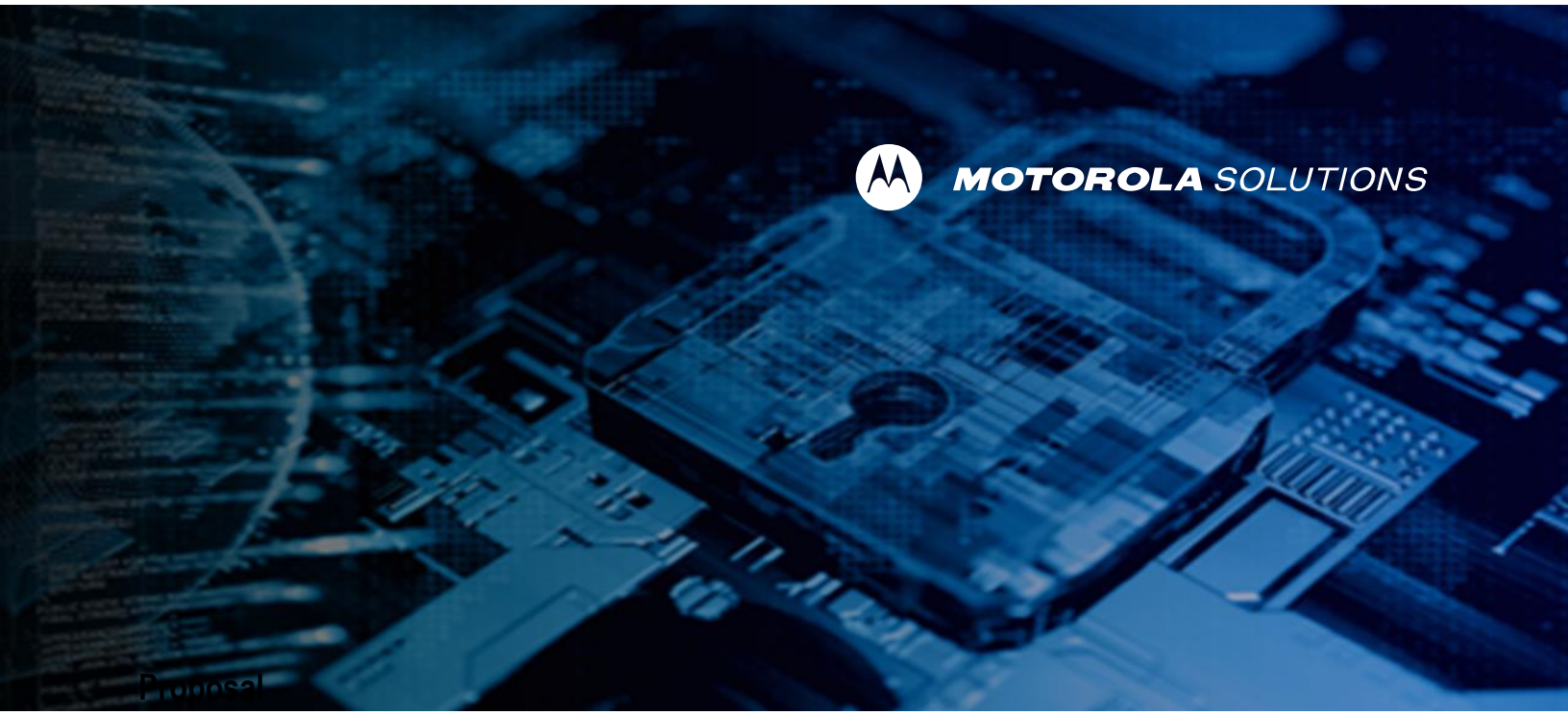


City of Bedford, TX

NETCO Virtualized Prime Site And CSC Replacement Proposal

12 November 2024

PS-000181492

Motorola Solutions, Inc.
500 W Monroe Street, Ste 4400
Chicago, IL 60661-3781
USA

November 12, 2024

Joey Lankford
Deputy Chief – Fire Marshal
City of Bedford, TX
1816 Bedford Road
Bedford, TX 76021

Subject: NETCO Virtualized Prime Site and CSC Replacement Proposal

Dear Chief Lankford,

Motorola Solutions, Inc. ("Motorola") is pleased to have the opportunity to provide the City of Bedford with quality communications equipment and services. The Motorola project team has taken great care to propose a solution that will meet your needs and provide unsurpassed value.

To best meet the functional and operational specifications of this solicitation, our solution includes a combination of hardware, software, and services. Specifically, this solution is to convert the G-series prime site platform to the new D-series virtualized prime site platform. This solution also includes converting the existing G-series Conventional Site Controllers (CSCs) to D-series at the Bedford, Euless, Grapevine and NETCOM dispatch centers.

This proposal is subject to the terms and conditions of the State of Texas DIR-CPO-5433 contract, its Exhibits, and applicable Addenda. This proposal shall remain valid for a period of forty-five (45) days from the date of this cover letter. This proposal may be accepted by issuing a signed purchase order that specifically references "PO is subject to the terms and conditions of the Texas DIR-CPO-5433 contract and Motorola's proposal." Alternatively, Motorola would be pleased to address any concerns the City of Bedford may have regarding the proposal. Any questions can be directed to your Motorola Account Executive, Casey Moore, at 817-368-8683.

We thank you for the opportunity to furnish the City of Bedford with "best in class" 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,

S Brad Rice

Brad Rice
Area Sales Manager
Motorola Solutions, Inc.

Table of Contents

Contents

Section 1 3
System Description 3
1.1 Overview 3
1.2 System Diagram 3
1.3 Virtualized Prime Sites 4
1.3.1 DSC 8000 4
1.3.2 Networking 4
1.3.3 Power 4
1.3.4 Site Time Reference 5
1.4 Migrating G-Series Prime Site to Virtualized Prime Site 5
1.5 Next Gen Conventional Site Controllers 6
Section 2 7
Statement of Work 7
2.1 Responsibility Matrix 7
2.2 Assumptions 14
Section 3 15
Acceptance Test Plan 15
3.1 System Reliability Features 16
3.1.1 Single DSC 8000 Failure 16
3.1.2 Redundant Site Controller Switching - User initiated 18
3.2 Signoff Certificate 19
Section 4 20
Project Schedule 20
Section 5 21
Infrastructure Premier Services Support Description 21
Overview 21
Premier Services Element Descriptions 21
Service Assurance 22
On-site Infrastructure Response 22
Network Hardware Repair with Advanced Replacement 22
Problem Management 22

