas generator can be placed on the west side of the shelter to provide backup site power. If this is not the case, additional charges may apply for locating the generator in an alternate location.

- Boring through the cylinder of the Archer Water Tower will be approved by the City of Burns. This is required at the 75' AGL on the North face of the tower to support the proposed microwave link to Antelope. If mounting in this manner cannot be achieved, an alternate mounting configuration may be required that could result in additional charges to the County.
- The proposed PTP microwave links both require a line of site survey in order to determine path viability. Any obstructions may result in alterations to the project's scope which could result in additional charges to the County for engineering and additional physical path surveys.
- The proposed microwave link design is dependent upon successful FCC licensing of the required 6 GHz frequencies.
- The Archer Tank equipment room, tower and primary power are sufficient to accommodate the proposed PTP microwave equipment and antenna system.
- The County will negotiate with the PSCC and Wyolink for a port assignment on the Wyolink Zone 1 WAN for connection of the Antelope and Burns Water Tank sites.
- Subscriber programming is not included. Any subscriber programming is the responsibility of the County.
- All work is to be performed during normal work hours, Monday through Friday 8:00 a.m. to 5:00 p.m.
- Motorola Solutions is not responsible for interference caused or received by the Motorola Solutions provided equipment except for interference that is directly caused by the Motorola Solutions-provided transmitter(s) to the Motorola Solutions-provided receiver(s). Should Laramie County system experience interference, Motorola Solutions can be contracted to investigate the source and recommend solutions to mitigate the issue.

5.3 CONTRACT

5.3.1 Contract Award (Milestone)

Task	Motorola Solutions	County
The County and Motorola Solutions execute the contract and both parties receive all the necessary documentation	X	X
Within 30 days of the Effective Date of the Communications System Agreement executed by Motorola Solutions and County, Motorola Solutions will furnish to the County, at the County's expense, a Builder's Risk Policy in the full amount of the Contract Price as security for the faithful performance of Motorola Solutions's obligations under the Communications System Agreement. The bond shall be on a form acceptable to Motorola Solutions's surety company.	X	

5.3.2 Contract Administration

Task	Motorola Solutions	County
Assign a Project Manager as the single point of contact with authority to make project decisions	X	X
Assign resources necessary for project implementation	X	

Task	Motorola Solutions	County
Set up the project in the Motorola Solutions information system	X	
Schedule the project kickoff meeting with the County	X	
Assign other resources necessary to ensure completion of project tasks for which the County is responsible		X

5.3.3 Completion Criteria:

Task	Motorola Solutions	County
Motorola Solutions internal processes are set up for project management	X	
Both Motorola Solutions and the County assign all required resources	X	X
Project kickoff meeting is scheduled	X	X

5.4 CONTRACT DESIGN REVIEW

5.4.1 Review Contract Design

Task	Motorola Solutions	County
Meet with the County project team	X	
Review the operational requirements and the impact of those requirements on various equipment configurations	X	
Establish a defined baseline for the system design and identify any special product requirements and their impact on system implementation	X	
Review the System Design, Statement of Work, Project Schedule, and Acceptance Test Plans, and update the contract documents accordingly	X	
Discuss the proposed Cutover Plan and methods to document a detailed procedure	X	
Submit design documents to the County for approval. These documents form the basis of the system, which Motorola Solutions will manufacture, assemble, stage, and install	X	
Prepare equipment layout plans for field staging.	X	
Establish demarcation point (supplied by the Motorola Solutions system engineer) to define the connection point between the Motorola Solutions-supplied equipment and the County-supplied link(s) and external interfaces.	X	
Finalize site acquisition and development plan	X	X

Task	Motorola Solutions	County
Conduct (updated) site evaluations to capture site details of the system design and to determine site readiness	X	
Determine each site's ability to accommodate proposed equipment based upon physical capacity	X	
If applicable, test existing equipment with which Motorola Solutions equipment will interface	X	
Prepare Site Evaluation Report that summarizes findings of above-described site evaluations	X	
Provide the County with the services and support complete required forms to file for frequency coordination and any other required frequency licensing.	X	
Assist the County with frequency planning services, frequency search services, interference analysis, public notifications, coordination, and frequency recommendations for the radio system	X	
Work with the County to identify radio interference between the new communication system and other existing radio systems	X	
The County's key project team participants attend the meeting		X
Make timely decisions, according to the Project Schedule		X
As mandated by FCC, the County, as the licensee, has the ultimate responsibility for providing all required radio licensing or licensing modifications for the system prior to system field staging. This responsibility includes paying for FCC licensing and frequency coordination fees.		X
Provide the FCC "call sign" station identifier for each site prior to system staging		X

Restrictions:

- Motorola Solutions assumes no liability or responsibility for inadequate frequency availability or frequency licensing issues.
- Motorola Solutions is not responsible for issues outside of its immediate control. Such issues include, but are not restricted to, improper frequency coordination by others and non-compliant operation of other radios.
- Motorola Solutions is not responsible for co-channel interference due to errors in frequency coordination by APCO or any other unlisted frequencies, or the improper design, installation, or operation of systems installed or operated by others
- If, for any reason, any of the proposed sites cannot be utilized due to reasons beyond Motorola Solutions's control, the costs associated with site changes or delays including, but not limited to, re-engineering, frequency re-licensing, site zoning, site permitting, schedule delays, site abnormalities, re-mobilization, etc., will be paid for by the County and documented through the change order process.

5.4.2 Completion Criteria:

Task	Motorola Solutions	County
Complete Design Documentation, which may include updated System Description, Equipment List, system drawings, or other documents applicable to the project	X	
Incorporate any deviations from the proposed system into the contract documents accordingly	X	X
The system design is "frozen" in preparation for subsequent project phases such as Order Processing and Manufacturing	X	X
A Change Order is executed in accordance with all material changes resulting from the Design Review to the contract	X	X

5.4.3 Design Approval (Milestone)

The County executes a Design Approval milestone document.

5.5 SITE ACQUISITION AND ZONING

5.5.1 Site Acquisition

Task	Motorola Solutions	County
Obtain site agreement with Action Communications for the use of the Antelope Site.		X

5.5.2 Completion Criteria:

Site acquisition completed by the County.

5.5.3 Site Acquisition and Zoning Complete

Site acquisition and zoning completed by the County.

5.6 ORDER PROCESSING

5.6.1 Process Equipment List

Task	Motorola Solutions	County
Validate Equipment List by checking for valid model numbers, versions, compatible options to main equipment, and delivery data.	X	

Task	Motorola Solutions	County
Enter order into Motorola Solutions's County Order Fulfillment (COF) system	X	
Create Ship Views, to confirm with the County the secure storage location(s) to which the equipment will ship. Ship Views are the mailing labels that carry complete equipment shipping information, which direct the timing, method of shipment, and ship path for ultimate destination receipt	X	
Create equipment orders	X	
Reconcile the equipment list(s) to the Contract	X	
Procure third-party equipment if applicable	X	
Approve shipping location(s)		X
Complete and provide Tax Certificate information verifying tax status of shipping location		X

5.6.2 Completion Criteria:

Task	Motorola Solutions	County
Verify that the Equipment List contains the correct model numbers, version, options, and delivery data	X	
Trial Equipment List validation completed	X	
Bridge the equipment order to the manufacturing facility	X	

5.7 MANUFACTURING AND STAGING

5.7.1 Manufacture Motorola Solutions Fixed Network Equipment

Task	Motorola Solutions	County
Manufacture the Fixed Network Equipment (FNE) necessary for the system based on equipment order	X	

5.7.2 Completion Criteria:

FNE shipped to either the field or the staging facility.

5.8 MANUFACTURE NON-MOTOROLA SOLUTIONS EQUIPMENT

Task	Motorola Solutions	County
Procure non-Motorola Solutions equipment necessary for the system based on equipment order	X	

5.8.1 Completion Criteria:

Ship non-Motorola Solutions manufactured equipment to the field.

5.9 SHIP EQUIPMENT TO FIELD

Task	Motorola Solutions	County
Pack system for shipment to final destination	X	
Arrange for shipment to the field	X	

5.9.1 Completion Criteria:

Equipment ready for shipment to the field.

5.10 FIELD SHIP ACCEPTANCE (MILESTONE)

All equipment shipped to the field.

