Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET
PURCHASING OPERATIONS
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

December 5, 2008

CHANGE NOTICE NO. 35
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **1301 East Algonquin Road** **Schaumburg, IL 60196** **gordon.webb@motorola.com**	TELEPHONE **Gordon Webb** **(517) 857-3796** VENDOR NUMBER BUYER/CA (517) 241-3215 **Steve Motz**
Contract Compliance Inspector: Patty Bogard (517) 335-4051 **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

THIS CONTRACT IS EXTENDED TO LOCAL UNITS OF GOVERNMENT

NATURE OF CHANGE (S):

Effective immediately, this contract is hereby INCREASED by $12,509,951.19 per the attached estimates. All other terms, conditions, specifications and pricing remain unchanged.

Please Note - The Contract Compliance Inspector is changed to Patty Bogard.

Overview of Contract Increase

Previous Contract Value:	**$251,757,033.60**
CN 35Increase:	**$12,509,951.19**

AUTHORITY/REASON:

Per MDIT and Contractor Agreement.

Overview of Administrative Board Funding Approvals:

	Funding Approved	CN 35 Increase	Funding Remaining
Administrative Boa 9/27/2005	$ 1,337,985.89	$ 1,337,985.89	$0
Administrative Boa 9/24/2008	$ 23,300,000.00	$11,171,965.30	$12,128,034.70
TOTAL(S)	$24,637,985.89	$12,509,951.19	$12,128,034.70

TOTAL REVISED ESTIMATED CONTRACT VALUE: $264,266,984.79

Estimated Due	Description	Estimated Amount
10/01/08	Equipment Lease Finance Payment	$583,007.65
10/01/08	Annual PMDC Server & Software Maintenance	$65,000.00
10/01/08	Annual System Technical Support (by phone)	$308,321.00
10/01/08	Infrastructure Software Support 1 year	$2,500,000.00
10/01/08	MSP Detroit Dispatch Consoles (part 2)	$304,000.00
01/01/09	U.P. PSIC Grant Computers	$400,000.00
12/15/08	DNR Dispatch Consoles (DNR Fire @ Roscommon)	$400,000.00
12/15/08	MDOT OBD-II On Board Diagnostics System	$250,000.00
01/01/09	Communications on Wheels (Deployment by 4/1/09)	$1,503,629.00
01/01/09	MDOT Radios	$125,000.00
04/01/09	Equipment Lease Finance Payment	$583,007.65
06/01/09	Lifecycle Mobile radio replacements	$1,250,000.00
06/01/09	Lifecycle Portable radio replacements	$1,250,000.00
06/01/09	Mobile Data Computers	$1,350,000.00
Various	Additional Product/Equipment	$300,000.00
Various	* Interest Payments for Municipal Lease	$1,337,985.89
	TOTAL estimated payments through 6/8/2009	**$12,509,951.19**

*This funding was previously approved at Ad Board on 9/27/2005, but was never added to this contract through a change notice.

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **November 27, 2007**
PURCHASING OPERATIONS
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 34
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **1301 East Algonquin Road** **Schaumburg, IL 60196** **gordon.webb@motorola.com**	TELEPHONE **Gordon Webb** **(517) 857-3796** VENDOR NUMBER BUYER/CA (517) 241-3215 **Steve Motz**
Contract Compliance Inspector: Mike Scieszka **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached Statement of Work for the MPSCS System Upgrade to ASTRO 6.9 is hereby incorporated into this contract. All other Terms, Conditions, Specifications and pricing remain the same.

Please Note The following Changes:
- The Buyer is changed to Steve Motz
- The Vendor Contact is changed to Gordon Webb
- The Contract Compliance Inspector is changed to Mike Scieszka

AUTHORITY/REASON:

Per DIT and Contractor Agreement.
The Administrative Board approved an increase on 8/16/05 and dollars were added via CN #32 for future operating system enhancements and upgrades.

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $251,757,033.60

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INTRODUCTION

Notice of Contract Revision 30 includes the equipment and implementation for the following:

- MPSCS System Upgrade to ASTRO 6.9

The contract revision includes a System Description, Statement of Work, and Pricing for each of the included items. Inasmuch as this contract revision contains considerable information it will be further supported by the completion and submittal of the Detailed Design Plan (DDP) which will further define the project deliverables, implementation and schedule.

The Detailed Design Plan will be completed and submitted to the MPSCS staff for review and approval within sixty (60) days of the approval of the Contract Change Notice (as show in the project schedule on page 19.

This Notice of Contract Revision assumes that the system upgrade will be approved prior to October 31, 2007, and pricing remains firm until that date.

SYSTEM DESCRIPTION – MPSCS SYSTEM UPGRADE

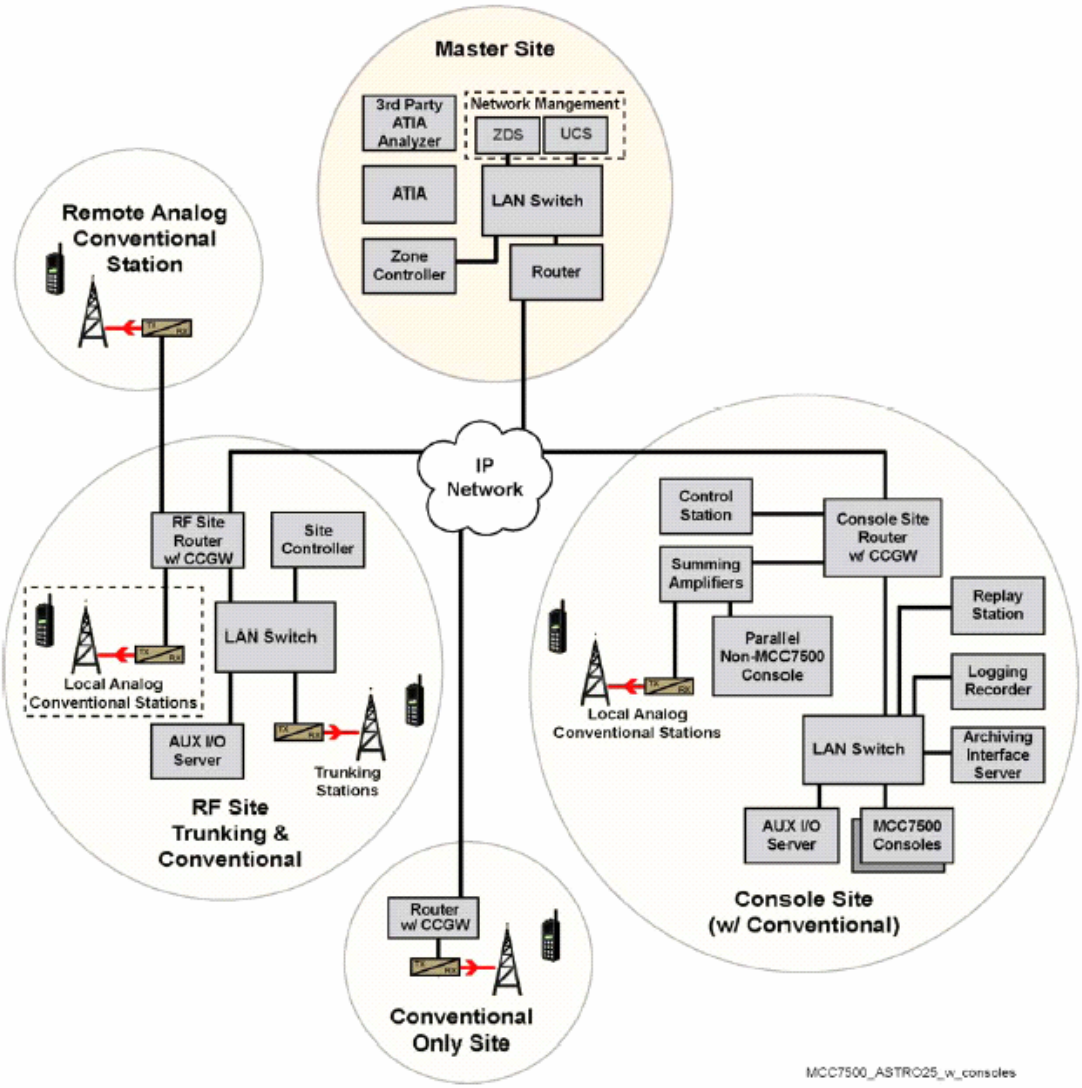
ASTRO® 25 6.9 UPGRADE SYSTEM OVERVIEW

1. With this release of Motorola's P25 compliant system offering, ASTRO®25 Trunking is expanded to include capabilities for: MCC7500 IP Consoles, Over-the-Air Programming (POP25) , GTR8000 base stations, the latest in network security, Alphanumeric Text Messaging and HPD (High Performance Data) .