Annual Preventive Maintenance 23
Cybersecurity Risk Assessment 23
Remote Security Update Service 23
Network Updates 24
Remote Technical Support 24
Change Management 24
Service Delivery Management 25
Motorola Solutions Service Delivery Ecosystem 25
Centralized Managed Support Operations 25
Governance 26
Field Service 26
Repair Depot 26
Service Delivery Management 26
Customer Support Manager 26
Customer Hub 26
Section 6 28
System Upgrade Agreement II 28
Section 7 29
Equipment List 29
Section 8 31
8.1 Equipment and Services 31
Section 9 32
Payment Terms 32
Section 10 33
Terms and Conditions 33

Section 1

System Description

1.1 Overview

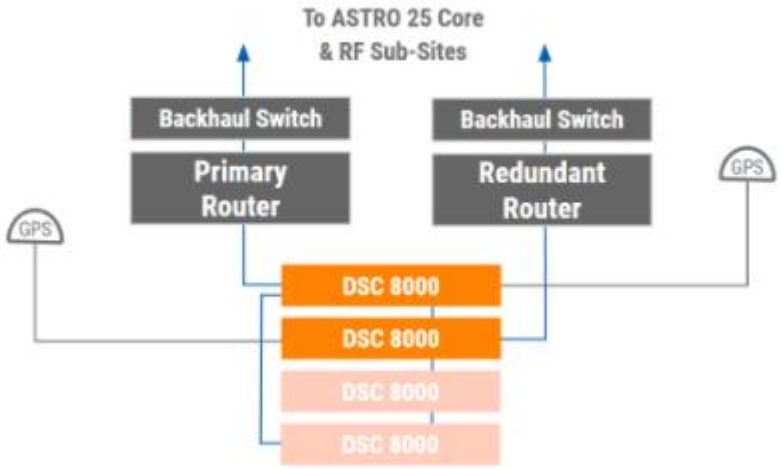
The Virtualized Prime Site is the next generation Simulcast/Voting Prime Site for ASTRO 25 trunking systems. Site Controller and Comparator voting applications are virtualized onto a common hardware platform, consolidating Fault Management and Configuration capabilities into a centralized location and allowing for easier implementation and maintenance. Virtualization also enables software-only expandability. For example, when adding base stations to a simulcast sub-system the Prime Site only needs to add voting software licenses to expand the capacity. As no additional hardware is required, this expansion can be done remotely.

This fully redundant platform offers a new, web-based configuration tool and access to critical applications for more advanced support without the need for additional hardware. With less equipment to maintain, less power being consumed, and a smaller physical footprint, the Virtualized Simulcast Prime Site lowers the City of Bedford's cost of ownership.

This project will install and deploy the Virtualized Prime Site equipment at the Bedford site. In addition the next generation DSC 8000 Conventional Site Controllers will be installed at the four dispatch sites to replace the existing GCP 8000 units. The four dispatch sites are Bedford, Euless, Grapevine and NETCOM.

1.2 System Diagram

A high-level block diagram is below:



1.3 Virtualized Prime Sites

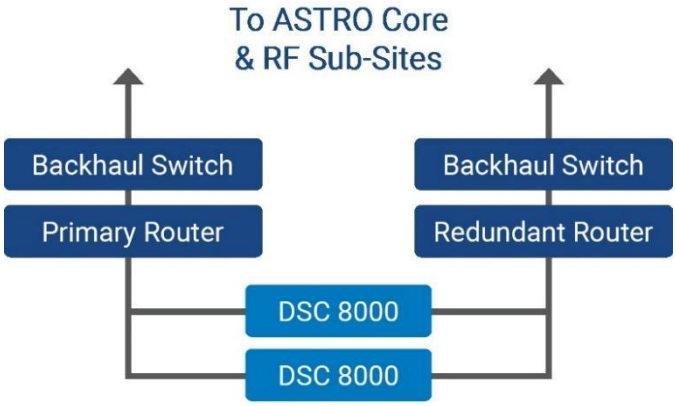
The proposed Virtualized Simulcast Prime Site supports the following features and configurations:

- FDMA Voice Calls
- Integrated Data
- Local, Full Redundancy
- Up to 18 Channels/Carriers with 9 trunking channels included
- Up to 32 Remote Sub-sites

1.3.1 DSC 8000

As part of the Virtualized Prime Site, the DSC 8000 consolidates the capabilities of a site controller and voting comparator of the ASTRO trunking simulcast sub-system into a single hardware unit. The DSC 8000 assigns voice and data channels, manages and reports alarms, provides Ethernet switching capabilities, and offers a timing reference for simulcast synchronization.

The DSC 8000 also provides an IP-based voting and simulcast operation for trunking channels, picking up audio from multiple sites and performs a frame-by-frame analysis to build a high-quality composite audio package for transmission. The DSC 8000 is provided in a redundant configuration, which means no single point of failure will cause the loss of any functionality or capacity at the Prime Site.



Virtualized Prime Site Architecture

1.3.2 Networking

The Virtualized Prime Site Juniper SRX 1500's routers are redundant and provide connectivity to both the ASTRO core and RF sub-sites. In addition, two redundant HP Aruba 2930F backhaul switches connect to Ethernet links (e.g. point-to-point Ethernet links, or to connect to multiple ports on the Ethernet WAN transport backhaul network).

1.3.3 Power

The Virtualized Prime Site rack is designed by default to be powered by a DC power system. By adding the optional AC power converter, Motorola has included a rack level AC to DC power supply system with a single PSU chassis, two redundant AC/DC PSU's, and a single feed to the Prime Site rack 48VDC power distribution panel. Each PSU has adequate power to power all the DSC 8000's and Juniper SRX1500 prime site routers. The second PSU provides full N+1 redundancy. PSU alarms and presence detect functions are provided and cabled to the DSC 8000's to monitor PSU status and report alarms to the UEM. For a Virtualized Prime Site, the main frame power will require 20A receptacles due to the power rating of the AC power supply.

1.3.4 Site Time Reference

For Simulcast Prime Sites, an external global navigation satellite system (GNSS) must be used to provide an accurate time reference. Motorola has included the following:

- External redundant timing reference to the existing TRAK 9100 units already at the existing Prime Site.

1.4 Migrating G-Series Prime Site to Virtualized Prime Site

Extended cell downtime can be expected during transition from the existing prime site to new Virtualized Prime Site when deploying a Virtualized Prime Site in a replacement / expansion scenario. In order to minimize this downtime effective cutover planning needs to be conducted prior to implementation. Additional actions that can be used to minimize downtime include simultaneously powering the current Prime Site equipment and the Virtual Prime Site equipment as well as having GPS available for both sets of equipment. For the City of Bedford, Motorola is proposing to replace the existing Prime Site with the new Virtualized Prime Site.