5.10.1 Civil Work for County-Provided Facilities

Task	Motorola Solutions	County
Provide electrical requirements for each equipment rack to be installed in the County-provided facilities	X	
Provide heat load for each equipment rack to be installed in the County-provided facilities	X	
Extend County provided electrical to Motorola Solutions equipment and terminate at the Edge PDU or Cabinet electric panel	X	
If applicable and based on local jurisdictional authority, the County will be responsible for any installation or upgrades of the Critical Operation Power Systems in order to comply with NFPA 70, Article 708		X
Secure site lease/ownership, zoning, permits, regulatory approvals, easements, power, and Telco connections		X
Provide clear and stable access to the sites for transporting electronics and other materials. Sufficient site access must be available for trucks to deliver materials under their own power and for personnel to move materials to the facility without assistance from special equipment		X
Design and construct facilities for housing communications equipment such as shelters, towers, generators, fuel tanks, fenced compounds, etc		X

Task	Motorola Solutions	County
Supply adequately sized electrical service, backup power (UPS, generator, batteries, etc.) including the installation of conduit, circuit breakers, outlets, etc., at each equipment location		X
Provide AC power (dedicated 20A, AC outlets - simplex with ground) for each major piece of equipment within 6 feet of the location of the Motorola Solutions-supplied equipment, to the demarcation point(s) indicated in the documentation including the associated electrical service and wiring (conduit, circuit breakers, etc.).		X
Provide adequate HVAC, grounding, lighting, cable routing, and surge protection (also, among existing and Motorola Solutions-provided equipment) based upon Motorola Solutions's Standards and Guidelines for Communication Sites (R56). Ceiling (minimum 9 feet) and cable tray heights (minimum 8 feet) in the equipment rooms in order to accommodate 7-foot, 6-inch equipment racks		X
Provide floor space and desk space for the System equipment at the County-provided facilities. Each rack shall be provided a minimum of 24-inch x 24-inch footprint with 36-inch clearance in the front and back		X
Relocate existing equipment, if needed, to provide required space for the installation of Motorola Solutions-supplied equipment		X
Bring grounding system up to Motorola Solutions's R56 standards and supply a single point system ground, of 5 ohms or less, to be used on all FNE supplied under the Contract. Supply grounding tie point within 10 feet from the Motorola Solutions-supplied equipment		X
Provide all necessary wall or roof penetrations on existing buildings for antenna coax and microwave waveguide (if applicable) for main transmitter antennas, microwave radios, and control station Yagi antennas		X
Provide obstruction-free area for the cable run between the demarcation point and the communications equipment		X
Resolve any environmental issues including, but not limited to, asbestos, structural integrity (rooftop, water tank, tower, etc.) of the site, and any other building risks. (Resolve environmental or hazardous material issues)		X
Arrange for space on the tower for installation of new antennas at the proposed heights		X
Perform structural analysis of existing tower and rooftops as required to confirm that the structure is capable of supporting proposed and future antenna loads		X
Supply all permits as contractually required		X
Supply interior building cable trays, raceways, conduits, and wire supports		X

Task	Motorola Solutions	County
Supply engineering and drafting as required for modifications to existing building drawings for site construction		X
Laramie County and Action Communications will provide the following at the Antelope site: - Provide and install a new HVAC unit. - Add cable management tray to the south face of the tower - Remove unused antennas and microwave dishes from the tower - Remove any unused coax or waveguide from the tower - Remove waveguide from the cable boots - Remove decommissioned cable/wiring from the cable trays - Remove or relocate 2 rows of existing microwave racks that are located near the cable entry point.		X
Pay for usage costs of power and generator fueling, both during the construction and installation effort, and on an ongoing basis		X
Complete all County deliverables in accordance within the approved project schedule		X

5.10.2 Completion Criteria:

All sites are ready for equipment installations in compliance with Motorola Solutions's R56 standards.

5.11 CIVIL WORK

5.11.1 Site Development at Burns Water Tank Site

Site Scope Summary

- Engineering services for site drawings and regulatory approvals – Included.
- Site acquisition services – Not included.
- Zoning Services – Not included.

Motorola Solutions Responsibilities:

Site Engineering

- Prepare site construction drawings, showing the layout of various new and existing site components.
- Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.

- Prepare zoning drawings that can be used to describe the proposed site installation in sufficient detail.
- Prepare record drawings of the site showing the as-built information.
- Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility "may have a significant environmental impact" and thus require additional documentation, submittals, or work. Perform a cultural resource study, as needed to identify sensitive historical and archaeological monuments that might be impacted by propose construction.
- Perform a Phase I Environmental Site Assessment (ESA), to identify obvious and reasonably likely on-site and/or off-site potential sources of contamination and prepare a report summarizing observations, findings, and conclusions for each site assessed. This study does not include Phase II assessments, risk/cost evaluations, and permitting assistance that may be required if risk factors are indicated.
- Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed the proposed equipment loads.
- Prepare photo renderings of how a specific site or sites would look after completion.
- Conduct a balloon test to prepare site line graphs showing potential visibility of the proposed communication site.
- Perform structural mapping, analysis, and design to antenna support structure for the proposed equipment and antenna loads. No obtrusive investigations have been included.
- Perform an x-ray of the structure (up to 15 location of three square feet each) to determine the location of structural components and rebar sizing.
- Design multi antenna support platform to support proposed antennas and dishes.
- Design rooftop platform to support proposed equipment shelter.
- Preparation, submission and tracking of application for local permit fees (zoning, electrical, building etc.) and procurement of information necessary for filing.

Site Preparation

- Obtain the permits such as electrical, building, and construction permits, and coordinate any inspections with local authorities that may be needed to complete site development work.
- Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola Solutions's control will result in additional costs.

Site Components Installation

- Construct 1 foundation for the 35kW generator with reinforcing steel necessary for foundations.
- Supply and install 1 standby power generator (35 kW) located within 20 feet of the ATS, including interconnection wiring between the generator, transfer switch, and site electrical service mains.
- Provide all trenching, conduit, and cabling necessary for underground hookup of power to the shelter from nearby utility termination located within 80 cable feet of the shelter.
- Supply and install a perimeter grounding system around the compound and shelter. The ground system is to tie to the fence and all new metal structures within the compound to meet current Motorola Solutions's R56 standards.

Antenna and Transmission Line Installation

- Install 2 antenna(s) for the RF system.

- Install 2 side arms for antennas.
- Install 1 tower top amplifier(s).
- Install 1 6-foot microwave dishes.
- Supply 1 dish mounts for 6-foot microwave dishes.
- Install 120 linear feet of 3/8-inch transmission line.
- Install up to 120 linear feet of 1/2-inch transmission line.
- Install up to 340 linear feet of 7/8-inch transmission line.
- Perform sweep tests on transmission lines.
- Perform alignment of each of 1 microwave paths to ensure that the microwave dishes are optimally positioned.
- Provide and install six hole hanger blocks and attachment hardware for supporting transmission lines on the antenna support structure every three feet.
- Provide and install six hole standoffs and attachment hardware for supporting transmission lines on antenna support structure every three feet.
- Supply and install 2 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.
- Supply and install #2 stranded copper ground (not to exceed240 linear feet) for grounding the antennas to the building ground.

Existing Facility Improvement Work

- Construct a new room of drywall construction (not to exceed 144 square feet) for installing the communications equipment.
- Coordinate the installation of electrical sub-feed with disconnect into the equipment room.
- Supply and install 1 200-amp breaker panel with capacity for 30 circuits.
- Supply and install 5 20-amp breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Supply and install 4 30-amp breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Install 1 Type 2 surge protector on electrical service side of the ATS.
- Install 1 primary Type 1 surge protector on the room electrical feed to protect the equipment from surges.
- Install 1 automatic transfer switch and connect it to generator and electric main.
- Supply and install 18-inch-wide cable runway (up to 20 linear feet) inside the existing room.
- Supply and install 2 cable entry panel with 6 ports.
- Ground all metallic objects in the interior of the existing room, to meet current Motorola Solutions's Standards and Guidelines for Communications Sites (R56) requirements and terminate near equipment locations.
- Supply and install 2 copper ground buss bar(s).
- Supply and install 4 fluorescent lighting fixtures inside the existing room.
- Supply and install 1 telco board (48 inch x 96 inch).
- Supply and install 1 wall-mounted 10-pound CO2 fire extinguisher and 1 wall-mounted 20-pound ABC fire extinguisher.
- Supply and install "No smoking" EME signage at the site.
- Supply and install 1 eye wash station and 1 first aid kit.
- Supply and install sensors for alarming (Fire, Smoke, Hi/Lo temp, door intrusion), punch block and wiring of contact closures to alarm block

Miscellaneous Work

- Cut, fabricate, and finish opening in steel corrugated wall for coax entry ports

- Boots for entry port
- Man-lift
- Install two UG coax conduits 6" each up to 100'.
- Banding for MW dish on leg
- Doors and hardware

5.11.2 Site Development at Archer Water Tank Site

Site Scope Summary

- Engineering services for site drawings and regulatory approvals – Included.
- Site acquisition services – Not included.
- Zoning Services – Not included.

Motorola Solutions Responsibilities:

Site Engineering

- Prepare site construction drawings, showing the layout of various new and existing site components.
- Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- Prepare record drawings of the site showing the as-built information.
- Perform an x-ray of the structure (up to 15 location of three square feet each) to determine the location of structural components and rebar sizing.
- Design multi antenna support platform to support proposed antennas and dishes.
- Preparation, submission and tracking of application for local permit fees (zoning, electrical, building etc.) and procurement of information necessary for filing.

Site Preparation

- Obtain the permits such as electrical, building, and construction permits, and coordinate any inspections with local authorities that may be needed to complete site development work.
- Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola Solutions's control will result in additional costs.