MCC 7500 DISPATCH CONSOLE SUBSYSTEM

The Motorola MCC 7500 Dispatch Console is Motorola's high-tier, mission-critical, IP-based radio dispatch console system. The console subsystem equipment consists of the MCC 7500 Dispatch Console (and associated peripheral hardware), the MCC 7500 Archiving Interface Server (AIS) (and the associated logging recorder and replay station), the Analog Conventional Channel Gateway (CCGW) (also known as the conventional base station interface), and the Aux I/O (Auxiliary Input/Output) Server. In addition, Active Directory Domain Controllers are required for a console subsystem with MCC 7500 Dispatch Consoles. The Domain Controller is needed to support Domain Name Server (DNS) and Active Directory services for the MCC 7500 Dispatch Consoles. Any location that has an MCC 7500 Dispatch Console or an MCC 7500 AIS is a console site. Each console site in the MCC 7500 Dispatch Console subsystem can have one or more console user positions. Each console user monitors a number of talkgroups and/or multigroups and conventional resources. Each console user position registers and affiliates just like a radio to a site. This is done to manage intra- and interzone traffic flow. Call traffic is routed only to a console user who is actively monitoring that group. Consequently, every console user position in the system must be assigned a unique ID, just as each radio has its own unique ID. Figure i-5 – High-Level System Diagram of the MCC 7500 Dispatch Console Subsystem shows a high-level diagram of how Motorola MCC 7500 Dispatch Console equipment fits into the system.

Figure i-5 – High-Level System Diagram of the MCC 7500 Dispatch Console Subsystem



HIGH PERFORMANCE DATA (HPD)

The data services of the High Performance Data (HPD) system address the needs of the traditional, private mobile data market. This customer segment is comprised of organizations and agencies that use a variety of wireless applications to enhance their operations or provide a critical service to their end customers. In most cases, this market segment uses interactive applications that require mission critical response times. Representative customers can be found in public safety (e.g., police, fire, EMS, sheriff, highway patrol, etc.), state and local government, national or federal governments, utilities (e.g., electrical, gas, telecommunications), transportation (e.g., airports, port authorities, railroad), and field service. HPD offers a flexible approach for customers to expand existing voice networks to add higher speed data services and incorporate future needs for wideband data (up to 150 kHz). The data transport, zone and Network Management infrastructure for HPD can be shared with existing ASTRO® Integrated Voice and Data (IV&D) Trunked Networks allowing for an economical and easily expandable integrated solution for both 9.6 kbps and higher speed data traffic, for use with data applications.

HPD systems accommodate the 800 MHz and 700 MHz frequency bands supporting up to 7 zones with up to 20,000 data users.

HPD SYSTEM TOPOLOGIES

The HPD system is a 25 kHz solution designed for deployment as 700/800 MHz as an overlay to an existing ASTRO® Trunked IV&D (Project 25) system. When the HPD system is deployed as an ASTRO® 25 6.x overlay:

- The site locations are shared between voice and data. Additional sites may be added to improve data throughput and capacity.
- The back-haul and transport are shared between voice and data.
- Sites require separate base stations to support HPD services.
- An additional HPD Mobile must be installed in vehicles when adding HPD capabilities to an ASTRO® Trunked IV&D network.

Key aspects of HPD architecture include:

- Internet Protocol (IP) based infrastructure
- Scaleable Adaptable Modulation (SAM) for data
- Utilizes efficient and reliable messaging services
- Advanced network security
- Standard interfaces into the ASTRO® HPD network
- USB or Ethernet physical interface

- PPP logical interface – no middleware required
- IP address isolation of the customer network
- End-to-End IP transport
- Expansion to the ASTRO® 25 IV&D network

TEXT MESSAGING SERVICES

Motorola ASTRO® 25 Text Messaging Services is an application that makes use of ASTRO® 25 IV&D data services. Text Messaging Services provide the ability for users within the customer network to send and receive data messages of up to 200 characters. The text messages may be sent between text messaging capable subscribers and Consoles equipped with the Fixed Text Messaging Client. The Fixed Text Messaging Client is an HP workstation or optionally, the Fixed Text Messaging Client may coexist on a CENTRACOM Gold Elite Console. The Fixed Messaging Client Application is not compatible with operation on a CENTRACOM Gold Elite Console configured as an operating position running physically on the CENTRACOM Gold Elite server. The MCC 7500 Console does not support the text messaging client. Dispatchers and subscribers may be a part of a named text messaging group, allowing point-multipoint service. All messages are routed through a central server in the customer enterprise network (CEN). This server provides a store and forward service for the system enabling messages sent to an out of service user to be store and subsequently delivered when the receiver becomes available. ASTRO® 25 Trunking Text Messaging Services is implemented by placing a Presence Notifier server, a Text Messaging server, and optionally a Bastion Network in the customer enterprise network (CEN).

NETWORK SECURITY ENHANCEMENTS

The following network security enhancements are added starting with ASTRO® 25 Release
6.9/7.2:

Configuration Hardening

ASTRO® 25 network elements are hardened based on industry-standard hardening guidelines to reduce the risk of attacks and exploits. Network element hardening is enhanced in the ASTRO® 25 system release 6.9/7.2. Also, starting from release 6.9/7.2, the default passwords on a number of network elements have been hardened to defend against password cracking.

Health Monitoring of the Security Devices

Starting from the ASTRO® 25 Release 6.9/7.2, the health of the network security components can be monitored using FullVision® Integrated Network Manager (INM).

The health of the network security components is indicated in FullVision INM via the Internet Map and/or the Alarm Browser. The following devices are monitored:

Within the Radio Network Infrastructure:
• Core Security Management Server (CSMS)
• Firewall Management Server (FMS)

Other:
• Firewall in the De-Militarized Zone (RNI-DMZ)
• Firewall in the Bastion Network
• Intrusion Detection System Sensor (IDSS) in the De-Militarized Zone

POP25

The feature "Programming Over P25" (POP25) allows a user to configure a radio remotely from his/her enterprise network by sending a sequence of commands over-the-air via the ASTRO 25 IV&D system. It is expected that the POP25 will significantly reduce the operational costs of IV&D radios by configuring personalities, talkgroups, channels, sites, etc in a radio without physically touching the radio. POP25 can update a radio that is available anywhere within the coverage area of the radio's home system. Mobility of the radio is supported by POP25. POP25 can be used on XTS5000, XTL5000, XTS2500, and XTL2500 radios only. POP25 supports read, write, and clone operations. It reads the entire codeplug from a radio. Once the codeplug is read, it can either write the codeplug to same or different radios or can save the codeplug1. In order to reduce the write-time, POP25 writes only those parts of the codeplug that have changed (differential write).

GTR 8000 INTEGRATED VOICE AND DATA

The GTR 8000 Platform is the next generation of RF site equipment. It is available in various
configurations supporting multiple frequency bands and site types. Integrated Voice and Data (IV&D) operation is available in both the ASTRO® 25 Repeater Site and MultiSite (Simulcast) configurations. A new ASTRO® 25 Repeater Site based on the GTR 8000 Expandable Site Subsystem replaces the ASTRO® 25 Repeater Site based on the 800 MHz QUANTAR® and the 700 MHz STR 3000. This new architecture supports up to six channels per cabinet. The architecture also includes GCP 8000 Site Controllers and a Radio Frequency Distribution System (RFDS). Expansion cabinets are used to increase site channel capacity in increments of 6. (i.e. 6, 12, 18, 24, 28) Each expansion cabinet requires an Expansion Hub (X-Hub) for control and reference frequency distribution. Phasing harnesses are available for combining transmit frequency output from two cabinets into one antenna. The maximum capacity of an ASTRO® 25 Repeater Site is 28 IV&D channels. An additional 5 High Performance Data (HPD) channels can be added to a Repeater Site in an HPD Overlay configuration. Additional information about HPD is provided later in this topic. The GTR 8000

Expandable Site Subsystem is the only configuration supported for new 700/800 MHz ASTRO® 25 Repeater Site Subsystems. Individual GTR 8000 Base

Radios can be added to existing 700/800 MHz systems as an additional channel or as a replacement for existing QUANTAR® or STR 3000 Base Radios. In ASTRO® 25 6.x and 7.x Simulcast configurations, the GTR 8000 Base Radio is a drop-in replacement for individual QUANTAR® and STR 3000 Base Radios. For example, a GTR 8000 can replace a single base radio for a Simulcast channel. The GTR 8000 Expandable Site Subsystem and the standalone GTR 8000 Base Radio support both 700 and 800 MHz with the same transceiver and power amplifier.

Pre-Tested Anti-Virus Subscription (PTSS)

Communication networks will require that the anti-virus definitions be updated on a regular basis. This service ensures that anti-virus protections do not mistakenly interfere with mission critical radio system functionality. To safeguard system availability, Motorola will obtain anti-virus definitions from the commercial supplier, and pre-test them on a dedicated, ASTRO 25 radio system with the standard supported configurations prior to making an update available to customers. Motorola will electronically provide access for regular updates to subscribing customers.

MPSCS System Upgrade Migration Overview

Motorola supports a smooth migration path from System Release to System Release, to add the additional features and functionality available, such as Integrated Voice and Data capabilities.

System Downtime

An upgrade to the latest system release can occur on a live system with minimal degradation of service. The master site equipment can be upgraded to the latest system release and will continue to communicate with the previous system release remote sites. This will allow the system to continue to be in full zone-level wide area trunking operation, with the previous release feature set, until all the remote sites are upgrade to the current System Release configuration. The flexibility is available to upgrade one site at a time, after the master site is upgraded, until the entire system is upgraded.