Major tasks in the prime site replacement procedure include:

- Off Site Prework
  - Ensure all prime and subsite routers are the same model (GGM or Juniper)
  - Verify compatibility and software versions between all required components
  - Stage prime site
  - Update TNCT
  - Verify IP backhaul site connectivity
- On Site Prework
  - Rack, power, and cable new equipment
  - Power up and configure new prime site
  - Provision the prime site in the ASTRO Core
  - Configure and test backhaul transport between new prime site and the ASTRO Core
  - Configure and test backhaul transport between new prime site and subsites
- Cutover
  - Confirm there are no hardware faults
  - Confirm DSC/Prime Router/Access Router/TRAK config and cables
  - Confirm TRAK sync and Wall-Time Valid (NTP) is True
  - Provision and prep the subsite routers
  - Migrate the subsites to the new prime site
  - UEM/UNC discovery

1.5 Next Gen Conventional Site Controllers

The DSC 8000 Conventional Site Controller is used in ASTRO 25 systems as the fallback controller for consoles in Trunking cores. The DSC 8000 Conventional Site Controller platform replaces the GCP 8000 Conventional Site Controller and provides its full call processing functionality. It can support the full set of dispatch consoles, archiving interface servers, and conventional gateways when the Zone Controller is not available.

The DSC 8000 controller is a new computing platform developed by Motorola Solutions that has recently been introduced in trunking systems, and is planned to also be used for other future products. It contains a server and an embedded LAN switch providing more processing power and additional ports. The DSC 8000 controller uses an external power supply for AC operations. The DSC 8000 controller has enhanced security capabilities and a refreshed configuration interface to streamline installation and maintenance.

Section 2

Statement of Work

2.1 Responsibility Matrix

Motorola Solutions will install and configure the proposed equipment. The following table describes the tasks involved with installation and configuration.

Tasks	Motorola Solutions	Customer
PROJECT INITIATION		
Contract Finalization and Team Creation		
Execute contract and distribute contract documents.	X	X
Furnish a performance bond in the full amount of the contract price as security for the faithful performance of Motorola Solutions' contractual obligations.	X	
Assign resources.	X	X
Schedule project kickoff meeting.	X	X
Deliverable: Signed contract, defined project team, and scheduled project kickoff meeting.		
Project Administration		
Ensure that project team members attend all meetings relevant to their role on the project.	X	X
Set up the project in the Motorola Solutions information system.	X	
Record and distribute project status meeting minutes.	X	
Maintain responsibility for third-party services contracted by Motorola Solutions.	X	
Complete assigned project tasks according to the project schedule.	X	X
Submit project milestone completion documents.	X	
Upon completion of tasks, approve project milestone completion documents.		X
Conduct all project work Monday thru Friday, 8 a.m. to 5:00 p.m. local time with the exception of Motorola Solutions' and the Customer's holidays.	X	
Deliverable: Completed and approved project milestones throughout the project.		

Tasks	Motorola Solutions	Customer
Project Kickoff		
Introduce team, review roles, and decision authority.	**X**	**X**
Present project scope and objectives.	**X**	
Review SOW responsibilities and project schedule.	**X**	**X**
Schedule Design Review.	**X**	**X**
Deliverable: Completed project kickoff and scheduled Design Review.		
Design Review		
Review the Customer's operational requirements.	**X**	**X**
Present the system design and operational requirements for the solution.	**X**	
Present installation plan.	**X**	
Present preliminary cutover plan and methods to document final cutover process.	**X**	
Present configuration and details of sites required by system design.	**X**	
Validate that Customer sites can accommodate proposed equipment.	**X**	**X**
Provide approvals required to add equipment to proposed existing sites.		**X**
Review safety, security, and site access procedures.	**X**	
Present equipment layout plans and system design drawings.	**X**	
Provide backhaul performance specifications and demarcation points.	**X**	
Provide heat load and power requirements for new equipment.	**X**	
Provide information on existing system interfaces.		**X**
Provide frequency and radio information for each site.		**X**
Assume liability and responsibility for providing all information necessary for complete installation.		**X**
Assume responsibility for issues outside of Motorola Solutions' control.		**X**
Review and update design documents, including System Description, Statement of Work, Project Schedule, and Acceptance Test Plan, based on Design Review agreements.	**X**	
Provide minimum acceptable performance specifications for customer provided hardware, software, LAN, WAN and internet connectivity.	**X**	
Execute Change Order in accordance with all material changes to the Contract resulting from the Design Review.	**X**	

Tasks	Motorola Solutions	Customer
Deliverable: Finalized design documentation based upon "frozen" design, along with any relevant Change Order documentation.		
SITE PREPARATION AND DEVELOPMENT		
Site Access		
Provide site owners/managers with written notice to provide entry to sites identified in the project design documentation.		**X**
Obtain site licensing and permitting, including site lease/ownership, zoning, permits, regulatory approvals, easements, power, and telco connections.		**X**
Deliverable: Access, permitting, and licensing necessary to install system equipment at each site.		
Site Planning		
Provide necessary buildings, equipment shelters, and towers for installation of system equipment.		**X**
Ensure that required rack space is available for installation of the new equipment.		**X**
Provide the R56 requirements for space, power, grounding, HVAC, and connectivity requirements at each site.	**X**	
Provide adequate electrical power in proper phase and voltage at sites.		**X**
Provide backup power, as required.		**X**
Confirm that there is adequate utility service to support the new equipment and ancillary equipment.		**X**
Provide power to the top of each proposed rack.		**X**
Provide appropriately sized breakers in the AC panel at sites to support the needs of the proposed system.		**X**
Conduct site walks to collect pertinent information.	**X**	
Ensure that each site meets the R56 standards for space, grounding, power, HVAC, and connectivity requirements.		**X**
Deliverable: Information and permitting requirements completed at each site.		
General Facility Improvements		
Provide adequate HVAC, grounding, lighting, cable routing, and surge protection based upon Motorola Solutions' Standards and Guidelines for Communication Sites (R56)		**X**
Ensure the resolution of environmental and hazardous material issues at each site including, but not limited to, asbestos, structural integrity (tower, rooftop, water tank, etc.), and other building risks.		**X**
Ensure that electrical service will accommodate installation of system equipment, including isolation transformers, circuit breakers, surge protectors, and cabling.		**X**