Antenna and Transmission Line Installation

- Install 1 6-foot microwave dishes.
- Supply 1 dish mounts for 6-foot microwave dishes.
- Install 90 linear feet of 3/8-inch transmission line.
- Perform sweep tests on transmission lines.
- Perform alignment of each of 1 microwave paths to ensure that the microwave dishes are optimally positioned.
- Provide and install six hole hanger blocks and attachment hardware for supporting transmission lines on the antenna support structure every three feet.
- Supply and install 24-inch-wide cable ladder to support RF transmission lines (90 linear feet).
- Supply and install 2 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.
- Supply and install #2 stranded copper ground (not to exceed90 linear feet) for grounding the antennas to the building ground.

Miscellaneous Work

- Core drilling for coax entry ports
- Boots for entry port
- Man-lift
- Uni strut for MW dish building
- Steel plates for mounting MW dish to building

5.11.3 Site Development at Antelope Site

Site Scope Summary

- Engineering services for site drawings and regulatory approvals – Included.
- Site acquisition services – Not included.
- Zoning Services – Not included.
- New fuel tank size – 1000 gallons- , Type – Propane above-ground.
- New generator size – 35 kW, Type – Indoor.

Motorola Solutions Responsibilities:

Site Engineering

- Prepare site construction drawings, showing the layout of various new and existing site components.
- Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- Prepare zoning drawings that can be used to describe the proposed site installation in sufficient detail.
- Prepare record drawings of the site showing the as-built information.
- Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility "may have a significant environmental impact" and thus require additional documentation, submittals, or work.
- Perform a Phase I Environmental Site Assessment (ESA), to identify obvious and reasonably likely on-site and/or off-site potential sources of contamination and prepare a report summarizing observations, findings, and conclusions for each site assessed. This study does not include Phase II assessments, risk/cost evaluations, and permitting assistance that may be required if risk factors are indicated.
- Perform an evaluation of the existing tower for conformance with the Telecommunications Industry Association/Electronics Industries Association (TIA/EIA 222) Standard for antenna configuration.
- Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Laramie County Wyoming.

NOTE: This task does not include mapping, structural measurement survey, materials testing, geotechnical investigation, and/or other field investigation to acquire the data. If applicable, these tasks will be noted separately in the SOW.

- Provide tower climbing and tower mapping services for towers up to 350 feet to collect information about structural members and existing equipment.
- Conduct site investigation necessary to develop structural analysis (cases where adequate as-built documentation is not provided).
- Conduct ultrasonic measurements of tubular members of towers up to 350' to determine the wall thickness.
- Conduct dispersive wave testing of foundations for a three legged self-supported tower to determine their structural details for analysis when tower drawings are not available.
- Preparation, submission and tracking of application for local permit fees (zoning, electrical, building etc.) and procurement of information necessary for filing.

Site Preparation

- Obtain the permits such as electrical, building, and construction permits, and coordinate any inspections with local authorities that may be needed to complete site development work.
- Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola Solutions's control will result in additional costs.

Site Components Installation

- Construct 1 concrete slab for 1000 gallon above-ground Liquid Propane (LP) fuel tank at 3000 psi with reinforcing steel necessary for foundations.
- Supply and install 1 1000-gallon Liquid Propane (LP) fuel tank(s), fill it with fuel and connect it to the generator.
- Supply and install fuel tank monitors on the tanks to monitor low fuel in tanks and run alarm wiring to the building located within 100 feet of the tank.
- Supply and install 1 standby power generator (35 kW) located within 20 feet of the ATS, including interconnection wiring between the generator, transfer switch, and site electrical service mains.
- Supply and install a perimeter grounding system around the compound and shelter. The ground system is to tie to the fence and all new metal structures within the compound to meet current Motorola Solutions's R56 standards.
- Conduct 1 three-point ground resistance test of the site. Should any improvements to grounding system be necessary after ground testing, the cost of such improvements shall be the responsibility of Laramie County Wyoming.
- Supply and install 1 freestanding 24-inch-wide cable/ice bridge from the tower to the shelter (up to 20 linear feet).

Tower Work

- Supply and install grounding for the tower base for self-supported towers

Antenna and Transmission Line Installation

- Install 2 antenna(s) for the RF system.
- Install 2 side arms for antennas.
- Install 1 tower top amplifier(s).
- Install 2 6-foot microwave dishes.
- Supply 2 dish mounts for 6-foot microwave dishes.
- Supply 2 ice shields for 6-foot microwave dishes.

- Install 2 ice shields above 6-foot microwave dishes.
- Install 270 linear feet of 3/8-inch transmission line.
- Install up to 120 linear feet of 1/2-inch transmission line.
- Install up to 360 linear feet of 7/8-inch transmission line.
- Perform sweep tests on transmission lines.
- Perform alignment of each of 2 microwave paths to ensure that the microwave dishes are optimally positioned.
- Provide and install six hole hanger blocks and attachment hardware for supporting transmission lines on the antenna support structure every three feet.
- Supply and install 1 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.

Existing Facility Improvement Work

- Supply and install 5 20-amp breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Supply and install 4 30-amp breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Install 1 Type 2 surge protector on electrical service side of the ATS.
- Install 1 primary Type 1 surge protector on the room electrical feed to protect the equipment from surges.
- Install 1 automatic transfer switch and connect it to generator and electric main.
- Ground all metallic objects in the interior of the existing room, to meet current Motorola Solutions's Standards and Guidelines for Communications Sites (R56) requirements and terminate near equipment locations.
- Supply and install 2 copper ground buss bar(s).

Miscellaneous Work

- Boots for entry port
- Fabricate and adapt existing cooling intake ducting for new generator.
- Additional supports to install generator inside shelter.

5.12 GLOBAL CUSTOMER RESPONSIBILITIES, AS REQUIRED:

- If required, prepare and submit Electromagnetic Energy (EME) plans for the site (as a licensee) to demonstrate compliance with FCC RF Exposure guidelines.
- As applicable, coordinate, prepare, submit, and pay for all required permits and inspections for the work that is the Customer's responsibility.
- Pay for all utility connection, pole or line extensions, and any easement or usage fees.
- Review and approve site design drawings within 7 calendar days of submission by Motorola Solutions or its subcontractor(s). Should a re-submission be required, the Customer shall review and approve the re-submitted plans within 7 calendar days from the date of submittal.
- Pay for the usage costs of power, leased lines and generator fueling both during the construction/installation effort and on an on-going basis.
- Pay for application fees, taxes and recurring payments for lease/ownership of the property.
- Provide personnel to observe construction progress and testing of site equipment according to the schedule provided by Motorola Solutions.
- As applicable (based on local jurisdictional authority), the Customer will be responsible for any installation or up-grades of the electrical system in order to comply with NFPA 70, Article 708

- Provide property deed or lease agreement, and boundary survey, along with existing as-built drawings of the site and site components to Motorola Solutions for conducting site engineering.
- Provide a right of entry letter from the site owner for Motorola Solutions to conduct field investigations.
- Maintain existing access road in order to provide clear and stable entry to the site for heavy-duty construction vehicles, cement trucks and cranes. Sufficient space must be available at the site for these vehicles to maneuver under their own power, without assistance from other equipment.
- Provide space, HVAC, backup power (UPS, generator), outlets, grounding, surge suppression, lighting, fire suppression and cabling facilities for the equipment room per Motorola Solutions's R56 specifications. Ceiling and cable tray heights in the equipment rooms should be such as to accommodate 7-1/2-foot equipment racks, and the ceiling should be 9 feet or greater.
- Confirm that there is adequate utility service to support the new equipment and ancillary equipment.
- If required, remove or relocate any existing facilities, equipment, and utilities to create space for new site facilities and equipment.
- If required, provide any physical improvements (walls, roofing, flooring, painting, etc.) necessary to house the equipment in the existing room.
- Supply required UPS Power to support the additional proposed equipment. This uninterruptible power source shall be adequate to back-up all radio equipment as well as future equipment growth.
- Supply dedicated 20 Amp simplex A. C. outlets at for each major piece of proposed equipment within six (6) feet of the equipment location wired to individual breakers in distribution panels.
- Secure power connection to the room, associated permitting, and installation of a meter and disconnect within 50 feet of the proposed shelter location.

5.13 GLOBAL ASSUMPTIONS, AS APPROPRIATE:

- No prevailing wage, certified payroll, mandatory union workers or mandatory minority workers are required for this work
- All work is assumed to be done during normal business hours as dictated by time zone (Monday thru Friday, 7:30 a.m. to 5:00 p.m.).
- All recurring and non-recurring utility costs [including, but not limited to, generator fuel (except first fill), electrical, Telco] will be borne by the Customer or site owner.
- All utility installations shall be coordinated and paid for by the site owner and located at jointly agreed to location within or around the new communications shelter or equipment room.
- Site will have adequate electrical service for the new shelter and tower. Utility transformer, transformer upgrades, line, or pole extensions have not been included.
- Pricing has been based on National codes such IBC or BOCA. Local codes or jurisdictional requirements have not been considered in this proposal.
- Hazardous materials are not present at the work location. Testing and removal of hazardous materials, found during site investigations, construction or equipment installation will be the responsibility of the customer.
- A maximum of 30 days will be required for obtaining approved building permits from time of submission, and a maximum of 60 days will be required for zoning approvals from time of submittal.
- No improvements are required for concrete trucks, drill rigs, shelter delivery, and crane access.
- If extremely harsh or difficult weather conditions delay the site work for more than a week, Motorola Solutions will seek excusable delays rather than risk job site safety.