Designed with migration and feature enhancement in mind, downtime is further minimized by redundant equipment and component configurations for key products. The redundant configuration of the MZC 3000 Zone Controller hardware allows the idle controller to be upgraded off-line. Once the upgrade is completed, the idle controller can be switched to be the active controller. The Zone Controller downtime experienced by the customer is the switchover time. Component redundancy available within the Network Products and the redundant MGEG allow upgrades to occur off-line by a similar means, minimizing customer downtime.

Software Download

Traveling to a remote site to update the software can be costly and time consuming. For ease in upgrading, centralized software download is available from the Network Manager to the non-simulcast ASTRO(R) 25 Repeater sites, ASTRO® 25 MTC 9600 Simulcast Site Controller, STR 3000 Base Radio subsystem and the ASTRO®-TAC 9600 Comparator. This eliminates the need to travel to a remote site for a software

upgrade. Note that software download is not available for Analog and Digital Mutual Aid equipment. This equipment must be upgraded on site.

SUBSCRIBER MIGRATIONS

Subscriber migrations and software upgrades can be particularly challenging since they are typically large in number and distributed through the coverage area of the system. To allow undisrupted use of the radio and the ability to upgrade them as necessary over time and at a different time than the infrastructure, the following 800MHz subscribers will provide voice operation on a system without any software changes: ASTRO® SABER, XTS 3000, XTS 5000, XTS 2500, XTL 5000, ASTRO® Spectra, and ASTRO(R) Spectra Plus. Note that the functionality of these radios will be limited to the functionality they had available in the previous release. To take advantage of the full feature set of the latest release, the XTS 2500, XTS 5000, XTL 5000 and ASTRO(R) Spectra Plus will require software upgrades. The ASTRO® SABER, XTS 3000, and ASTRO® Spectra offer only limited functionality (800 MHz voice only operation).

MPSCS 6.9 UPGRADE

This upgrade includes addition of the following infrastructure capabilities available with the new release:

- MCC7500 IP Consoles
- Over-the-Air Programming (POP25)
- GTR8000 base stations
- Upgraded Network Security
- Alphanumeric Text Messaging
- HPD (High Performance Data)

The upgrade will allow the addition of the new IP consoles (MCC7500), this will solve the AEB capacity issues. The zone 2 AEB will not support additional console connections. The new MCC7500 consoles do not require AEB/MGEG connections like the older Gold Elite Consoles. The upgrade will allow many additional consoles to be added to Zone and will allow continued expansion of the system.

The capability to add POP25 can help reduce reprogramming expense and time, since it allows subscribers to be remotely reprogrammed. An additional server and subscriber options are required to implement this feature.

The existing simulcast additions to the MPSCS have been implemented with STR repeaters. The next generation model is the GTR series. The upgrade supports the next generation GTR series base stations. This will allow continued expansion of the system.

The Network Security upgrade will replace the Core Security Management Server (CSMS) with the next generation server. This replacement will allow improved network security and continued support for the Antivirus updates. Without the upgrade the Pre Tested Software Subscription (PTSS) for the Antivirus updates will expire. Without the PTSS the system would be vulnerable to viruses due to the out of date antivirus software.

HPD (High Performance Data) will allow the addition of higher Tier data applications. The upgrade supports this capability. New GTR base stations, master site equipment, and mobile modems are required to implement this feature. This will allow continued expansion of the system.

An Implementation Time Line (ITL) will be provided, and reviewed by Motorola and Customer prior to upgrade execution.

MIGRATION DETAILS

- Existing 6.5 hardware re-useable in 6.9
- Master site Cisco LAN switch replaced
  - New Enterprise LAN switch
- InfoVista Server Replaced
- Master site equipment works with previous release remote site
  - 6.9 master with 6.5 remotes
- Supported Subscribers compatible with all 6.x releases
  - ASTRO Spectra, XTS3000, ASTRO Saber: 800 MHz voice only
  - ASTRO Spectra Plus, XTL2500, XTL5000, XTS5000, XTS2500: offer full 6.x features
- Support database migrations from 6.5 to 6.8 and 6.8 to 6.9
- Network Management
  - RCM Management Clients replaced
- Network Security
  - CSMS Server Replaced

MPSCS SYSTEM UPGRADE - STATEMENT OF WORK

This document, known as the Statement of Work (SOW), describes the deliverables to be furnished to the Michigan Public Safety Communication's System (MPSCS), and the tasks to be performed by Motorola, its subcontractors, and the MPSCS to implement the solution described in this proposal. It describes the work involved in installation, identifies the installation standards to be followed, and clarifies the responsibilities for both Motorola and the MPSCS 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 and the MPSCS
- The qualifications and assumptions taken into consideration during the development of this project

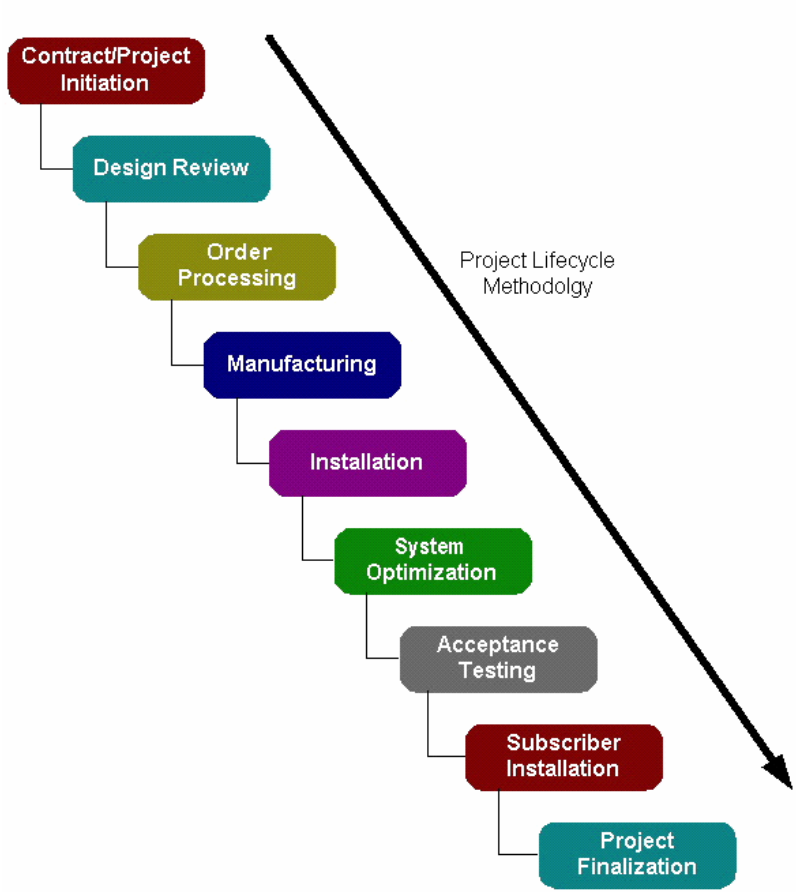
This SOW provides the most current understanding of the work required by both parties to ensure a successful project implementation. It is understood that this SOW is a working document, and that it will be revised as needed to incorporate any changes associated with contract negotiations, Design Review (DR), and any other change orders that may occur during the execution of the project.

As the proposed system directly interfaces to and becomes part of the Michigan Public Safety Communications System (MPSCS), it is critical that State of Michigan personnel be directly involved in the implementation process, including design reviews and acceptance testing.

PHASES AND TASKS

Based on many years of experience, Motorola has developed a project implementation methodology that identifies major project phases– Contract/Project Initiation, Design Review, Order Processing, Manufacturing, Installation, System Optimization, Acceptance Testing, Subscriber Installation, and Project Finalization. Depending on the particular project, all or some of these phases may be required. A visual representation of these phases is shown in the figure below. Each phase follows a Work Breakdown Structure (WBS) that clearly identifies the work to be performed during this project.

Figure 29: Project Lifecycle Methodology.



Throughout the duration of this project, Motorola will provide the equipment and services within each phase as described within this proposal. Detailed descriptions of the specific tasks associated with the individual phases are contained in the following sections.

CONTRACT/PROJECT INITIATION

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

The implementation process will begin with the Contract/Project Initiation phase. During this phase, project teams from Motorola and the MPSCS meet to begin the project.

This phase is considered complete when the Project Kickoff Meeting has been held.

Project Manager Overview

As the systems integrator, Motorola provides the resources and processes necessary to complete the tasks within this project. Motorola will designate a single individual as the project manager whose primary responsibility and authority will be to manage and administer this project to successful completion, as defined within the contract. This individual is the Motorola point of contact for the MPSCS. The project manager will ensure that all objectives are met within cost and schedule constraints, and will provide timely reporting of the overall progress of the project via refinement of the proposed Project Schedule and project status reports. In addition Motorola will ask that the MPSCS identify a single point of contact to represent the MPSCS and to be responsible for all MPSCS signature approvals.