Tasks	Motorola Solutions	Customer
Provide obstruction-free area for the cable run between the demarcation point and system equipment.		X
Supply interior building cable trays, raceways, conduits, and wire supports.		X
Provide one-time mobilization of installation crews.	X	
Correct any R56 deficiencies.		X
Transport removed site equipment to a location designated by Customer and within Customer's jurisdiction.		X
Deliverable: Sites meet physical requirements for equipment installation.		
SYSTEM INSTALLATION		
Equipment Order and Manufacturing		
Create equipment order and reconcile to contract.	X	
Manufacture Motorola Solutions-provided equipment necessary for the system based on equipment order.	X	
Procure non-Motorola Solutions equipment necessary for the system as contracted.	X	
Deliverable: Equipment procured and ready for shipment.		
Equipment Shipment and Storage		
Provide a secure location for solution equipment.		X
Pack and ship solution equipment to the identified, or site locations.	X	
Receive solution equipment.		X
Inventory solution equipment.	X	
Deliverable: Solution equipment received and ready for installation		
General Installation		
Deliver solution equipment to installation location.	X	
Coordinate receipt of and inventory solution equipment with designated contact.	X	
Install all proposed fixed equipment as outlined in the System Description based upon the agreed-upon floor plans, connecting audio, control, and radio transmission cables to connect equipment to the power panels or receptacles, and audio/control line connection points. Installation performed in accordance with R56 standards and state/local codes.	X	
Provide system interconnections that are not specifically outlined in the system design, including dedicated phone circuits, microwave links, or other types of connectivity.		X

Tasks	Motorola Solutions	Customer
Install and terminate all network cables between site routers and network demarcation points, including microwave, leased lines, and Ethernet. Unless noted otherwise in the proposal, network cable lengths are assumed to be 25 feet or less, and to be run within the same equipment room. Also, up to 2 network cables are assumed per site.	X	
Provide, Install and terminate all cabling between punchblocks and customer provided I/O or alarm interfaces.		X
Ensure that Type 1 and Type 2 AC suppression is installed to protect installed equipment.		X
Connect installed equipment to the provided ground system within 15 feet.	X	
Label Motorola-supplied equipment, racks, and cables.	X	
Perform preliminary audit of installed equipment to ensure compliance with requirements and R56 standards.	X	
Note any required changes to the installation for inclusion in the “as-built” system documentation.	X	
Remove, transport, and dispose of old equipment.		X
Deliverable: Equipment installed.		
Site Link Assessment		
Verify site link performance, prior to the interconnection of the solution equipment to the link equipment. Site links will be tested once. If the links do not pass the audit, a change order will be processed to perform link audits a second time after the customer resolves the link issues and prior to cutover.	X	
Motorola Solutions will not perform any work on non-Motorola Solutions owned equipment.		X
Provide information on customer public Internet connection for evaluation purposes.		X
Deliverable: Site Link Assessment completed and findings are presented to the Customer.		
ASTRO 25 Core and Prime Site Installation and Configuration		
Install fixed equipment contained in the equipment list and system description.	X	
Provide backhaul connectivity and associated equipment for all sites to meet latency, jitter and capacity requirements.		X
Configure ASTRO 25 system to support the new Prime Site.	X	
Integrate the Prime Site into the system to ensure proper operation.	X	
Deliverable: ASTRO 25 core and remote site equipment installation completed.		

Tasks	Motorola Solutions	Customer
SYSTEM OPTIMIZATION AND TESTING		
R56 Pre-Install Site Audit		
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' R56 Standards and Guidelines for Communication Sites.	**X**	
Deliverable: R56 Standards and Guidelines for Communication Sites audits completed successfully.		
Solution Optimization		
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**	
Verify communication interfaces between devices for proper operation.	**X**	
Ensure that functionality meets manufacturers' specifications and complies with the final configuration established during design review or system staging.	**X**	
Reconfigure and reoptimize 3rd party equipment that is not part of the Motorola Solutions scope of work.		**X**
Deliverable: Completion of System Optimization.		
Functional Acceptance Testing		
Verify the operational functionality and features of the solution supplied by Motorola Solutions, as contracted.	**X**	
Witness the functional testing.		**X**
Document all issues that arise during the acceptance tests.	**X**	
If any major task for the system as contractually described fails during the Customer acceptance testing or beneficial use, repeat that particular task after Motorola Solutions determines that corrective action has been taken.	**X**	
Resolve any minor task failures before Final System Acceptance.	**X**	
Document the results of the acceptance tests and present for review.	**X**	
Review and approve final acceptance test results.		**X**
Deliverable: Completion of functional testing and approval by Customer.		
Cutover		
Finalize Cutover Plan.	**X**	**X**
Calibrate and tune existing mobile and portable radios to ensure good working order (if applicable).		**X**

Tasks	Motorola Solutions	Customer
Provide Motorola Solutions with user radio information for input into the system database and activation, as required.		X
Provide programming of user radios and related services (i.e. template building, re-tuning, testing and installations), as needed, during cutover period.		X
Conduct a cutover meeting with relevant personnel to address both how to mitigate technical and communication problem impacts to the users during cutover and during the general operation of the system.	X	
Notify the personnel affected by the cutover of the date and time planned for the cutover.		X
Provide ongoing communication with users regarding the project and schedule.	X	X
Cut over users and ensure that user radios are operating on the system.		X
Resolve punch list 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 punch list items by providing support, such as access to the sites, equipment and system, and approval of the resolved punch list items.		X
Deliverable: Migration to new system completed, and punch list items resolved.		
Transition to Warranty		
Review the items necessary for transitioning the project to warranty support and service.	X	
Motorola Solutions to provide services during year 1 warranty which align with the proposed services.	X	
Provide a Customer Support Plan detailing the warranty support associated with the contract equipment.	X	
Participate in the Transition Service/Project Transition Certificate (PTC) process.		X
Deliverable: Service information delivered and approved by Customer		
Finalize Documentation and System Acceptance		
Provide manufacturer's installation material, part list and other related material to Customer upon project completion.	X	
Provide an electronic as-built system manual on CD or other Customer preferred electronic media. The documentation will include the following: ▪ Simulcast System Block Diagram. ▪ Prime Site Equipment Rack Configuration. ▪ Functional Acceptance Test Plan Test Sheets and Results. ▪ Equipment Inventory List. ▪ Maintenance Manuals (where applicable). ▪ Drawings will be delivered in Adobe PDF format.	X	

Tasks	Motorola Solutions	Customer
Receive and approve documentation.		X
Execute Final Project Acceptance.	X	X
Deliverable: All required documents are provided and approved. Final Project Acceptance.		