- Alarming at existing sites will be limited to new component installations and will have to be discussed and agreed to on a site-by-site basis.
- The site will have adequate room for installation of proposed equipment, based on applicable codes and Motorola Solutions's R56 standards.
- The existing utility service and backup power facilities (UPS, generators) have sufficient extra capacity to support the proposed new equipment load.
- A clear obstruction-free access exists from the antenna location to the equipment room.
- The Customer does not desire upgrade of the existing site to meet Motorola Solutions's R56 standards.
- The floor can support the proposed new loading. Physical or structural improvements to the existing room will not be required.

5.14 GLOBAL COMPLETION CRITERIA

- Site development completed per issued for construction (IFC) construction drawings, project requirements, contractual obligations (including any customer/Motorola Solutions approved changes), and approved by Laramie County Wyoming.
  - This shall be confirmed by contractor and reviewed with Motorola Solutions construction manager and project manager before inspections occur.
- All jurisdictional and contractual required testing and inspections to be performed by the contractor. (Contractual testing and inspections defined and agreed to with project team and customer prior to project kick off; vendor solely responsible for conducting, coordinating and paying for all jurisdictional testing and inspections).
- Motorola Solutions site development checklist shall be completed and signed off by contractor prior to customer inspection. (Review with project team and customer and amend checklist as required at project kick off or before work begins).
- Site turn-over package completed and turned over to Motorola Solutions (As defined and agreed to with project team and customer).
- All punch list and deficiencies shall be completed prior to customer and Motorola Solutions inspections.

5.14.1 Site Development Complete

All site development completed, and approved by the County.

5.15 SITE DEVELOPMENT ACCEPTANCE (MILESTONE)

All site development completed and accepted by the County.

5.16 SYSTEM INSTALLATION

5.16.1 Install Fixed Network Equipment

Task	Motorola Solutions	County
Motorola Solutions will be responsible for the installation of all fixed equipment contained in the equipment list and outlined in the System Description based upon the agreed to floor plans, at the sites where the physical facility improvement is complete and the site is ready for installation. All equipment will be properly secured to the floor and installed in a neat and professional manner, employing a standard of workmanship consistent with its own R56` installation standards and in compliance with applicable National Electrical Code (NEC), EIA, Federal Aviation Administration (FAA) and FCC standards.	X	
For installation of the fixed equipment at the various sites, Motorola Solutions will furnish all cables for power, audio, control, and radio transmission to connect the Motorola Solutions supplied equipment to the power panels or receptacles and the audio/control line connection point	X	
During field installation of the equipment, any required changes to the installation will be noted and assembled with the final 'as-built' documentation of the system	X	
Will provide storage location for the Motorola Solutions-provided equipment	X	
Receive and inventory all equipment	X	
Bond the supplied equipment to the site ground system in accordance with Motorola Solutions's R56 standards	X	
Will interface with the following network connections: • County Supplied PTP microwave at the Archer Water Tank Site • State supplied Microwave at the 85 South Site	X	
Will not remove existing equipment.	X	
Will not relocate existing equipment to a location designated by the County	X	
Will not dispose of existing equipment	X	
Provide secure storage for the Motorola Solutions-provided equipment, at a location central to the sites		X
Motorola Solutions coordinates the receipt of the equipment with the County's designated contact, and inventory all equipment	X	X
Provide access to the sites, as necessary		X

5.16.2 Completion Criteria:

Fixed Network Equipment installation completed and ready for optimization.

5.17 FIXED NETWORK EQUIPMENT INSTALLATION COMPLETE

All fixed network equipment installed and accepted by the County.

5.18 LINK VERIFICATION

Task	Motorola Solutions	County
Perform test to verify site link performance, prior to the interconnection of the Motorola Solutions-supplied equipment to the link equipment	X	
Make available the required links which meet the specifications supplied by Motorola Solutions at the CDR		X

It should be noted that 900 MHz, 2.4 GHz, and 5.2/5.4/5.8 GHz bands are unlicensed. Therefore, Motorola Solutions has no control over signal emissions in these bands that may interfere with the desired signals. Although link surveys will identify possible existing interference sources, there is no guarantee that interference will not emerge after the survey. Motorola Solutions can assist the County in assessing interference issues if they occur, however, the cost for the services and any additional equipment necessary to resolve the interference problem are beyond the scope of the generic link survey and installation.

5.18.1 Completion Criteria:

Link verification successfully completed.

5.19 SYSTEM INSTALLATION ACCEPTANCE (MILESTONE)

All equipment installations are completed and accepted by the County.

5.20 SYSTEM OPTIMIZATION

5.20.1 Optimize System FNE

Task	Motorola Solutions	County
Motorola Solutions and its subcontractors optimize each subsystem	X	
Verify that all equipment is operating properly and that all electrical and signal levels are set accurately	X	
Verify that all audio and data levels are at factory settings	X	
Check forward and reflected power for all radio equipment, after connection to the antenna systems, to verify that power is within tolerances	X	
Check audio and data levels to verify factory settings	X	

Task	Motorola Solutions	County
Verify communication interfaces between devices for proper operation	X	
Test features and functionality are in accordance with manufacturers' specifications and that they comply with the final configuration established during the CDR.	X	
Install and integrate the RF sites with the Wyolink system, then optimize and activate the site.	X	
Provide access/escort to the sites		X

5.20.2 Completion Criteria:

System FNE optimization is complete.

5.21 OPTIMIZATION COMPLETE

System optimization is completed. Motorola Solutions and the County agree that the equipment is ready for acceptance testing.

5.22 TRAINING

5.22.1 Perform Training

Task	Motorola Solutions	County
Training is not included	X	

5.22.2 Completion Criteria:

None

5.23 AUDIT AND ACCEPTANCE TESTING

5.23.1 Perform R56 Installation Audit

Task	Motorola Solutions	County
Perform R56 site-installation quality audits, verifying proper physical installation and operational configurations	X	
Create site evaluation report to verify site meets or exceeds requirements, as defined in Motorola Solutions's Standards and Guidelines for Communication Sites (R56)	X	
Provide access/escort to the sites		X

Task	Motorola Solutions	County
Witness tests		X

5.23.2 Completion Criteria:

All R56 audits completed successfully.

5.24 PERFORM EQUIPMENT TESTING

Task	Motorola Solutions	County
Test individual components of the system to verify compliance to the equipment specifications	X	
Repeat any failed test(s) once Motorola Solutions (or the County) has completed the corrective action(s)	X	
Prepare documentation of component tests to be delivered as part of the final documentation package	X	
Witness tests if desired		X

5.24.1 Completion Criteria:

Successful completion of equipment testing.

5.25 PERFORM FUNCTIONAL TESTING

Task	Motorola Solutions	County
Verify the operational functionality and features of the individual subsystems and the system supplied by Motorola Solutions, as contracted	X	
If any major task as contractually described fails, repeat that particular task after Motorola Solutions determines that corrective action has been taken	X	
Document all issues that arise during the acceptance tests	X	
Document the results of the acceptance tests and present to the County for review	X	
Resolve any minor task failures before Final System Acceptance	X	
Witness the functional testing		X

5.25.1 Completion Criteria:

Successful completion and County approval of the functional testing.

5.26 SYSTEM ACCEPTANCE TEST PROCEDURES (MILESTONE)

County approves the completion of all the required tests.

5.27 FINALIZE

5.27.1 Cutover

Task	Motorola Solutions	County
Motorola Solutions and the County develop a mutually agreed upon cutover plan based upon discussions held during the CDR	X	
During cutover, follow the written plan and implement the defined contingencies, as required	X	
Conduct cutover meeting(s) with user group representatives to address both how to mitigate technical and communication problem impact to the users during cutover and during the general operation of the system	X	
Attend cutover meetings and approve the cutover plan		X
Notify the user group(s) affected by the cutover (date and time)		X

5.27.2 Completion Criteria:

Successful migration from the old system to the new system.

5.28 RESOLVE PUNCHLIST

Task	Motorola Solutions	County
Work with the County to resolve punchlist items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance	X	
Assist Motorola Solutions with resolution of identified punchlist items by providing support, such as access to the sites, equipment and system, and approval of the resolved punchlist item(s)		X

5.28.1 Completion Criteria:

All punchlist items resolved and approved by the County.