Milestone Acceptance

Motorola and the MPSCS will establish schedule and contract milestones prior to contract. Motorola will be responsible for providing documentation of milestone completion to the MPSCS. The MPSCS will be responsible for signature on milestone completion once verification of work has been accepted.

Contract Change Orders

Once the contract, including this Statement of Work, is approved and signed by authorized representatives of both the MPSCS and Motorola, a formal Change Order procedure will become effective. Motorola's Project Manager is the only individual authorized within Motorola's team to make changes that affect the scope of the project, regardless of how small such changes may be. A Change Order Form must be filled out and executed by both the MPSCS designated Project Manager and Motorola's Project Manager prior to the initiation of work outlined in any proposed change.

Change order procedures details are specified within the Contract Agreement.

Conduct Project Kickoff Meeting

The project will be initiated with a Project Kickoff Meeting that includes key MPSCS and Motorola project participants. The date, time, and location of the meeting will be

mutually agreed upon between Motorola and the MPSCS. The objectives of this meeting include:

- Introduction of all project participants
- Review of the roles of the project participants
- Review of the overall project scope and objectives
- Review of the resource and scheduling requirements
- Review of the project schedule
- Review of the team interaction, meetings, reports, milestone acceptance, and MPSCS participation in particular phases

Detailed project schedules are integral to the management of the project and will be produced by the Motorola team to provide a timeline analysis for all phases of the project. The final Project Schedule will emphasize all milestones and the critical path, which is essential for the successful completion of the project. The MPSCS and Motorola will mutually agree upon the final schedule.

DESIGN REVIEW

After the Project Kickoff Meeting, the Motorola and MPSCS project teams will meet to review the proposed system design. The goal of this review is to achieve written agreement on the overall system design and deliverables. Various design documents will be presented for approval from the MPSCS. These documents will form the basis of the system that will be built, assembled, staged, and installed. This review is not intended to redesign the system architecture or to re-evaluate any specifications previously reviewed and approved.

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

This phase is considered complete when all documentation deliverables associated with this phase have been delivered to and signed by the designated representative from the MPSCS.

Conduct Site Evaluations

Motorola may conduct site evaluations in order to capture the site details of the system design and to determine site readiness. These evaluations will capture the viability issues of using each site from a personnel safety, system design and installation standpoint, as well as from a physical capacity standpoint to ensure that the sites are able to accommodate the proposed equipment. This task may include the testing of existing equipment that will interface with the proposed equipment and will include the performance of a preliminary suitability review for each site included in this proposal.

Conduct Design Review

A Design Review (DR) Meeting will be held with the MPSCS to ensure that all customer requirements are shown in the necessary customer approved documents and that the design meets those requirements. During this meeting, Motorola and the MPSCS will review the operational requirements and the impact of those requirements on various equipment configurations. The goals of this meeting are to establish a firm baseline for the system design, identify any special product requirements and their impact on system implementation, and to review the system implementation plan. The system design is "frozen" at this point, in preparation for the subsequent phases of the project such as Order Processing and Manufacturing. A discussion of the Cutover Plan and methods to document a detailed procedure for cutover will begin at this meeting, if cutover is included as part of this project.

The results of the DR Meeting will be documented in the Design Documents that may include the updated System Description, programming templates, updated Equipment List, and system drawings or other documents specific to the project.

ORDER PROCESSING

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

The completion of the Design Review phase, resulting in a final design and equipment list that includes any modifications as identified during the DR Meeting, triggers the onset of the Order Processing phase.

Within this phase, the Equipment List goes through a validation process that checks for valid model numbers, valid versions, compatible options to main equipment, current pricing and delivery data. Validation is not complete until the system verifies that the Equipment List contains the correct model numbers, version, options, pricing, and delivery data.

As part of this process, Motorola also confirms with the MPSCS the storage location(s) for this equipment and creates Ship Views. Ship Views are the mailing labels that carry complete shipping information as supplied by MPSCS. They direct the timing, method of shipment and ship path each item will take to reach their ultimate destination. This makes the tracking of the factory orders more manageable for the project manager and team.

The final step within order processing is the creation of the orders for the equipment based on all the information gathered. Once the Equipment List has cleared all validation points, a Motorola Credit Analyst will reconcile the list(s) to the original purchase order or contract. The procurement of third party equipment also takes place during this phase of the project.

This phase will be deemed complete when the equipment order is bridged to the manufacturing facility.

MANUFACTURING

Based on the equipment order, Motorola will manufacture and/or procure the items necessary for the system. For Motorola manufactured equipment, the manufacturing facility will test each subsystem from its base kit or module level up to the complete subsystem at factory staging. In addition to the individual tests applied to all units shipped, Motorola's Product Quality Engineering Department may perform additional tests on periodic samples. These additional tests may include performance tests under environmental extremes (e.g., temperature, humidity, vibration, etc.).

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

Staging

This system will not undergo a Factory Acceptance Test (FAT) at Motorola's Customer Center for Solutions Integration (CCSi).

EQUIPMENT INSTALLATIONS

Once the equipment is received at the location designated by the MPSCS and Motorola, Motorola will install the equipment per the approved design documentation. During field installation of the equipment, any required changes to the installation will be noted and included with the final "as-built" documentation of the system. The "as-built" documents will be provided along with the maintenance and operator manuals upon project completion.

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

This phase will be deemed completed when all equipment has been installed at the designated locations, and an associated Milestone Certificate has been signed by both parties.

Manage Receipt of Equipment

Motorola will ensure that all equipment is sent to the customer secured storage location designated by the MPSCS, coordinate the receipt of all equipment with the MPSCS point of contact, and inventory all equipment.

Install Equipment

Motorola will install the equipment included in this project in the locations provided by MPSCS. Motorola may also interface network connections supplied

by the MPSCS into the Motorola supplied equipment as defined in the approved Design

Documents. Examples of connections may include, but are not limited to, telephony circuits, logging recorders, and existing radio system interfaces. These interfaces will be done from a demarcation point located within the equipment room at a point not to exceed 50' from the supplied equipment. Specifically, Motorola will:

- Bond the supplied equipment to the site ground system in accordance with the Motorola document Standards and Guidelines for Communication Sites (R56)
- Install system equipment as specified by the Equipment List, System Description and system drawings

The installation pricing assumes that any existing building facilities utilized have sufficient heating, ventilation and air conditioning (HVAC), space, necessary power and back-up power, along with required cable routing facilities to interconnect the hardware. Improvements of existing facilities have not been included in this proposal.

Prime Sites

Seven (7) prime sites are included in this project. The sites are Zone 1 site 1102, Zone 2 site 2504, Zone 3 site 6102, Zone 4 site 7808, Zone 5 site 8203, Zone 6 site 8807 and Detroit Zone7.

Remote Sites

Remote sites do not require upgrading for this project.

R-56 Audit

As we are replacing limited equipment at the sites, a formal R-56 audit will not be performed at the sites. Formal site inspections with representatives from Motorola and the MPSCS will be conducted at each master site to ensure that the equipment has been installed in the proper manner.

Figure 30: High Level Estimated Schedule

Month	1	2	3	4	5	6	7	8	9	10
Contract Award										
DDP										
Upgrade Operations High Level Planning and Design										
Detailed Plan for Master Cut Over Zones 1-7										
Equipment Orders										
Receipt and Inventory of Upgrade Equipment										
Master Site Upgrades										
Testing										
Punchlist Resolution & Acceptance										

A detailed schedule will be developed during the DDP process of the contract.

SYSTEM OPTIMIZATION

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

Upon completion of the installation process, the system will have power applied and will then be optimized by Motorola personnel under the direction of the project manager.

This phase will be deemed complete when Motorola and the MPSCS agree that the equipment is ready for acceptance testing.

Configure, Optimize, and Program Equipment

Motorola will verify that all equipment is operating properly and that all electrical and signal levels are properly set once installation in the field is complete. Motorola and its subcontractors will optimize each subsystem individually. Audio and data levels will be checked to verify factory settings. Communication interfaces between devices will be verified for proper operation. Features and functionality will be tested to ensure that they are functioning according to the manufacturer's specifications and per the final configuration established during the design review.

Remove/Dispose of Debris

Motorola will remove and dispose of any packaging or debris that is a result of the delivery, installation, or site improvements provided by Motorola.

Alarm System (MOSCAD)

Motorola will wire and test the required alarm indications. Upon completion, Motorola will verify the equipment and installation, and test the alarm operation for the alarm system.

MOSCAD alarms will be received at the State of Michigan NCC. Due to system equipment new to the MPSCS, there may be additional alarms that are not currently being monitored by the State at this time. It is expected that the State will work with Motorola Engineering to accommodate the new alarms on the system.

ACCEPTANCE TESTING

All tests will be performed as described in the Acceptance Test Plan and Acceptance Test Procedures mutually approved during the Design Review phase. During acceptance testing, the system will be tested and the results documented as defined in the Acceptance Test Plan. This phase is considered complete when the MPSCS acknowledges successful completion of the procedures by signing a System Acceptance Certificate.