2.2 Assumptions

Motorola Solutions has made several assumptions in preparing this proposal, which are noted below. Motorola will need to seek alternate solutions in the case of invalid assumptions.

- A Performance Bond is not required.
- Union Labor is not required.
- Prevailing Wages are not required.
- All existing sites or equipment locations will have sufficient space available for the system described as required/specified by R56.
- All existing sites or equipment locations will have adequate electrical power in the proper phase and voltage, and site grounding to support the requirements of the system described.
  - Electrician services are not included.
- Any site/location upgrades or modifications are the responsibility of the City of Bedford.
- Interfacing to 3rd party equipment or applications is not a part of this proposal.
- Approved local, State, or Federal permits as may be required for the installation and operation of the proposed equipment are the responsibility of the Customer.
- Any required system interconnections not specifically outlined here will be provided by the Customer. This may include dedicated phone circuits, microwave links, or other types of connectivity.
- No coverage testing or coverage guarantees are provided with this offering.
- City of Bedford is responsible for any desired UPS power for the Virtual Prime equipment at the Virtual Prime Site.
- The Conventional Site Controllers will have the proper power receptacles required at each of the Four Dispatch Sites.
- 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 the Customer's system experience interference, Motorola Solutions can be contracted to investigate the source and recommend solutions to mitigate the issue.

Section 3

Acceptance Test Plan

System Acceptance of the proposed solution will occur upon successful completion of a Functional Acceptance Test Plan (FATP), which will test the features, functions, and failure modes for the installed equipment in order to verify that the solution operates according to its design. This plan will validate that City of Bedford's NETCO Virtualized Prime Site solution will operate according to its design.

3.1 System Reliability Features

3.1.1 Single DSC 8000 Failure

1. DESCRIPTION

A Virtualized Prime Site consists of multiple DSC 8000s working in a redundant configuration. In case one DSC fails, another DSC will take over and carry on all Virtualized Prime Site operations (site controller, comparator, switch). Typically for a 2 DSC configuration in non-failure conditions, the odd channels are serviced by DSC1 and the even channels are serviced by DSC2.

PCA – Provisioning and Configuration Agent

Note: This test is not applicable for Geo-Redundant Prime Sites.

SETUP

A Virtualized Prime Site with a minimum of 4 channels. At least one odd and one even channel are Control Channel capable (typically the first 4 channels).

PCA is connected to DSC2 (since DSC1 will be powered off).

This test can be ran on a non-Tsub prime site or a Tsub prime site (while in wide area trunking).

RADIO-1 – TALKGROUP 1
CONSOLE-1 - TALKGROUP 1

RADIO-2 - TALKGROUP 2
CONSOLE-2 - TALKGROUP 2

All Radios should be "Site Locked"

VERSION #1.060

2. TEST

Step 1. Verify the system is in Wide Trunking Mode with Channel-1 as the control channel and all channels are in service.

Step 2. Initiate a call from CONSOLE-1 and verify that RADIO-1 hears the audio (keep CONSOLE-1 keyed until Step 5). Verify an even Channel (which will be on DSC2) is used via ZoneWatch. Key CONSOLE-2 and verify that RADIO-2 hears the audio. Verify an odd Channel (which will be on DSC1) is used via ZoneWatch.

Step 3. Power off DSC1 using the power button of the DSC (long push). Verify that reception of audio at RADIO-2 is interrupted for a short period of time until the call is re-assigned to a channel serviced by DSC2. Dekey CONSOLE-2.

Verify that RADIO-1 continues to hear audio from CONSOLE-1 (call on DSC2).

Verify that the site remains in wide trunking.

Step 4. After a short period of time, verify that all channels at the site are now enabled (with warning of non-redundant). Initiate a call from CONSOLE-2 and verify that RADIO-2 hears the audio (call is now on DSC2).

Step 5. Dekey CONSOLE-1. Dekey CONSOLE-2.

Step 6. Power on DSC1 using the power button of the DSC. Observe that the site remains in wide trunking. After DSC boots up, verify all of the channels are operational.

Pass____ Fail____

System Reliability Features

3.1.2 Redundant Site Controller Switching - User initiated

1. DESCRIPTION

The Site Controller subsystem uses two Site Controllers in a redundant configuration. The backup Site Controller is made active either upon the loss of the active Site Controller or upon a user initiated command from the Unified Event Manager (UEM).

SETUP

RADIO-1 - TALKGROUP 1
RADIO-1 - SITE - SITE 1 (Site Locked)
RADIO-2 - TALKGROUP 1
RADIO-2 - SITE - SITE 1 (Site Locked)
RADIO-3 - TALKGROUP 1
RADIO-3 - SITE - SITE 1 (Site Locked)

VERSION #1.010

2. TEST

Step 1. Initiate a call using RADIO-1. Verify RADIO-2 and RADIO-3 can communicate with RADIO-1.

Step 2. Verify both Site Controllers are enabled by viewing the site status in the UEM. Both Site Controllers should have a green, normal indication.

Step 3. Initiate a user disabled on the active Site Controller using the UEM.

Step 4. Verify that the backup Site Controller becomes active by viewing the status LED on the front panel of the Site Controller and the UEM.

Step 5. Key RADIO-1 and verify that RADIO-2 and RADIO-3 hear the audio.

Step 6. End the call from RADIO-1.

Step 7. Enable the user disabled Site Controller and verify both are in Normal state.

Pass____ Fail____

3.2 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 4

Project Schedule

Motorola estimates the project implementation to be approximately 12 months from Contract Execution to Final Acceptance. As part of the Design Review and Implementation Planning, the implementation project schedule will be fine-tuned by Motorola's Project Manager with the City of Bedford. The dates for the implementation are highly dependent on the actual completion dates of tasks associated with dispatch site/center readiness, installation schedule and final cutover plan.

PROJECT PHASE	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Contract Execution												
Pre to Post Transition												
Project Kick-off / CDR												
Equipment Order / Ship												
Install Equipment												
Program / Configure / Optimize												
Testing, Acceptance												
Training												
Cut-Over (Go-Live)												
Closeout												

Section 5

Infrastructure Premier Services Support Description

Overview

Modern mission-critical communication networks support robust features, but their complexity usually requires specialized personnel to monitor and maintain. Motorola Solutions' Premier Services for ASTRO® 25 infrastructure provides the personnel and tools necessary to maintain network performance. With Premier Services, Bedford will be able to rely on Motorola Solutions instead of having to assemble and maintain a qualified support team.