5.29 TRANSITION TO SERVICE/PROJECT TRANSITION CERTIFICATE

Task	Motorola Solutions	County
Review the items necessary for transitioning the project to warranty support and service	X	
Provide a Customer Support Plan detailing the warranty and post-warranty support, if applicable, associated with the Contract equipment	X	
Participate in the Transition Service/Project Transition Certificate (PTC) process		X

5.29.1 Completion Criteria:

All service information has been delivered and approved by the County.

5.30 FINALIZE DOCUMENTATION

Task	Motorola Solutions	County
Provide an electronic as-built system manual	X	
Receive and approve all documentation provided by Motorola Solutions		X

5.30.1 As-built documentation includes:

- Site Block Diagrams Site Floor Plans
- Site Equipment Rack Configurations Antenna Network Drawings for RF Sites ATP Test Checklists
- Functional Acceptance Test Plan Test Sheets and Results Equipment Inventory List

Drawings are created utilizing AutoCAD design software and will be delivered in Adobe PDF format. All other system manual documents converted from native format to Adobe PDF format to be included on the System Manual CD.

5.30.2 Completion Criteria:

All required documentation is provided and approved by the County.

5.31 FINAL ACCEPTANCE (MILESTONE)

Task	Motorola Solutions	County
All deliverables completed, as contractually required	X	

5.31.1 Completion Criteria:

Final System Acceptance documents signed by County and received by Motorola Solutions.

5.32 PROJECT ADMINISTRATION

5.32.1 Project Status Meetings

Task	Motorola Solutions	County
Motorola Solutions Project Manager, or designee, will attend all project status meetings with the County, as determined during the CDR	X	
Record the meeting minutes and supply the report	X	
Attend and participate in project status meetings	X	X
Respond to issues in a timely manner	X	X

5.32.2 Sample Project Status Meeting agenda:

- Overall project status compared to the Project Schedule.
- Product or service related issues that may affect the Project Schedule. Status of the action items and the responsibilities associated with them, in accordance with the Project Schedule.
- Any miscellaneous concerns of either the County or Motorola Solutions.

5.32.3 Completion Criteria:

Completion of the meetings and submission of meeting minutes.

5.32.4 Progress Milestone Submittal

Task	Motorola Solutions	County
Submit progress (non-payment) milestone completion certificate/documentation	X	
Approve milestone, which will signify confirmation of completion of the work associated with the scheduled task		X

5.32.5 Completion Criteria:

The County approval of the Milestone Completion document(s).

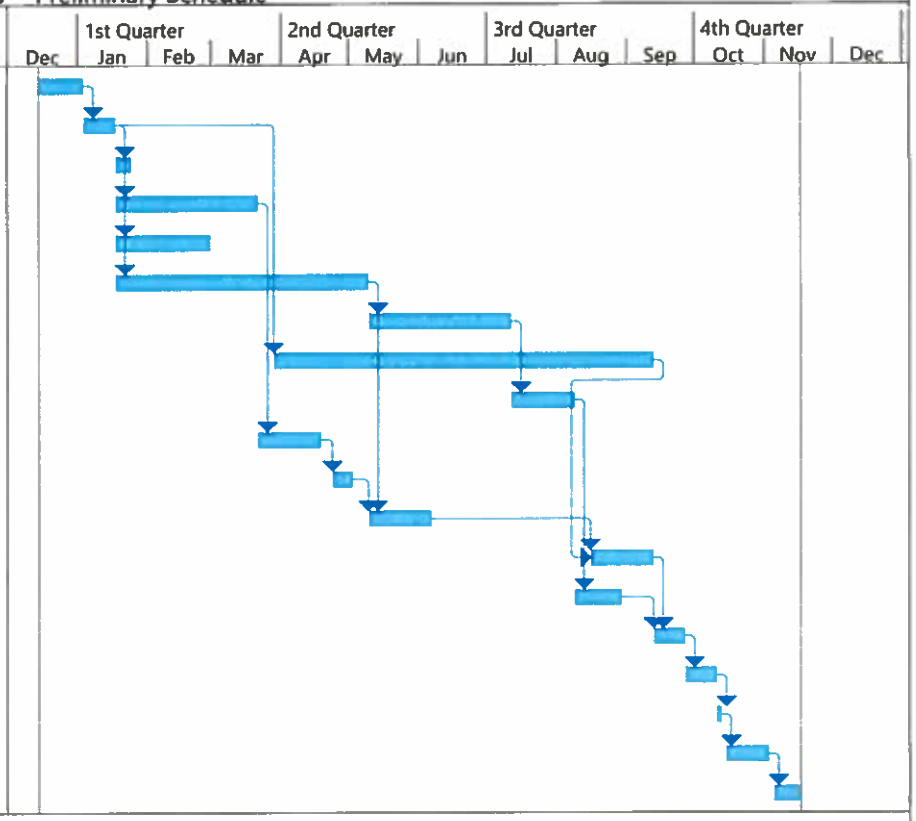
SECTION 6

PROJECT SCHEDULE

Project Schedule is included on the following pages.

Laramie County RF Sites - Preliminary Schedule

ID	Task Name	Duration	Start
1	Contract	14 days	Fri 12/15/17
2	Contract Design Review	10 days	Thu 1/4/18
3	Order Processing	5 days	Thu 1/18/18
4	RF Site Hardware Manufacturing	45 days	Thu 1/18/18
5	Microwave Path Survey	30 days	Thu 1/18/18
6	Frequency Coordination	80 days	Thu 1/18/18
7	Microwave Hardware Manufacturing	45 days	Thu 5/10/18
8	Civil Construction	120 days	Thu 3/29/18
9	Ship Microwave Hardware to Field	20 days	Thu 7/12/18
10	Ship RF Sites to Field	20 days	Thu 3/22/18
11	Receive and Inventory	7 days	Tue 4/24/18
12	Field Staging	20 days	Thu 5/10/18
13	Installation of RF Sites	20 days	Thu 8/16/18
14	Installation of Microwave	15 days	Thu 8/9/18
15	Optimization	10 days	Thu 9/13/18
16	Audit and Acceptance Testing	10 days	Thu 9/27/18
17	Cutover	2 days	Thu 10/11/18
18	Finalize _ Final Documentation	15 days	Mon 10/15/18
19	Final Acceptance_Transition to Service	10 days	Mon 11/5/18



Project: Laramie 2017 RF Sites Project Schedule
Date: Mon 10/9/17
Preliminary Schedule

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

SECTION 7

ACCEPTANCE TEST PLAN

7.1 WIDE AREA TRUNKING - FDMA ONLY SITES

7.1.1 Talkgroup Call

1. DESCRIPTION

The Talkgroup is the primary level of organization for communications on a trunked radio system. Radios with Talkgroup call capability will be able to communicate with other members of the same Talkgroup. This provides the effect of a private channel down to the Talkgroup level.
This test will demonstrate that a Talkgroup transmission initiated by a radio user will only be heard by system users, which have, the same Talkgroup selected. As with other types of calls, Talkgroup calls can take place from anywhere in the system.

SETUP

RADIO-1 - SITE 1 - TALKGROUP 1
RADIO-2 - SITE 2 - TALKGROUP 1
RADIO-3 - SITE 1 - TALKGROUP 2
RADIO-4 - SITE 2 - TALKGROUP 2

VERSION #1.040

2. TEST

Step 1. Initiate a Wide Area Call with RADIO-1 in TALKGROUP 1.

Step 2. Observe that only RADIO-2 will be able to monitor and respond to the call.

Step 3. Initiate a Wide Area Call with RADIO-3 in TALKGROUP 2.

Step 4. Observe that only RADIO-4 will be able to monitor and respond the call.

Pass____ Fail____

Wide Area Trunking - FDMA Only Sites

7.1.2 Continuous Assignment Updating

1. DESCRIPTION

When a talkgroup is assigned a voice channel, the site controller continues to transmit the channel assignment on the control channel for the duration of the talkgroup call. Radios coming into use on the system are automatically sent to voice channels with conversations in progress involving their selected talkgroups.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
RADIO-3 - TALKGROUP 1

VERSION #1.010

2. TEST

Step 1. Turn OFF RADIO-1.

Step 2. Initiate a Talkgroup Call using RADIO-2 and verify RADIO-3 hears the audio.

Step 3. While the Talkgroup Call is in progress, turn ON RADIO-1.

Step 4. Observe RADIO-1, which was just brought back into service, joins the Talkgroup Call already in progress.

Step 5. End the talkgroup call.

Step 6. Switch RADIO-1 to another talkgroup.

Step 7. Initiate a Talkgroup Call from RADIO-2 to RADIO-3.

Step 8. While the Talkgroup Call is in progress, set RADIO-1 back to TALKGROUP 1.

Step 9. Observe that RADIO-1 joins the Talkgroup Call already in progress.

Pass____ Fail____

7.1.3 Multigroup Call in Wait Mode

1. DESCRIPTION

This trunking feature allows an equipped radio user to transmit an announcement to several different talkgroups simultaneously. The multigroup (ATG) call can be flagged for Wait Mode in the Provisioning Manager (PM) database forcing all attached talkgroups to finish calls in progress before the trunked system will process the multigroup call. The system does not permit inactive, attached talkgroups to initiate Talkgroup Calls during the "wait" timeframe. As with other types of calls, multigroup calls can take place from anywhere in the system.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - RANDOM (Not part of MG)
RADIO-4 - ATG 1

* TALKGROUP 1 and TALKGROUP 2 are members of ATG 1.