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

Review Acceptance Test Procedure

The Acceptance Test Procedure (ATP) details the procedures to be run to confirm that the system provided by Motorola is complete and meets the acceptance test criteria. Each segment will be tested independently using detailed check sheets provided by Motorola, as appropriate, and approved by the MPSCS prior to commencement of acceptance testing. Motorola will review any system testing that the MPSCS wants performed that is not specified in the Acceptance Test Plan and documented in the test procedures. Additional tests may represent a change in the project's scope and may result in a change order to address the supplemental costs to perform the extra tests.

Conduct Acceptance Test

Motorola will conduct acceptance testing based upon the test documents approved during the Design Review phase. Both Motorola and MPSCS representatives must witness the conduct of the acceptance test to approve the test(s).

Resolutions to any deficiencies found during testing will be agreed upon and documented. If the documented deficiencies do not prevent productive operational use of the system, then the test will be deemed completed. Motorola will remain responsible for the resolution of any documented deficiencies.

Upon successful completion of the acceptance test, the MPSCS and Motorola will sign a System Acceptance Certificate acknowledging the successful test

completion, the transfer of risk of loss and the commencement of the warranty period.

SUBSCRIBER PROGRAMMING AND INSTALLATION

Subscribers are not included in this project.

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

FINALIZATION

The Project Finalization phase ensures that all criteria for Final Project Acceptance have been met. During this phase, Motorola will provide the MPSCS with an electronic System Manual, software licenses and necessary software to read the electronic manuals, and any equipment manuals supplied as part of the purchased equipment.

WBS Name
Implementation Project
Contract/Project Initiation
Design Review
Order Processing
Manufacturing
Installation
System Optimization
Acceptance Testing
Subscriber Installation
Project Finalization

This phase will be deemed complete when Motorola and the MPSCS sign the Final Project Acceptance portion of the System Acceptance Certificate. Additional information regarding Final Project Acceptance can be found in the Communications System Agreement.

Resolve Punchlist Items

Motorola will work with the MPSCS to resolve punchlist items documented during the Acceptance Testing phase and any other phase during project implementation to ensure that all the criteria for final acceptance have been met.

Conduct System and Project Readiness Review

During this task, Motorola conducts a System and Project Readiness Review to obtain concurrence from all Motorola functional groups and the MPSCS that:

- The factors and plans necessary for the high quality and reliability of the system, its components, installation, testing and training, have been addressed and successfully completed.
- The system is ready for beneficial use (cut-over).
- The project is evaluated and assessed to identify any issues that may affect the satisfaction of the end users of the system.

Perform System Cutover

Motorola and the MPSCS will develop a mutually agreed upon Cutover Plan during the Design Review phase that will be used to implement the cutover process. During cutover, the written plan will be followed and the defined contingencies will be implemented as required. The cutover plan should not require phases or long periods of time where existing equipment is interconnected to the new system.

Transfer System to Service

Motorola will review the items necessary for transitioning the project to Service. Motorola will provide a Customer Support Plan (CSP) detailing the warranty associated with the equipment supplied as part of this project. This task will be deemed complete when all service information has been delivered to the MPSCS.

PROJECT DELIVERABLES

Services, equipment, software and documentation are several types of project deliverables Motorola provides as part of this project. Services are specified within this SOW and the equipment is defined within the Equipment List. The documentation and drawings to be developed and delivered as part of this project are described below.

Motorola develops documentation and drawings of the system not only to assist with the implementation of the project, but also to provide the MPSCS with reference materials that can be used for training, as a basis for future system upgrades, and even disaster recovery. For these reasons, Motorola creates and updates documentation and drawings during the implementation of the project.

The table below lists each deliverable, describes its contents, states the quantity to be provided, and provides the delivery method.

Table 1: Project Deliverables

#	Title	Description	Qty	Format Type/ Delivery
1	Project Schedule	This is the schedule for the project that is completed after the Project Kickoff Meeting.	1	Electronic/Email
2	Project Status Reports/ Schedule Updates	These reports capture the status of the project and will be provided on a basis that is mutually agreed upon by Motorola and MPSCS.	1	Electronic/Email
3	Standards and Guidelines for Communication Sites (R56)	This is a site standard recognized in the industry and is provided after contract award as reference for MPSCS.	1	Electronic/ CD-ROM
4	Design Documentation	The items included within this proposal are further refined and updated to reflect the "as-built" description of the system. This documentation may include documents such as System Description, system drawings, Equipment List, site connectivity, power requirements, document approval process, programming templates, etc. The final information is included as part of the System Manual.	1	Electronic/Email
5	Acceptance Test Procedures	Acceptance Test Procedures are provided during the Design Review phase.	1	Hardcopy

#	Title	Description	Qty	Format Type/ Delivery
6	System Manual	A document that contains the final versions of the System Description, Equipment List, drawings, Acceptance Test Procedures, programming templates, and Customer Support Plan.	2	Electronic/CD ROM
7	System Manual Licenses and Readers	The software required to view the electronic system manuals.	2	Electronic/CD ROM
8	Equipment Manuals	These are the manuals provided by the manufacturer(s) for the equipment that was supplied as part of this project.	As received	As received
9	Customer Support Plan	This document outlines the plan for customer support during the warranty period.	N/A	Electronic/CD ROM (provided as part of System Manual)

RESPONSIBILITIES

A successful project requires responsibilities to be managed by both Motorola and the MPSCS. Motorola and MPSCS responsibilities are outlined throughout this proposal. The information contained within the Equipment List and work defined in this SOW is based on the understanding that certain tasks will be performed by the MPSCS. These tasks are enumerated in the Responsibility Matrix below, which details the tasks that are to be completed by the MPSCS in order to successfully complete the implementation.

Table 2: Responsibility Matrix

#	Task	Description	Responsibility
1	Provide Notice to Proceed	Upon project award, MPSCS will officially grant Motorola the Contract.	MPSCS DIT
2	Provide Primary Point of Contact	MPSCS will identify an individual as a primary point of contact who will work with the Motorola project manager.	MPSCS DIT
3	Complete Project Scheduled Tasks	MPSCS will ensure that tasks assigned to them as agreed upon during the Project Kickoff Meeting and Design Review are completed on a timely basis.	MPSCS DIT
4	Perform Communication Site Preparation	MPSCS will ensure that site preparation for any sites provided by the MPSCS is completed within the Project Schedule time frame.	MPSCS DIT
5	Grant Site Access	MPSCS will provide a letter to all owners/managers of sites and provide any keys or other necessary items to allow Motorola or third party personnel to enter all sites within this proposal.	MPSCS DIT
6	Ensure Personnel Safety	MPSCS will provide the Motorola project manager with safety rules during the Project Kickoff Meeting. These rules will be followed during the integration phase of this project. Motorola may conduct periodic inspections of all active job sites to ensure compliance with the safety rules set forth by MPSCS.	MPSCS DIT

#	Task	Description	Responsibility
7	Assist with Site Access	Motorola may require assistance accessing sites owned by others. MPSCS will provide access to these sites if required.	MPSCS DIT
8	Identify Location for Equipment Storage	MPSCS will identify the location for equipment storage during the Project Kickoff Meeting. This location will be used as the "ship to" address for the equipment and the storage facility will be used to warehouse the equipment as the sites are being prepared.	MPSCS DIT
9	Provide Secure Storage of Equipment	MPSCS is responsible for the secure storage of all equipment.	MPSCS DIT
10	Provide Documentation of Existing Equipment	MPSCS will provide documentation of existing system(s), sites, and interfaces as required for successful project completion. Documentation may include, but is not limited to, equipment manuals, drawings, and equipment lists.	MPSCS DIT
11	Review Documentation	MPSCS will review project documentation as it is received to provide feedback for appropriate and timely discussions and or changes. Documentation includes the System Design, Training Plan and course materials, Acceptance Test Plans, and Acceptance Test Procedures.	MPSCS DIT
12	Responsibility for Third Party Equipment, Software, or Services	Third party services and/or equipment contracted by MPSCS are the responsibility thereof. Motorola has responsibility for all third party services provided under this proposal.	MPSCS DIT
13	MPSCS-provided Site Connectivity Equipment	The connectivity performance standards will be included in a Design Document developed during the Design Review Phase. Motorola may test for compliance of the connections prior to commencing installation.	MPSCS DIT

#	Task	Description	Responsibility
14	Installation, Acceptance Tests, and Cutover	MPSCS will provide times and dates of availability to perform these events.	MPSCS DIT
15	Decommission and Removal of Existing Equipment	MPSCS and Motorola will decommission and remove the old system.	MPSCS DIT Motorola
16	Communicate Project Changes	MPSCS will communicate schedule changes for tasks or phase events, and/or changes to training dates to the project manager to avoid additional costs.	MPSCS DIT

SITE REQUIREMENTS AND DESIGN ASSUMPTIONS

Motorola has developed a comprehensive solution contained within this proposal with the best intentions of satisfying the needs of the MPSCS. Certain assumptions were made in order for Motorola to design this system. The following is a list of site requirements and design assumptions for the system:

SCOPE CHANGE

Should the scope change beyond what is noted above, the site design team must review the changes and make proper pricing and scope adjustments. Only items denoted in this statement of work have been included in the proposal.