Premier Services provide a tailored set of service elements to maintain performance so Bedford can focus on core objectives. These elements include:

- Service Assurance
- On-site Infrastructure Response
- Network Hardware Repair with Advanced Replacement
- Problem Management
- Annual Preventive Maintenance
- Cybersecurity Risk Assessment
- Remote Security Update Service (RSUS)
- Network Updates
- Change Management
- Remote Technical Support
- Service Delivery Management:
  - Availability and Service Metrics
  - Performance Management

Motorola Solutions commits to a defined service level for Bedford's ASTRO 25 network, measured according to Key Performance Indicators (KPI). The included service elements maintain network components to keep performance at defined levels.

Premier Services Element Descriptions

The following sections describe the elements proposed for Bedford's ASTRO 25 infrastructure.

Service Assurance

Timely detection of developing issues will help keep Bedford's ASTRO 25 network at optimum availability, ready to serve mission-critical communications needs. Motorola Solutions uses sophisticated tools to monitor network and backhaul elements and identify potential issues. Motorola Solutions' experienced personnel can then respond swiftly to minimize issue impact on network performance.

On-site Infrastructure Response

Motorola will provide repair service from trained and qualified technicians. Once dispatched, technicians will travel to Bedford's ASTRO 25 network location to diagnose issues and restore functionality. These technicians will run diagnostics on hardware to identify defective components, and repair or replace them as appropriate. Infrastructure Response times are based on a given issue's impact on overall system function.

Travel times and service levels are governed by local geography. Motorola Solutions will provide additional information in the Statement of Work for ASTRO 25 Premier Services and in the Customer Support Plan agreed between Bedford and Motorola Solutions.

Network Hardware Repair with Advanced Replacement

To restore Bedford's ASTRO 25 network components if they malfunction, Motorola will repair Motorola Solutions-provided infrastructure equipment. This includes select third-party infrastructure equipment supplied by Motorola Solutions. Motorola will ship and return repaired equipment, and will coordinate the repair of third-party solution components.

To reduce the impact of a malfunction, Motorola Solutions will exchange malfunctioning equipment with Advanced Replacement units or Field Replacement Units (FRU), as available. Motorola's repair depot will diagnose and repair malfunctioning components, and once repaired, add those to the depot's FRU inventory. Replacement components will remain in Bedford's ASTRO 25 network to maintain continued network functionality.

If Bedford prefers to maintain their existing FRU inventory rather than using Motorola Solutions' depot inventory, Motorola Solutions can provide "loaner" FRUs during the repair process.

Problem Management

Recurring ASTRO 25 radio network incidents can indicate a root cause is responsible for these incidents. Motorola Solutions will work to identify and correct this root cause through Problem Management.

If an incident occurs repeatedly, Motorola Solutions can investigate for a root cause. Once an investigation establishes a problem's root cause, Motorola Solutions will take steps to resolve it or minimize its impact. For reference, Motorola Solutions will document these problems and the steps to remedy them.

Annual Preventive Maintenance

Motorola Solutions will annually test and service network components. Qualified field technicians will perform routine hands-on examination and diagnostics of network equipment to keep them operating according to original manufacturer specifications.

Cybersecurity Risk Assessment

Effective security requires testing and assessment of that security. Without that testing, critical vulnerabilities may go unnoticed until a cyberattack has already exploited them.

Motorola Solutions' Cybersecurity Risk Assessment identifies these vulnerabilities so they can be addressed proactively, strengthening Bedford's security. Motorola Solutions provides the technical expertise and experience needed for the assessment, freeing Bedford to focus on operational objectives.

Figure 5-1: The Value of Cybersecurity Risk Assessment

As part of this assessment, Motorola Solutions will:

- Analyze gaps in management processes, operational procedures and technical implementation that pose security risks.
- Examine external factors that may jeopardize your network cybersecurity.

Motorola Solutions will develop a remediation plan that will identify and prioritize the risks found during the assessment. The remediation plan will include suggested remedies Bedford can implement for each risk.

After assessing and addressing vulnerabilities, Bedford will be better equipped against cyberattacks, and can align with security frameworks, such as ISO 27001 or NIST 800-53.

Remote Security Update Service

Commercial security software updates are often designed without consideration for specialized systems like radio communications networks. These updates may inadvertently disrupt ASTRO 25 network operations and functionality.

To minimize cyber risks and software conflicts, Motorola Solutions provides the Remote Security Update Service (RSUS). With this service, Motorola Solutions deploys antivirus and operating system security updates on an ASTRO 25 network in a dedicated information assurance lab to test and validate them for use with ASTRO 25 networks.

Motorola Solutions tests whether applying these security updates degrades network service. If an update degrades performance, Motorola Solutions searches for a solution or workaround to address the issue before releasing that update.

With RSUS, Motorola Solutions will remotely install tested updates on Bedford's ASTRO 25 network. If there are any recommended configuration changes, warnings or workarounds, Motorola Solutions will provide detailed documentation on a secured extranet website.

Network Updates

The Network Updates service provides public safety radio system release updates on a consistent, budgeted plan. These updates maintain reliable network operations and cybersecurity protection. In addition, Network Updates keep Bedford's ASTRO 25 network compatible with expansion elements, as well as new products or features. With Network Updates, Bedford's network will remain on a release that qualifies for support services.

Motorola Solutions will deliver updates based on a predefined cadence of upgrade windows, with up to one update in each window. The Network Updates service includes the following:

- **Software Release Updates** - Motorola Solutions-certified software that improves network functions over previous releases. This also includes commercial operating system and application software updates.
- **Hardware Update** – When needed to support a software release update, Motorola Solutions provides new hardware that will support the new software update, as well as maintain existing functions and features.
- **Professional Implementation Services** – Motorola Solutions will plan and implement updates at Bedford's site. This includes factory integration, testing and supply chain management for new software and hardware.
- With these services, Bedford will have access to the technology, support and planning expertise needed for an effective upgrade.

Remote Technical Support

Motorola Solutions' Centralized Managed Support Operations (CMSO) will provide Remote Technical Support for infrastructure issues that require specific technical expertise. Experienced technical support specialists will be available to consult with Bedford to help diagnose, troubleshoot and resolve infrastructure issues. Service Desk maintenance procedures and incident resolution techniques are based on ISO 9001 and TL 9000 standards.