* RANDOM is any talkgroup not a member of ATG 1.

* Multigroups are set up through both the Provisioning Manager (PM) and the Subscriber Programming software.

VERSION #1.020

2. TEST

Step 1. Verify ATG 1 is set for the Wait mode.

Step 2. Using RADIO-1, initiate a call on TALKGROUP 1.

Step 3. While RADIO-1 is keyed, attempt to initiate a multigroup call using RADIO-4 on ATG 1. Verify RADIO-4 receives a busy tone because one of the talkgroups attached to ATG 1 is involved in a Talkgroup Call.

Step 4. Key RADIO-2 and verify that a busy tone is received because the ATG 1 call is in queue.

Step 5. Dekey RADIO-1 and verify RADIO-4 receives a callback.

Step 6. Key RADIO-4 and verify both RADIO-1 and RADIO-2 hear the multigroup call while RADIO-3 does not unmute.

Pass____ Fail____

7.1.4 Call Alert

1. DESCRIPTION

Call Alert is a tone page that allows a user to selectively alert another radio unit. The initiating radio will receive notification from the trunked system as to whether or not the page was received by the target radio. Units receiving a Call Alert will sound an alert tone. As with other types of calls, Call Alerts can take place from anywhere in the system.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 2
RADIO-3 - TALKGROUP 3

VERSION #1.010

2. TEST

Step 1. Using RADIO-1, press the page button.

Step 2. Enter the unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored

Step 3. Press the PTT to initiate the call alert. Verify that the RADIO-1 user receives audible indication that the Call Alert was sent.

Step 4. Verify that RADIO-2 user receives an audible indication of an incoming Call Alert was sent but RADIO-3 does not.

Step 5. Verify RADIO-1 gets an audible indication that the Call Alert was successfully received at the target radio.

Step 6. Turn off RADIO-2. Send a Call Alert from RADIO-1 to RADIO-2.

Step 7. Verify that the RADIO-1 user receives audible indication that the Call Alert was sent.

Step 8. Verify RADIO-1 receives a "No Acknowledgement" indication that the Call Alert was not received at the target radio.

Pass____ Fail____

Wide Area Trunking - FDMA Only Sites

7.1.5 Private Call

1. DESCRIPTION

Private Call is a selective calling feature that allows a radio user to carry on one-to-one conversation that is only heard by the 2 parties involved. Subscriber units receiving a private call will sound an alert tone. As with other types of calls, Private Calls can take place from anywhere in the system.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
RADIO-3 - TALKGROUP 1

VERSION #1.020

2. TEST

Step 1. Using RADIO-1, press the Private Call (Call) button.

Step 2. Enter the unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored.

Step 3. Press the PTT to initiate the Private Call.

Step 4. Verify that RADIO-2 hears tones and the display indicates that a Private Call has been received, but RADIO-3 receives no indications.

Step 5. Answer the call at RADIO-2 by pressing the Private Call (Call)/Respond button. If RADIO-2 has a display, verify it shows the ID number or Alias of the calling unit.

Step 6. Press the PTT switch on RADIO-2 and respond to the Private Call. Note that if you do not press the Private Call button before pressing PTT, your audio will be heard by all members of the talkgroup, and not just by the radio initiating the Private Call.

Step 7. Verify that RADIO-2 can communicate with RADIO-1.

Step 8. Verify that RADIO-3 does not monitor the Private Call.

Step 9. End the Private Call by pressing the "home" key and return to normal talkgroup operation.

Pass____ Fail____

7.1.6 Audio Interrupt / Interrupt Never Mode

1. DESCRIPTION

A radio PTT request may be received for a group already active and currently being sourced by another radio unit. The talkgroup can be flagged to either allow or disallow the new PTT. If allowed, the latest PTT request will be granted and become the source of the call.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-2 - TALKGROUP 1
RADIO-3 - TALKGROUP 1

VERSION #1.020

2. TEST

Step 1. Verify TALKGROUP 1's template is set up as Audio Interrupt Never.

Step 2. Using RADIO-1, initiate a call on TALKGROUP 1.

Step 3. Verify both RADIO-2 and RADIO-3 monitor the audio.

Step 4. Using RADIO-3, initiate a call on TALKGROUP 1.

Step 5. Verify that RADIO-3 receives a reject and that RADIO-2 continues to listen to RADIO-1.

Step 6. Dekey both Radios.

Pass____ Fail____

Wide Area Trunking - FDMA Only Sites

7.1.7 Emergency Alarm and Call with Top of Queue

1. DESCRIPTION

Users in life threatening situations can use the Emergency button on the radio to immediately send a signal to the dispatcher and be assigned the next available voice channel. An Emergency Call can be set to either Top of Queue or Ruthless Preemption operation. During an emergency call the Emergency ID will appear on the display of the subscribers. To demonstrate this, an Emergency Alarm and Call will be initiated from a subscriber which will be received by a subscriber on the same talkgroup, affiliated at any site of any zone in the system.

NOTE: If the subscriber does not have the Display option, the Emergency ID will not be displayed.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - Any Site
RADIO-3 - TALKGROUP 2
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 3
RADIO-4 - SITE - SITE 1

All radios and talkgroups should start with default priorities. Default is 10.

VERSION #1.010

2. TEST

Step 1. Verify the emergency type for TALKGROUP 1's template is set up as Top of Queue.

Step 2. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 3. Press the PTT to initiate a call with RADIO-3 and hold the PTT switch until instructed to release.

Step 4. Key RADIO-4 and verify the radio receives a busy tone. Release the PTT switch on RADIO-4.

Step 5. Using RADIO-1 send an Emergency Call by depressing the emergency switch and then the PTT switch.

Step 6. Observe that RADIO-1 cannot transmit due to the voice channel being busy.

Step 7. Release the PTT switch on RADIO-3.

Step 8. Observe that RADIO-1 receives the call back before RADIO-4 and is able to proceed with the call. Also observe that the display on RADIO-2 denotes an emergency and the unit ID or alias of RADIO-1.

Step 9. Dekey RADIO-1 and end the Emergency Call by holding down the Emergency button on RADIO-1 until an alert tone sounds. Verify RADIO-1 returns to normal operation and that RADIO-4 receives a callback.

Step 10. Return the system to normal operation by enabling all the channels at SITE 1.

Pass____ Fail____

7.2 SITE TRUNKING - FDMA ONLY SITES

7.2.1 Site Trunking Indication

1. DESCRIPTION

When a remote site loses its link or does not have a link to the Zone Controller, the affected site will enter "Site Trunking" mode of operation. Radios locked onto this site will be serviced locally within this site's coverage area.

NOTE: If the subscriber does not have the Display option, the "Site Trunking" indication will not be displayed.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1
Lock the subscribers to SITE 1 if more than one site exists on the system.

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Verify that RADIO-1 and RADIO-2 are displaying the "Site Trunking" indication.

Step 3. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Site Trunking - FDMA Only Sites

7.2.2 Talkgroup Call

1. DESCRIPTION

When a site goes into Site Trunking, radios with Talkgroup Call capability will be able to communicate with other members of the same talkgroup at that same site. Members of the same talkgroup at other sites will not be able to monitor those conversations.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 2
RADIO-4 - TALKGROUP 1
RADIO-4 - SITE - SITE 2

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Initiate a Talkgroup Call with RADIO-1 on TALKGROUP 1 at SITE 1.

Step 3. Observe that only RADIO-2 will be able to monitor and respond to the call. Note that RADIO-3 and RADIO-4 are not able this monitor the call since the site is not in wide area operation.

Step 4. Initiate a Talkgroup Call with RADIO-3 on TALKGROUP 1 at SITE 2.

Step 5. Observe that only RADIO-4 will be able to monitor and respond to the call.

Pass____ Fail____

Site Trunking - FDMA Only Sites

7.2.3 Call Alert

1. DESCRIPTION

Call Alert is a tone page that allows a user to selectively alert another radio unit. When a site is in Site Trunking, Radios at the site will only be able to Call Alert other radios at the same site. The initiating radio will receive notification from the trunked system as to whether or not the page was received by the target radio.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Using RADIO-1, press the page button.

Step 3. Enter the Unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored.

Step 4. Press the PTT to initiate the Call Alert.

Step 5. Verify that RADIO-2 received the Call Alert.

Step 6. Exit the Call Alert mode and return to normal talkgroup mode.

Step 7. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Site Trunking - FDMA Only Sites

7.2.4 Private Call

1. DESCRIPTION

Private Call is a selective calling feature that allows a dispatcher or radio user to carry on one-to-one conversation that is only heard by the 2 parties involved. When a site is in Site Trunking, Radios at the site will only be able to Private Call other radios at the same site.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.020

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Using RADIO-1, press the Private Call button.