ADDITIONAL TIME

Should additional time or resources be required beyond what is noted within this scope of work document for zoning and permitting and thus requires additional documentation, submittals, resources or work, Motorola shall cease any further work on the facility and notify the customer of such action in writing. Upon execution of a negotiated contract change order, Motorola will move forward as required to complete the zoning and permitting process. In addition, Motorola will not be held accountable for schedule slippage associated with such requests nor shall other reasonable payments or project milestones be withheld.

RF CHANNEL PLAN

Motorola has no plans to change the existing designed RF system.

EXISTING MPSCS OWNED EQUIPMENT

Motorola has not made provision for the removal of any existing MPSCS equipment that will no longer be utilized once the new system is operational. The disposal of this equipment is the responsibility of the MPSCS. Old equipment from the upgrade will be left at the location the work was completed.

PRICING

PRICING – SYSTEM UPGRADE

ASTRO 6.9 SYSTEM UPGRADE
$2,478,000.00

TERMS AND CONDITIONS

The following modifications apply to this Change Notice No. 30 only:

In Section 1.6.1 Hardware and Software, subparagraph A., add the following as an additional sentence to this section: Notwithstanding any other provision in this section, Motorola's liability for liquidated damages related to not completing the System Upgrade ordered under Change Notice No. 30 on the mutually agreed upon completion date, shall not exceed fifteen percent (15%) of the total contract price of Change Notice No. 30.

In Section 1.12. Limitation of Liability, in the last line, delete the words "…twenty million dollars and no cents ($20,000,000.00)" and replace them with the words "…the total contract price of Change Notice No. 30."

The Bond requirements under Section 1.14 are waived for this Change Notice No. 30.

PAYMENT TERMS

The System Upgrade will be paid as defined by the following milestone payments:

The Price of the 6.9 Upgrade is $2,478,000.00

Payment Milestones are as follows:

- 45% of the total value of the 6.9 Upgrade upon signing of the Detailed Design Plan.
- 25% of the total value of the 6.9 Upgrade upon shipment of the Fixed Network Upgrade Equipment.
- 20% of the total value of the 6.9 Upgrade upon completion of Installation.
- 10% of the total value of the 6.9 Upgrade upon Completion of Upgrade.

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **June 22, 2007**
PURCHASING OPERATIONS
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 33
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER/CA (517) 241-2005 **Lisa Morrison**
Contract Compliance Inspector: Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately this Contract is hereby reduced by $146,554.00 and added to Contract No. 071B3001101.

All other Terms, Conditions, Specifications and pricing remain the same.

AUTHORITY/REASON:

Per DMB Purchasing Operations.

TOTAL REVISED ESTIMATED CONTRACT VALUE: $251,757,033.60

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

August 30, 2005

CHANGE NOTICE NO. 32
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER/CA (517) 241-2005 **Lisa Morrison**
Contract Compliance Inspector: Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, this contract is hereby INCREASED by $19,960,868.00. All other terms, conditions, specifications and pricing remain unchanged.

AUTHORITY/REASON:

Per Administrative Board approval dated 8/16/05

INCREASE: $19,960,868.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $251,903,587.60

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

June 8, 2005

CHANGE NOTICE NO. 31
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER/CA (517) 373-1455 **Laura Gyorkos**
Contract Compliance Inspector: Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, this contract is hereby INCREASED by $3,500,000.00. All other terms, conditions, specifications and pricing remain unchanged.

AUTHORITY/REASON:

Per DMB/Acquisition Services

INCREASE: $3,500,000.0.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $231,942,719.60

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

May 10, 2005

CHANGE NOTICE NO. 30
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER/CA (517) 373-1455 **Laura Gyorkos**
Contract Compliance Inspector: Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective May 4, 205, this contract is hereby INCREASED by $999,930 so that releases can be made for maintenance and homeland security purchases. All other terms, conditions, specifications and pricing remain unchanged.

AUTHORITY/REASON:

Per Administrative Board approval on 4/29/05.

INCREASE: $999,90.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $228,442,719.60

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **June 21, 2004**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 29
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER/CA (517) 335-0462 **Christine Michel**
Contract Compliance Inspector: Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, this contract is hereby INCREASED by $308,315.00 to allow for the provision of centralized telephone help desk and technical support 24 hours a day, 7 days a week, 365 days of the year to be provided by the Motorola for the MPSCS to allow for high-level diagnosis and problem resolution.

AUTHORITY/REASON:

Per agency request (Mary Levene) on 3/5/04, vendor agreement (Rick Uslen) on 5/25/04, and DMB/ACQUISITION SERVICES approval.

INCREASE: $308,315.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $227,442,789.60

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **January 29, 2004**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 28
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, contract value is hereby INCREASED by $1,500,000.00 to allow for additional radio purchases over the FY04.

AUTHORITY/REASON:

Per vendor request (Gordon Webb) and agency agreement (John Kalanquin) on 11/12/03.

INCREASE: $1,500,000.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $227,134,474.60

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **December 10, 2003**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 27
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, Motorola will be installing a software patch from Microsoft Corporation on the 800 mHz system to remedy or mitigate effects of computer viruses and/or worms on its operating software. The attached agreement for this service and product offered at a cost of $0.00 to the State has been reviewed and approved by Iris Lopez of DMB State Affairs of the Michigan Attorney General's office.

AUTHORITY/REASON:

Per vendor request (Gordon Web) and agency agreement (Mary Levine) on 11/21/03, and approval from the Attorney General's office (Iris Lopez).

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $225,634,474.60

AGREEMENT TO DEPLOY SOFTWARE PATCH

Motorola, Inc., by and through its Commercial, Government, and Industrial Solutions Sector ("Motorola"), and the Michigan Department of Information Technology - MPSCS ("Customer"), on ~~November~~ December 8, 2003 (the "Effective Date"), enter into this Agreement to Deploy Software Patch ("Agreement"), with reference to the following factual recitals.

A. Pursuant to a separate agreement, Motorola has previously provided to Customer a radio communications system (the "System"). This Agreement is not intended to amend, replace or supercede the contract between Motorola and the Customer dated December 8, 1994.

B. The System uses certain third party software, including Microsoft Corporation's Windows™ operating software (the "Operating Software").

C. Due to computer viruses and/or worms transmitted via the Internet or by other means, the Operating Software has become vulnerable to attack which, in turn, causes the reliability and security of the System to become vulnerable.

D. Microsoft Corporation has made available to its end users the software patch to remedy or mitigate the effects of computer viruses and/or worms on its Operating Software (the "Patch"). In the future, Microsoft Corporation may make available to its end users software patches to remedy or mitigate the effects of future computer viruses and/or worms on its Operating Software ("Future Patches").

E. Pursuant to this Agreement, Motorola is willing to provide to Customer certain services as more fully described below to assist Customer in deploying on its System the Patch.

For good and valuable consideration, the parties agree as follows:

Section 1 DEFINITIONS

Capitalized terms used in this Agreement shall have the following meanings:

"Proprietary Rights" means the patents, patent applications, inventions, copyrights, trade secrets, trademarks, trade names, mask works, know-how, and other intellectual property rights.

"Services" means those services to be provided by Motorola to Customer under this Agreement, the nature and scope of which are more fully described in Section 2 and the Statement of Work.

"Statement of Work" means the statement of work attached hereto as Exhibit A and incorporated herein by this reference. The Statement of Work describes the Services that Motorola will provide to Customer under this Agreement, and the other work-related responsibilities that the parties owe to each other.

Section 2 SCOPE OF AGREEMENT; TERM

2.1 Motorola has tested the Patch that is identified in the Statement of Work. As more completely described in the Statement of Work, Motorola has conducted such test in a controlled environment on a Motorola system (the "Test System") that is similar to Customer's System. The purpose of this test was for Motorola to determine the effects, if any, of the Patch on the Test System. As future Patches are made available, Motorola will in its sole discretion determine whether to test that Patch on the Test System and, if so, is willing to amend this Agreement to modify the Statement of Work to describe the Services related to Future Patches. Motorola makes no representations or promises that any Future Patches will be offered or tested. Concerning the Patch and any Future Patches that Motorola tests, Motorola will provide to Customer a general description of the test results; and if requested by Customer, Motorola will assist Customer in installing and deploying them on the System. The provision of Services under this Agreement does not obligate Motorola to provide any other services. To enable Motorola to perform the Services, Customer will provide to Motorola reasonable assistance, such as access to essential Customer personnel and the System, office space where Motorola's workers are working on Customer's premises, and other general assistance.

2.2 Motorola will assign qualified workers who have the requisite experience and competencies to perform the Services with reasonable skill and care. Motorola will provide and furnish all material, labor, supervision, tools, apparatus, and equipment for accomplishing the Services with the exception of those items specifically mentioned in this Agreement to be provided by Customer.

2.3 If and to the extent the Patch or any Future Patch is governed by a software license agreement, Microsoft Corporation's standard software license agreement shall apply. Although Motorola may assist Customer in this regard, properly obtaining any Futue Patch is the sole responsibility of Customer as the end user.