Change Management

Motorola Solutions' personnel will work with Bedford to control changes to configurable elements or network activities, implementing them with minimal disruption and risk. When a change is proposed, Motorola Solutions personnel will gauge its impact. They will then communicate with key stakeholders to get authorization to implement the change based on its projected impact. Once a change is

approved, Motorola Solutions personnel will notify affected groups in advance of implementation so they can prepare.

Service Delivery Management

Motorola Solutions delivers the proposed services to support specific performance and availability targets. To determine performance and guide service activity, Motorola Solutions will regularly review KPIs with Bedford.

Availability Commitment and Service Metrics

Motorola Solutions will work with Bedford to develop specific availability targets and KPIs to measure ASTRO 25 network performance. Motorola Solutions' proposed services maintain network elements to keep the network operating at defined target levels.

Performance Management

Tracking, measuring and reporting on Bedford's ASTRO 25 network performance will verify that the network is meeting expectations and can identify potential improvements. Motorola Solutions will design, implement and maintain the network's performance data collection and report generation systems. On a pre-determined schedule, Bedford will receive a defined set of network performance reports. Motorola Solutions personnel will review those performance reports and network KPIs with Bedford to make sure performance meets targeted levels.

Motorola Solutions Service Delivery Ecosystem

Premier Services are delivered through a tailored combination of field service personnel, centralized teams, product repair depots and Customer Hub. These service resources will collaborate to swiftly analyze network issues, accurately diagnose root causes, and efficiently resolve issues to return the network to normal operation.

Motorola Solutions services will be delivered by staff experienced in servicing mission-critical networks. Motorola Solutions uses the Information Technology Infrastructure Library (ITIL) framework to define service tasks based on industry-recognized best practices. As staff perform tasks, service incident information will be available to Bedford's administrators and personnel through Customer Hub.

Service activities and Motorola Solutions' service teams are described in more detail below.

Centralized Managed Support Operations

The cornerstone of Motorola Solutions' support process is the Centralized Managed Support Operations (CMSO) organization. This TL 9000/ISO 9001-certified organization is staffed 24x7x365 by experienced service desk specialists, security analysts and operations managers. The CMSO houses critical central functions, including the Service Desk.

The CMSO Service Desk will serve as a single point of contact for services. It processes service requests, service incidents, change requests and dispatching. The Service Desk communicates necessary information to stakeholders, bridging communications among Bedford, Motorola Solutions and third-party subcontractors.

Service Desk teams record, track and update incidents through the Motorola Solutions Customer Relationship Management (CRM) system. They document and respond to inquiries, requests, concerns

and service tickets. When an incident is initiated, the CMSO will engage with teams to resolve that incident. The CMSO will escalate to new teams when needed. Depending on the incident, the CMSO will coordinate incident resolution with local field service and authorized repair depots.

Motorola Solutions will brief assigned personnel on Bedford's ASTRO 25 network configuration, availability commitments and end user needs. These individuals will be able to analyze network trends and identify areas of potential performance improvement. This in-depth knowledge will help personnel to understand alarms and incidents, so they can resolve potential network issues more quickly.

Governance

Complex land mobile radio (LMR) networks need sophisticated governance to coordinate services with stakeholders, and to perform service tasks efficiently. Motorola Solutions' service team will provide a framework for collaboration between stakeholders. The service team will work with Bedford to define the individuals that need to receive LMR network notifications and approve decisions.

Field Service

Motorola Solutions authorized and qualified field service technicians will perform the On-site Infrastructure Response service, repair malfunctioning hardware in the field, and conduct preventive maintenance tasks. These technicians will coordinate with the Service Desk, technical support teams and product engineering as needed to resolve incidents.

Repair Depot

The Motorola Solutions Repair Depot will provide Bedford with a central repair location. This will eliminate the need to send network equipment to multiple vendor locations for repair. Motorola Solutions tracks products sent to the Depot via a case management system throughout the repair process. This system will enable Bedford's representatives to check repair status, from inbound shipment to return.

Service Delivery Management

Service Delivery Management uses standard procedures to provide and communicate committed service performance levels. The Service Delivery Management resource evaluates Bedford's feedback, and establishes quality improvement processes through cooperation with Motorola Solutions teams. Service Delivery Management defines success criteria during service transition and manages ongoing end-to-end service delivery.

Customer Support Manager

A Motorola Solutions Customer Support Manager (CSM) will be Bedford's key point of contact for the definition and administration of services. The CSM will work with Bedford to define service delivery details to address Bedford's specific priorities.

Customer Hub

To provide Bedford with quick access to service details, Motorola Solutions will provide our Customer Hub online network information tool. Customer Hub provides our customers with real-time critical network and services information through an easy-to-use graphical interface.

Figure 5-2: Customer Hub offers real-time, role-based access to critical network and services information.

With Customer Hub, Bedford's administrators will be able to monitor system health and maintenance updates. Capabilities include:

- Viewing network and support compliance
- Viewing incident reports
- Updating and creating incidents
- Checking system update status
- Receiving pro-active notifications regarding updates
- Viewing Premier performance reports

Available 24x7x365 from any web-enabled device, the information provided by Customer Hub will be based on your needs and user access permissions, ensuring that the information displayed is secure and pertinent to your operations.

Section 6

System Upgrade Agreement II

The System Upgrade Agreement II (SUA II) service provides public safety radio system release updates on a consistent, budgeted plan. These updates maintain reliable network operations and cybersecurity protection. In addition, SUA II keeps Bedford's ASTRO 25 network compatible with expansion elements, as well as new products or features. With SUA II, Bedford's network will remain on a release that qualifies for support services.

Motorola Solutions will deliver SUA II in two-year periods, with up to one update in each period. The SUA II service includes the following:

- **Software Release Updates** - Motorola Solutions-certified software that improves network functions over previous releases. This also includes commercial operating system and application software updates.
- **Hardware Update** – When needed to support a software release update, Motorola Solutions provides new hardware. New hardware will both support the new software update, as well as maintain existing functions and features.
- **Professional Implementation Services** – Motorola Solutions will plan and implement updates at Bedford's site. This includes factory integration, testing, and supply chain management for new software and hardware.

With these services, Bedford will have access to the technology, support, and planning expertise needed for an effective upgrade.

Section 7

Equipment List

This section lists the equipment necessary for the proposed solution.