Step 3. Enter the Unit ID of RADIO-2 with the keypad, or scroll to the location where this ID is stored.

Step 4. Press the PTT to initiate the call.

Step 5. Verify that at RADIO-2 only tones are heard and the display indicates that a call has been received.

Step 6. Answer the call at RADIO-2 by pressing the Private Call/Respond button. Verify its display shows the ID number or alias of the calling unit.

Step 7. Press the PTT switch on RADIO-2 and respond to the call. Note that if you do not press the Private Call button before pressing PTT, your audio will be heard by all members of the talkgroup, and not by the radio initiating the Private Call.

Step 8. Verify only RADIO-1 hears the audio from RADIO-2.

Step 9. End the Private Call. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Site Trunking - FDMA Only Sites

7.2.5 Continuous Assignment Updating

1. DESCRIPTION

When a talkgroup is assigned a voice channel, the site controller continues to transmit the channel assignment on the control channel for the duration of the Talkgroup Call. Radios coming into use on the system are automatically sent to voice channels with conversations in progress involving their selected talkgroups.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Turn OFF RADIO-1.

Step 3. Initiate a Talkgroup Call using RADIO-2.

Step 4. While the Talkgroup Call is in progress, turn on RADIO-1.

Step 5. Observe that RADIO-1, which was just brought back into service, joins the Talkgroup Call already in progress.

Step 6. Release the PTT of RADIO-2. Switch RADIO-1 to TALKGROUP 2.

Step 7. Initiate a Talkgroup Call using RADIO-2.

Step 8. While the Talkgroup Call is in progress, tum RADIO-1 back to TALKGROUP 1.

Step 9. Observe that RADIO-1, which was just set back to TALKGROUP 1, joins the Talkgroup Call already in progress.

Step 10. Return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

Site Trunking - FDMA Only Sites

7.2.6 Busy Queuing and Callback

1. DESCRIPTION

If no voice channel resources are available, radios requesting channels for new conversations are placed in the busy queue. Users of the same priority will move through the queue in a FIFO (first in, first out) sequence. When a voice channel becomes available, the radio at the top of the busy queue gets a channel assignment and generates a callback tone. The callback alerts the user that a channel assignment was made and transmitting is now possible on the selected talkgroup.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 2
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 3
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 1
RADIO-4 - SITE - SITE 1

Note: All radios are "Site Locked."

VERSION #1.030

2. TEST

Step 1. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 2. Initiate a Talkgroup Call with RADIO-1 and observe that RADIO-4 receives the call. Keep this call in progress until instructed to end the call.

Step 3. Key RADIO-2 and observe that the radio receives a busy.

Step 4. Key RADIO-3 and observe that the radio receives a busy.

Step 5. End the Talkgroup Call established in Step 2.

Step 6. Observe that RADIO-2 receives a callback prior to RADIO-3 receiving a callback.

Step 7. Return the site to Wide Area Trunking unless the next test requires Site Trunking

Pass____ Fail____

Site Trunking - FDMA Only Sites

7.2.7 Emergency Call and Alarm

1. DESCRIPTION

Emergency Alarms and Calls can be initiated by subscribers when the registered site is in Site Trunking. With all subscribers registered on a Site Trunking site, a subscriber will initiate an Emergency Alarm by pressing the Emergency button. By pressing the PTT, an Emergency Call will be issued and the ID of the initiator will be displayed with an Emergency indication by the other subscribers on the same talkgroup.

Note that for site trunking, Emergency Call operation is always Top of Queue.

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1
RADIO-3 - TALKGROUP 2
RADIO-3 - SITE - SITE 1
RADIO-4 - TALKGROUP 3
RADIO-4 - SITE - SITE 1

Note: All Radios should be "Site Locked"

VERSION #1.010

2. TEST

Step 1. Place SITE 1 into the Site Trunking mode.

Step 2. Simulate a busy system by disabling all channels at SITE 1 with the exception of the control channel and one voice channel.

Step 3. Press the PTT on RADIO-3 and hold the PTT switch until instructed to release.

Step 4. Key RADIO-4 and observe that the radio receives a busy.

Step 5. Using RADIO-1, initiate an emergency alarm followed by an emergency call.

Step 6. Observe that RADIO-1 cannot transmit due to the voice channel being busy.

Step 7. Release the PTT switch on RADIO-3.

Step 8. Observe that RADIO-1 can now proceed with the call and RADIO-2 receives the call. Also observe that the display on RADIO-2 denotes an emergency and the ID or Alias of the unit sending the emergency.

Step 9. End the emergency call and verify that RADIO-4 gets a callback.

Step 10. Restore all channels to service and return the site to Wide Area Trunking unless the next test requires Site Trunking.

Pass____ Fail____

7.3 SIGNOFF CERTIFICATE

By their signatures below, the following witnesses certify they have observed the system Acceptance Test Procedures.

Signatures

WITNESS: _____ Date: _____

Please Print Name: _____ _____

Initials:

Please Print Title: _____

WITNESS: _____ Date: _____

Please Print Name: _____ _____

Initials:

Please Print Title: _____

WITNESS: _____ Date: _____

Please Print Name: _____ _____

Initials:

Please Print Title: _____

SECTION 8

TRAINING PLAN

Motorola Solutions' Worldwide Learning Services (WLS) organization dedicates itself exclusively to offering the most comprehensive training available for communications system. We understand that your system is highly sophisticated, and as such, end-users require specialized training to fully realize the system's potential. WLS offers advanced training facilities, resources, and techniques to help you achieve the maximum potential from your investment.

Training has not been included as part of this proposal. If Laramie County desires formal WLS technical training, it can be provided as part of a Change Order.

SECTION 9

WARRANTY AND MAINTENANCE PLAN

Motorola Solutions will provide warranty services per the standard warranty terms and conditions outlined in the Communications System Agreement between Laramie County and Motorola Solutions effective December 17, 2014.

In addition, Motorola Solutions may provide the following above-warranty services during the Warranty Period. The services are described generally below. Statements of Work more fully describing the services are available upon request.

9.1 ADVANCED SERVICES OVERVIEW

In order to ensure the continuity of Laramie County's network and reduce system downtime Motorola proposes our Advanced Services offering to the County Appropriate for customers who wish to leverage Motorola's experienced personnel to maintain mission-critical communications for their first responders, Advanced Services focuses on monitoring the network on an ongoing basis, proactively mitigating potential functionality and security issues, and providing both remote and onsite support. The proposed offering consists of the following specific services:

- Service Desk.
- Technical Support.
- Network Event Monitoring.
- Onsite Support.
- Annual Preventative Maintenance.
- Network Hardware Repair with Advanced Replacement.

These services will be delivered to the County through the combination of local service personnel either dedicated to the network or engaged as needed; a centralized team within Motorola's Solutions Support Center (SSC), which operates on a 24 x 7 x 365 basis; and our Repair Depot, which will ensure that equipment is repaired to the highest quality standards. The collaboration between these service resources, all of who are experienced in the maintenance of mission-critical networks, will enable a swift analysis of any network issues, an accurate diagnosis of root causes, and a timely resolution and return to normal network operation.

9.2 ADVANCED SERVICES DESCRIPTION

9.2.1 Centralized Service Delivery

Centralized support will be provided by Motorola's support staff, located at our Service Desk and Solutions Support Center (SSC). These experienced personnel will provide direct service and technical support through a combination of Service Desk telephone support, technical consultation and troubleshooting through the SSC, and ongoing network monitoring of Laramie County's system.

Motorola will provide **Service Desk** response as a single point of contact for all support issues, including communications between the County, third-party subcontractors and manufacturers, and Motorola. When Laramie County's personnel call for support, the Service Desk will record, track, and update all Service Requests, Change Requests, Dispatch Requests, and Service Incidents using Motorola's Customer Relationship Management (CRM) system. The Service Desk is responsible for documenting Laramie County's inquiries, requests, concerns, and related tickets; tracking and resolving issues; and ensuring timely communications with all stakeholders based on the nature of the incident.

As tickets are opened by the Service Desk, issues that require specific technical expertise and support will be routed to our Solutions Support Center (SSC) system technologists for **Technical Support**, who will provide telephone consultation and troubleshooting capabilities to diagnose and resolve infrastructure performance and operational issues. Motorola's recording, escalating, and reporting process applies ISO 9000I and TL 9000-certified standards to the Technical Support calls from our contracted customers, reflecting our focus on maintaining mission-critical communications for the users of our systems.

The same SSC staff that provides direct telephone support to the County will also provide **Network Event Monitoring** to Laramie County's network in real-time, ensuring continuous management of the system's operational functionality. The SSC's technicians will utilize sophisticated tools to remotely monitor Laramie County's system, often identifying and resolving anomalous events before they might affect user communications.

9.2.2 Field Service Delivery

Onsite repairs and network preventative maintenance will be provided by authorized local field services delivery personnel, who will be dispatched from and managed by the Solutions Support Center.