2.4 The term of this Agreement shall begin on the Effective Date and shall continue for six (6) months. At any time after Motorola performs the Services concerning the Patch or any future Patches, Motorola may terminate this Agreement by giving thirty (30) days advance written notice to Customer.

Section 3 CONTRACT PRICE AND PAYMENT

3.1 The "Contract Price" in U.S. dollars is -0-, exclusive of any taxes, if applicable.

3.2 Any services performed by Motorola outside the scope of this Agreement at the direction of Customer, and any Services concerning a Future Patch, are subject to additional charges. Any agreement to perform additional services or Services concerning Future Patches shall be reflected in a written and executed change order or amendment to this Agreement.

3.3 Motorola will submit invoices to Customer after the Services are performed, and Customer will make payment to Motorola within thirty (30) days after the date of invoice in the form of a wire transfer, check, or cashier's check from a U.S. financial institution.

3.4 Customer shall reimburse Motorola for all documented and reasonable travel expenses, including lodging, meals, mileage and actual road toll charges provided by Motorola in connection with the Services furnished under this Agreement. Reimbursement of lodging, meals and mileage shall be based on the current State of Michigan travel rates available to State of Michigan employees.

Section 4 TIME SCHEDULE; FORCE MAJEURE

4.1 All Services shall be performed in accordance with the performance schedule included in the Statement of Work, or if there is no performance schedule, within a reasonable time period.

4.2 Neither party will be liable for its non-performance or delayed performance if caused by a "Force Majeure" which means an event, circumstance, or act of a third party that is beyond a party's reasonable control, such as an act of God, an act of the public enemy, an act of a government entity, strikes or other labor disturbances, hurricanes, earthquakes, fires, floods, epidemics, embargoes, war, riots, or any other similar cause. Each party will notify the other in writing if it becomes aware of any Force Majeure that will significantly delay performance. The notifying party will give such notice promptly (but in no event later than fifteen (15) days) after it discovers the Force Majeure.

Section 5 CONFIDENTIAL INFORMATION AND PROPRIETARY RIGHTS

5.1 Motorola's test results of the Patch or any Future Patches, the release notes and related information delivered with the Patch or any Future Patches, and the proprietary script to enable remote deployment of the Patch or any Future Patches are all "Confidential Information." Customer will: (i) maintain in confidence the Confidential Information and not disclose it to any third party, except as authorized by Motorola in writing or as required by a court of competent jurisdiction; (ii) restrict disclosure of Confidential Information to its employees who have a "need to know" and not copy or reproduce such Confidential Information; (iii) take necessary and appropriate precautions to guard the confidentiality of Confidential Information; and (iv) use such Confidential Information only in furtherance of the performance of this Agreement.

5.2 Each party owns and retains all of its Proprietary Rights. Unless otherwise explicitly stated herein, this Agreement does not restrict a party concerning its own Proprietary Rights and is not a grant (either directly or by

implication, estoppel, or otherwise) of a party's Proprietary Rights to the other party. The use of the word "Proprietary" in this Agreement is not to be construed as the State engaging in any "proprietary function" or waiver of its governmental immunity.

Section 6 WARRANTY

Motorola warrants that the Services will be performed in a professional and workmanlike manner. This warranty shall be for a period of thirty (30) days following completion of the Services. If Motorola breaches this warranty, Motorola shall, re-perform the non-conforming Services or refund the portion of the Contract Price actually paid for the non-conforming Services. EXCEPT FOR THIS WARRANTY CONCERNING THE SERVICES, MOTOROLA ASSUMES NO RESPONSIBILITY FOR ERRORS OR OMISSIONS THAT MAY OCCUR TO CUSTOMER'S SYSTEM OR OTHERWISE AS A RESULT OF THE SERVICES. MOTOROLA DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. FURTHER, MOTOROLA DISCLAIMS ANY WARRANTY CONCERNING THE PATCH OR ANY FUTURE PATCH AND DOES NOT GUARANTEE THAT CUSTOMER'S SYSTEM WILL BE ERROR-FREE OR IMMUNE TO VIRUSES OR WORMS AS A RESULT OF THESE SERVICES OR DEPLOYMENT OF THE PATCH OR ANY FUTURE PATCH.

Section 7 LIMITATION OF LIABILITY

This limitation of liability provision shall apply notwithstanding any contrary provision in this Agreement. Except for personal injury or death, Motorola's total liability, whether for breach of contract, warranty, negligence, or otherwise, will be limited to the direct damages recoverable under law, but not to exceed the Contract Price or $25,000, whichever is greater. ALTHOUGH THE PARTIES ACKNOWLEDGE THE POSSIBILITY OF SUCH LOSSES OR DAMAGES, THEY AGREE THAT MOTOROLA WILL NOT BE LIABLE FOR ANY COMMERCIAL LOSS; INCONVENIENCE; LOSS OF USE, TIME, DATA, GOOD WILL, REVENUES, PROFITS OR SAVINGS; OR OTHER SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES IN ANY WAY RELATED TO OR ARISING FROM THIS AGREEMENT OR THE PERFORMANCE OF THE SERVICES BY MOTOROLA. This limitation of liability will survive the expiration or termination of this Agreement. No action for breach of this Agreement or otherwise relating to the transactions contemplated by this Agreement may be brought more than one (1) year after the accrual of such cause of action, except for money due upon an open account.

Section 8 INDEMNIFICATION

8.1 Motorola will indemnify and hold Customer harmless from any and all liability, expense, judgment, suit, cause of action, or demand for personal injury, death, or direct damage to tangible property which may accrue against Customer to the extent it is caused by the negligence of Motorola, its subcontractors, or their employees or agents, while performing their duties under this Agreement, provided that Customer gives Motorola prompt, written notice of any such claim or suit. Customer shall cooperate with Motorola in its defense or settlement of such claim or suit. This section sets forth the full extent of Motorola's general indemnification of Customer from liabilities that are in any way related to Motorola's performance under this Agreement.

Section 9 INSURANCE

9.1 Motorola shall name the State of Michigan an Additional Insured under the terms of the attached Insurance Certificate.

Section 10 NONDISCRIMINATION

10.1 In the performance of any Contract or purchase order resulting herefrom, the bidder agrees not to discriminate against any employee or applicant for employment, with respect to their hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, ancestry, age, sex, height, weight, marital status, physical or mental disability unrelated to the individual's ability to perform the duties of the particular job or position. The bidder further agrees that every subcontract entered into for the performance of any Contract or purchase order resulting herefrom will contain a provision requiring non-discrimination in employment, as herein specified, binding upon each subcontractor. This covenant is required pursuant to the Elliot Larsen Civil Rights Act, 1976 Public Act 453, as

amended, MCL 37.2101, et seq, and the Persons with Disabilities Civil Rights Act, 1976 Public Act 220, as amended, MCL 37.1101, et seq, and any breach thereof may be regarded as a material breach of the Contract or purchase order.

Section 11 - I-9A WORKPLACE SAFETY AND DISCRIMINATORY HARASSMENT

10.1 In performing services for the State pursuant to this Contract, the Contractor shall comply with Department of Civil Service Rules 2-20 regarding Workplace Safety and 1-8.3 regarding Discriminatory Harassment. In addition, the Contractor shall comply with Civil Service Regulations governing workplace safety and discriminatory harassment and any applicable state agency rules on these matters that the agency provides to the Contractor. Department of Civil Service Rules and Regulations can be found on the Department of Civil Service website at www.michigan.gov/mdcs.

Section 12 UNFAIR LABOR PRACTICES

12.1 Pursuant to 1980 Public Act 278, as amended, MCL 423.231, et seq, the State shall not award a Contract or subcontract to an employer whose name appears in the current register of employers failing to correct an unfair labor practice compiled pursuant to section 2 of the Act. This information is compiled by the United States National Labor Relations Board. A Contractor of the State, in relation to the Contract, shall not enter into a Contract with a subcontractor, manufacturer, or supplier whose name appears in this register. Pursuant to section 4 of 1980 Public Act 278, MCL 423.324, the State may void any Contract if, subsequent to award of the Contract, the name of the Contractor as an employer, or the name of the subcontractor, manufacturer or supplier of the Contractor appears in the register.

Section 13 DEFAULT AND DISPUTES

13.1 Neither party may assert a default claim against the other party until it first gives the other party a written and detailed notice of default and an opportunity to cure the alleged default within thirty (30) days after receipt of the notice of default.

13.2 The parties will attempt to settle any dispute arising from this Agreement through consultation and negotiation in good faith and a spirit of mutual cooperation. However, in the event of a breach of intellectual property rights or of the confidentiality provisions, Motorola may immediately seek injunctive relief or any other remedy as it deems appropriate.

Section 14 GENERAL

14.1. HEADINGS AND SECTION REFERENCES. The section headings in this Agreement are inserted only for convenience and are not to be construed as part of this Agreement or as a limitation of the scope of the particular section to which the heading refers. This Agreement will be fairly interpreted in accordance with its terms and conditions and not for or against either party.

14.2. GOVERNING LAW. This Agreement and the rights and duties of the parties will be governed by and interpreted in accordance with the laws of the State in which the System is installed.