LIM	O	QTY	DESCRIPTION
1	-	1	VIRTUALIZED PRIME SITE
1	a	1	ADD: REDUNDANT JUNIPER SRX1500 ROUTERS
1	b	1	ADD: REDUNDANT JUNIPER SRX1500 ROUTERS PRICE
1	c	1	ADD: REDUNDANT BACKHAUL SWITCHES
1	d	1	ADD: REDUNDANT BACKHAUL SWITCHES PRICE
1	e	1	ADD: DSC AC POWER CABLE - US, 6 FT.
1	f	1	ADD: EXTERNAL TIMING REFERENCE CONNECTION ONLY
1	g	1	ADD: PRIME SITE AC POWER
1	h	1	ADD: HW SUPPORT UP TO 18 CARRIERS
1	i	1	ADD: REPLACEMENT PRIME SITE
1	j	9	ADD: TRUNKING MULTISITE VOTING LICENSE, PER CARRIER
1	k	1	ADD: MULTISITE PRIME TRUNKING LICENSE
1	l	1	ADD: ASTRO SYSTEM RELEASE 2022.1
2	-	1	FRE: DSC 8000
3	-	1	FRU: DSC 8000 AC POWER SUPPLY
4	-	1	PDU, 120V HARDWIRE (8) 20A OUTLET PDU
5	-	1	RACK MT ADAPTER PLATE, 19 IN
6	-	1	FOUR PORT DDM
7	-	1	EDGE & HUB ROUTER & FIREWALL - AC
7	a	1	ADD: MISSION CRITICAL HARDENING
7	b	1	ADD: STATEFUL FIREWALL
8	-	1	FRU: SRX 1500 AC SWAPPABLE POWER SUPPLY
9	-	4	STANDALONE DSC 8000 CONTROLLER
9	a	4	ADD: DSC 8000 CONVENTIONAL SITE CONTROLLER SW
9	b	4	ADD: ASTRO SYSTEM RELEASE 2022.1
9	c	4	ADD: NM--DISPATCH SITE

9	d	4	ADD: DSC 8000 CONVENTIONAL SITE CONTROLLER
10	-	4	DSC AC POWER SUPPLY CHASSIS
10	a	4	ADD: SINGLE POWER SUPPLY FOR DSC
10	b	4	ADD: DSC AC POWER CABLE - US, 6 FT.

Section 8

Pricing Summary

Motorola is pleased to provide the following equipment and services to the City of Bedford.

8.1 Equipment and Services

Description	Price ($)
Equipment – Virtual Prime and Conventional Site Controllers	$460,792.00
Professional Services	$454,460.00
Warranty – Year 1	Included
DIR-CPO-5433 Contract Equipment Discount	($91,069.00)
Total System	$824,183.00

Note: The SUA II year-1 is not included in this proposal since it is currently included in the Fort Worth SUA II contract.

Price Adjustment Due to Market volatility: Motorola's proposal is conditioned upon the ability of Motorola to complete the project at the prices set forth herein. Due to significant market volatility and material price fluctuations in raw materials such as steel, copper, finished wood and concrete, Motorola reserves the right to review all material pricing prior to placing any order for materials or equipment required for new towers or shelters and related civil work at each site in order to verify price validity. In the event of a cost increase in material, equipment or energy occurring during performance of the project through no fault of Motorola, the contract price, time of completion and/or contract requirements shall be equitably adjusted by Change Order in accordance with the procedures of the contract documents. The freight rates are estimated. Motorola reserves the right to apply a fuel surcharge to the quoted freight rates on all shipments based on the cost of diesel at the time of shipment.

Section 9

Payment Terms

Except for a payment that is due on the Effective Date, Customer will make payments to Motorola within thirty (30) days after the date of each invoice. 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. If Customer has purchased additional Professional or Subscription services, payment will be in accordance with the applicable Addenda. Payment for the System purchase will be in accordance with the following milestones.

System Purchase (excluding Subscribers, if applicable)

1. **25% of the Contract Price due upon contract execution (due upon effective date);**
2. **50% of the Contract Price due upon shipment of equipment from Staging;**
3. **15% of the Contract Price due upon installation of equipment; and**
4. **10% of the Contract Price due upon Final Acceptance.**

For Lifecycle Support Plan:

Motorola will invoice Customer annually in advance of each year of the plan

For multi-year agreements, at the end of the first year of the Agreement and each year thereafter, a CPI percentage change calculation shall be performed using the U.S. Department of Labor, Consumer Price Index, "All Items," Unadjusted Urban Areas (CPI-U). Should the annual inflation rate increase greater than 3% during the previous year, Motorola shall have the right to increase all future maintenance prices by the CPI increase amount exceeding 3%. "All Items," not seasonally adjusted shall be used as the measure of CPI for this price adjustment. The adjustment calculation will be based upon the CPI for the most recent twelve (12) month increment beginning from the most current month available as posted by the U.S. Department of Labor (http://www.bls.gov) immediately preceding the new maintenance year. For purposes of illustration, if in Year 5 the CPI reported an increase of 8%, Motorola may increase the Year 6 price by 5% (8%-3% base). Any pricing change would be documented in a change order executed with the Customer.

Section 10

Terms and Conditions

Motorola's proposal is subject to the terms and conditions of the State of Texas DIR-CPO-5433 contract, its Exhibits, and applicable Addenda. This proposal shall remain valid for a period of forty-five (45) days from the date of the cover letter. The City of Bedford may accept this proposal by issuing a signed purchase order referencing "PO is subject to the terms and conditions of the Texas DIR-CPO-5433 contract and Motorola's proposal."

Data Location

Disclaimer: Data for the State of Texas Customer may be exported by Provider if (1) access is needed for internal business purposes such as processing orders or invoices to Poland, or (2) access to City or County Data is necessary to enable third tier development support personnel located outside of the United States to perform fixes or other remedial services associated with the products and services purchased hereunder.

Product Accessibility

Disclaimer: Motorola provides products geared towards law enforcement professionals in their day-to-day operations and as such, our mobile video products are provided to work in and be supported in that environment. This Agreement encompasses a large variety of products, and as such accessibility for mobile video products may vary based on it's environment and function, as such the accessibility requirements in this section shall not apply to Mobile Video Products. To the extent that accessibility standards could be applicable and/or commercially feasible for the applicable products and their environment, the DIR agencies may request that Motorola either provide the most recent VPAT assessment (if available), complete a VPAT assessment in a reasonable timeframe, or respond to an accessibility information requests within in a reasonable timeframe.

Limitation of Liability

Disclaimer: The liability for damages in any claim or cause of action arising under or related to any Purchase Order related to this proposal shall not exceed two times (2x) the total value of the Purchase Order. Such value includes all the amounts paid and amounts to be paid over the life of the Purchase Order to Motorola by Customer as described in the Purchase Order.