OnSite Support provides local, trained and qualified technicians who will arrive at Laramie County's location upon a dispatch service call to diagnose and restore the communications network. This involves running diagnostics on the hardware or FRU (Field Replacement Unit) in order to identify defective elements, and replacing those elements with functioning ones. The system technician will respond to the Laramie County's location in order to remedy equipment issues based on the impact of the issue to overall system function.

Annual Preventive Maintenance Service provides proactive, regularly scheduled operational testing and alignment of infrastructure and network components to ensure that they continually meet original manufacturer specifications. Certified field technicians perform hands-on examination and diagnostics of network equipment on a routine and prescribed basis.

9.2.3 Network Hardware Repair

Motorola also proposes **Network Hardware Repair with Advanced Replacement** to Laramie County. With this additional service, Motorola will exchange malfunctioning components and equipment with advanced replacement units or Field Replacement Units (FRUs) as they are available in the Repair Depot's inventory. Malfunctioning equipment will be evaluated and repaired by the infrastructure repair depot and returned to the Repair Depot's FRU inventory upon repair completion. If the County prefers to maintain their existing FRU inventory, the County will be able to request a "loaner" FRU while their unit is being repaired.

9.3 MOTOROLA'S SERVICE CAPABILITIES

Our focus on the needs of our public safety partners has led us to recognize that an integrated implementation and service delivery team that takes a new system from system installation, to acceptance, to warranty, and all the way through extended maintenance, is the best way to ensure that public safety communications systems meet the needs of first responders. Motorola's team of experts, have developed refined processes and sophisticated tools through our experience in delivering mission-critical communications.

On-Call Support through the Solutions Support Center (SSC)

The cornerstone of our customer care process, Motorola's Solution Support Center (SSC) is staffed 24x7x365 by experienced system technologists. This TL 9000/ISO 9001-certified center responds to over 5000 public safety, utility, and enterprise customers. With over 100,000 phone and email interactions with Motorola customers per month, the SSC provides our customers with a centralized contact point for service requests.

Onsite Service through a Field Service Team

Onsite maintenance and repair of Laramie County's system will be provided by Motorola's local team of service personnel. Motorola will provide the County with a Customer Support Plan (CSP) that outlines the details of each service, provides escalation paths for special issues, and any other information specific to Laramie County's service agreement. Some of these details will include items such as access to sites, response time requirements, severity level definitions, and parts department access information.

Local technicians will be dispatched for onsite service by the SSC, who will inform the technician of the reason for dispatch. This will enable the technician to determine if a certain component or field replacement unit (FRU) will be needed from inventory to restore the system. Once on site, the field technician will notify the SSC and begin to work on the issue. The technician will review the case notes to determine the status of the issue, and begin the troubleshooting and restoration process. Once the system is restored to normal operation, the field technician will notify the SSC that the system is restored. The SSC, in turn, will notify the County that the system is restored to normal operation and request approval to close the case.

Centralized Repair Management through Motorola's Repair Depot

Our repair management depot coordinates component repair through a central location, eliminating the need to send system equipment to multiple vendor locations for repair. Once equipment is at the depot, technicians will replicate Laramie County's network configuration in our comprehensive test labs in order to reproduce and analyze the issue. Technicians will then restore the equipment to working order. After repairs are completed, equipment will be tested to its original performance specifications and, if appropriate, configured for return to use in Laramie County's system. All components being repaired are tracked throughout the process, from shipment by the County to return through a case management system where users can view the repair status of the radio via a web portal.

Direct Access to System Information through MyView Portal

Supplementing Motorola's proposed services plan for the County is access to Motorola's online system information tool, MyView Portal. MyView Portal provides our customers with real-time visibility to critical system and services information, all through an easy-to-use, graphical interface. With just a few clicks, Laramie County's administrators will gain instant access to system and support compliance, case reporting, ability to update and create cases, have visibility to when the

system will be updated, and receive pro-active notifications regarding system updates. Available 24x7x365 from any web-enabled device, the information provided by MyView will be based on your needs and user access permissions, ensuring that the information displayed is secure and pertinent to your operations.

Figure 1: MyView Portal offers real-time, role-based access to critical system and services information.

9.3.1 First Echelon On-Site Support: Point to Point Microwave

Motorola Solutions First Echelon On-Site Support will be added to supplement Cambium's factory warranty. This provides local, trained and qualified technicians to work with the original equipment manufacturer to diagnose and restore your communications network. The field technicians restore the system by performing first level troubleshooting on site.

Response will be provided 24x7. Site access requiring tower climbs are not included under the terms of the contract.

9.4 POST WARRANTY SERVICES

As Motorola Solutions's continuing commitment to supporting your system, warranty services can be extended after the Warranty Period to provide maintenance and service support in future years. Any of the services that we identify can be customized in future years, and are available for purchase either in "System Support Services" packages or as individual service offerings. These system support services significantly benefit Laramie County because the system can be effectively supported after the warranty period, thereby maximizing the operational capabilities and useful life of the system and protecting your investment in the system.

Post-warranty support has been included as part of this proposal.

SECTION 10

PRICING SUMMARY

Motorola's pricing is based on the equipment list and services defined for the system designed for the Laramie County's two 800 MHz 7-Channel Radio Sites. The Statement of Work (SOW) describes the work to be performed for the installation, optimization, and testing of the system and the equipment list provides the equipment necessary for this project.

System Pricing	
Equipment - Two 7-Channel 800 MHz Radio Sites, Two Hops of PTP and Two Generators	**$671,691.00**
Project Management, Civil Improvements, Frequency Identification/Coordination, Physical Path Surveys, System Integration, Engineering, Configuration and Optimization services	**$932,233.00**
40 APX Portable, One Time Programming, As Detailed Below	**$272,501.00**
Post Warranty Support Service	**$192,247.00**
System Discount	**($308,073.00)****
Additional System Discount – 40 APX Portables as Detailed Below	**($272,501.00)****
System Total	**$1,488,098.00**

**Applies to order of all items as proposed by 12/15/17.

Post Warranty Support Service Pricing Breakdown:

Post Warranty Support Pricing	Base Price	Price with 5% Multi-Year Discount
2nd Year Post Warranty Support	$ 46,951.00	$ 44,604.00
3rd Year Post Warranty Support	$ 49,299.00	$ 46,834.00
4th Year Post Warranty Support	$ 51,764.00	$ 49,175.00
5th Year Post Warranty Support	$ 54,352.00	$ 51,634.00
Years 2-4 Post Warranty Support Total	$ 202,366.00	$ 192,247.00

Portable Radio Detail

QTY	NOMENCLATURE	DESCRIPTION
40	H49TGD9PW1 N	APX7000XE DIGITAL PORTABLE RAD
40	QA00569	ADD: 7/800MHZ PRIMARY BAND
40	QA00574	ADD: VHF SECONDARY BAND
40	QA00579	ADD: ENABLE DUAL BAND OPERATION
40	QA00577	ADD: APX7000XE MODEL 3 OPTION
40	Q806	ADD: ASTRO DIGITAL CAI OPERATION

QTY	NOMENCLATURE	DESCRIPTION
40	H38	ADD: SMARTZONE OPERATION
40	Q361	ADD: P25 9600 BAUD TRUNKING
40	QA09000	ADD: DIGITAL TONE SIGNALING
40	QA01427	ALT: IMPACT GREEN HOUSING
40	Q58	ADD: 3 YEAR SERVICE FROM THE START LITE
40	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA
40	PMMN4099A	AUDIO ACCESSORY-REMOTE SPEAKER MICROPHONE,IMPRES WINDPORTING RSM, IP55
1	PROGRAMMING	PROGRAM 40 PORTABLES ONE (1) TIME USING EXISTING LARAMIE TEMPLATE

10.1 PAYMENT SCHEDULE

The Customer will make payments to Motorola Solutions within thirty (30) days after the date of each invoice. The Customer will make payments when due in the form of a check, cashier's check, or wire transfer drawn on a U.S. financial institution and in accordance with the following milestones:

1. 10% of the Contract Price upon execution of the Contract
2. 10% of the Contract Price upon Completion of Customer Design Review
3. 45% of the Contract Price upon Receive & Inventory of all equipment;
4. 10% of the Contract Price upon installation of RF sites;
5. 10% of the Contract Price upon installation of Microwave;
6. 10% of the Contract Price upon Audit and Acceptance testing;
7. 5% of the Contract Price upon Final Acceptance

Motorola Solutions reserves the right to make partial shipments of equipment and to request payment upon shipment of such equipment. In addition, Motorola Solutions reserves the right to invoice for installations and civil work completed on a site-by-site basis, when applicable.

SECTION 11

TERMS AND CONDITIONS

Laramie County and Motorola Solutions previously entered into a Communications System Agreement effective December 17, 2014 (the "CSA"). Section 3.4 of the CSA permits Laramie County to make additional purchases of Equipment, Software, and services using the CSA as the underlying agreement. This proposal is based on the assumption that Laramie County will use its rights under Section 3.4 for the proposed transaction(s) and that the terms and conditions of the CSA apply.