14.3. ENTIRE AGREEMENT. This Agreement, including any Exhibits, constitutes the entire agreement of the parties regarding the Agreement and supersedes all previous agreements, proposals, and understandings, whether written or oral, relating to the subject matter of this Agreement. This Agreement may be altered, amended, or modified only by a written instrument signed by authorized representatives of both parties. The preprinted terms and conditions found on any Customer purchase order, acknowledgment or other form will not constitute an amendment or modification of this Agreement.

14.4. COMPLIANCE WITH APPLICABLE LAWS. Each party will comply with all applicable federal, state, and local laws, regulations and rules concerning the performance of this Agreement.

14.5. SURVIVAL OF TERMS. The following provisions shall survive the expiration or termination of this Agreement for any reason: if any payment obligations exist, Section 3 (Contract Price and Payment); Section 5

(Confidential Information and Proprietary Rights); Section 7 (Limitation of Liability); Section 8 (Default and Disputes); and all General provisions in Section 9.

In witness whereof, the parties hereto have executed this Agreement as of the Effective Date.

STATE OF MICHIGAN	MOTOROLA, INC.
BY: Christine Mitchell	BY: William E C Ming III
NAME: Christine Mitchell	NAME: William E. C. Ming III
TITLE: Buyer Specialist	TITLE: MCEI V.P. & Director of Finance

Exhibit A
To Agreement to Deploy Software Patch

Statement of Work

Operating System Patch Deployment

1.0 Description of Services

As an end user of Microsoft Corporation's Windows™ operating software, Customer may receive the Patch or any Future Patches. Motorola will pre-test the Patch or any Future Patches on a Test System and will assist Customer in deploying the Patch on the Customer's System. Motorola will test the Patch for the Microsoft Windows based equipment present in the Motorola Astro 25 radio Test System. The Patch will be deployed on the Test System with standard supported configurations, and Motorola will check and monitor the Test System to confirm that the Patch does not degrade or compromise system performance of the Test System.

The Patch and any Future Patches will be tested for functionality on the following components of the Test System: CDM (console) servers, Centracom Elite/ Gold Operator positions, MGEG, Infovista, Private Network Management ("PNM") clients, Moscad server, Moscad clients, and the telephone interconnect.

After the Patch has been tested and no adverse system performance impacts have been detected, Motorola will electronically release the Patch to Astro 6.1 and Astro 6.2 Customers. Motorola may issue Motorola proprietary script to aid in the remote deployment of the Patch and any Future Patches to some equipment in Customer's System. Motorola may also use service providers to deploy the Patch on equipment that cannot receive the Patch via remote deployment.

2.0 Motorola has the following responsibilities:

- 2.1 Receive the operating software Patch from Microsoft Corporation.
- 2.2 Test the Patch by deploying it on a dedicated ASTRO 25 radio Test System within the standard supported configurations.
- 2.3 Confirm that the Patch does not degrade or compromise System performance on the Test System.
- 2.4 Release the tested Patch for use by the Customer in its System, specifically in equipment with Microsoft Windows™ operating software. This release may include the Patch, as well as instructions and other information deemed pertinent by Motorola.
- 2.5 Provide Motorola proprietary script to enable remote deployment of the Patch to Centracom Elite/Gold Operator positions. This requires a service provider to log in to the domain controller at the System's prime site, load the Patch, and modify the administrative account. Every Centracom Elite/Gold Operator position will then need to be logged in with the administrative account to allow the Motorola proprietary script to remotely deploy. These Centracom Elite/Gold Operator positions will then need to be rebooted.
- 2.6 Provide service providers to manually deploy the Patch to CDM (console) servers, Centracom Elite/ Gold Operator positions, MGEG, Infovista, PNM clients, Moscad server, Moscad clients, and the telephone interconnect.
- 2.7 Coordinate with Customer, as appropriate, to execute sections 2.5 and 2.6 above.

3.0 Customer has the following responsibilities:

- 3.1 Provide means for accessing the Patch electronically.
- 3.2 Agree to recommended deployment procedures as stated in 2.5 and 2.6 above.
- 3.3 Identify one point of contact for issues specific to the Patch.
- 3.4 Coordinate with Motorola to deploy the Patch on the System.
- 3.5 Perform any acts that may be required to allow deployment of the Patch.
- 3.6 Cooperate with Motorola and perform all acts that are reasonable or necessary to enable Motorola to provide and deploy the Patch to Customer. This may include: temporarily modifying the administrative account, logging in to each Centracom Elite/Gold Operator position with administrative login, rebooting equipment as needed, and providing continuous access to equipment and System locations.

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms
and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **September 26, 2003**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 26
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached items and prices are hereby incorporated into this contract with no modifications in terms and conditions. The attached price list represents an overall average savings of 9.90%, and the attached work statement provides for system expansion in Jackson and Southfield, Michigan.

AUTHORITY/REASON:

Per vendor request (Gordon Web) on 8/26/03 and agency approval (Shelly Warstler) on 9/2/03.

INCREASE: $2,367,796.60

TOTAL REVISED ESTIMATED CONTRACT VALUE: $225,634,474.60

CONTRACT REVISION 24
TO THE
STATE OF MICHIGAN
800 MHZ RADIO SYSTEM & TELECOMMUNICATIONS BACKBONE NETWORK
CONTRACT NO. 071B5000240
BETWEEN
THE STATE OF MICHIGAN
AND MOTOROLA, INC.
DATED August 5, 2003

1. The addition of MPSCS System site 1704 as defined in the scope contained within this change notice for amount of $1,210,574.

2. In Exhibit E, replace Section V. Pricing for Add on users with the attached.

Summary of changes

1. Subscriber price revision.
2. Update of product APC discounts.
3. Addition of the mobile data pilot

THE STATE OF MICHIGAN	**MOTOROLA, INC.** d/b/a Motorola Communications & Electronics, Inc.
By: _____ (Signature)	By: _____ (Signature)
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

INTRODUCTION – Site 1704 – Jackson

The following is the proposal to construct a new MPSCS site (1704) using the existing SOM site located at the DNR tower located on O'Leary Road in Jackson, MI. The equipment and services in this proposal meet the requirements of the request for bid dated July 8, 2003

SCOPE OVERVIEW – SITE 1704:

- MPSCS site design including microwave and 800 MHz equipment.

- Site Construction:
  - Engineer changes to the site affected by new communication site construction

- Site development:
  - Clear, fill and grade communication site location
  - Access and parking area within the communication site location
  - Install security fencing required for proper communication site installation
  - Re-work existing site access road, if necessary, due to construction of communication site

- Provide and install the new 800 MHz six (6) channel remote site with Mutual-Aid, and associated equipment.

- Provide and install 800 MHz antenna system on the existing tower at the site.

- Antenna systems sweep test

- Equipment shelter design, manufacture & placement:
  - 12' x 26' (type B)
  - 45 KW generator
  - 200 amp single phase electrical service

- Site equipment preparation:
  - UPS System – 800 MHz equipment
  - DC power plant – Microwave equipment
  - Electrical service drops
  - Ground system drops

- TBN and 800 MHz site equipment implementation:
  - Installation of the new microwave system equipment at the 1704 site, for the required path.
  - Installation of microwave antenna systems to meet new path requirements

- Antenna systems sweep test
- Microwave path alignment for the new path.
- Installation of the new 800 MHz six (6) channel remote site with Mutual-Aid, and associated equipment.
- Site equipment optimization / integration and specification testing

- Testing:
  - Site development inspections and site alarm testing
  - Alarm & Control (ACS) system
  - Field Functional

SCOPE OVERVIEW – SITE 1702 (Stockbridge):

- TBN and 800 MHz site equipment implementation:
  - Installation of the new microwave system equipment at the 1702 site, for the required path.
  - Microwave path alignment for the new path.

- Microwave antenna system:
  - Installation of microwave antenna systems to meet new path requirements
  - Antenna systems sweep test

STATE OF MICHIGAN RESPONSIBILIES:

- Provide the required property parcel, and suitable tower for antenna mounting.
- P.A. 538 requirements
- Land Surveys and Analysis
  - Topographical and Boundary of the entire DMB land parcel

  - All Phase 1 and Phase 2 environmental surveys or studies
  - Any environmental impact studies, correspondence and coordination required by the FAA, FCC or United State Fish and Wildlife (USFW)
  - Any wetland studies
- Provide current tower loading documentation.
- Provide required personnel to assist in sites and facilities inspections & testing, verification of equipment inventory, equipment specification testing and field functional testing.
- Provide the required utility power per site design requirements.
- Provide utility gas supply (natural gas) piping connection and meter at equipment shelter, for generator fuel supply.

Addition information regarding the implementation is contained in the attached Statement of Work.

ASSUMPTIONS:

Should Motorola encounter any of the noted assumptions below or items not included in our previously stated scope overview we shall stop work and provide an additional scope and cost proposal to perform such services. If such encounters are not handled is an expedient manner, such that Motorola or any of it's sub-contractors must demobilize or are delayed in any way, the State shall be responsible for those charges. Remobilization charges shall be calculated and quoted at the time they are encountered

Site 1704:

- The encounter of underground obstructions are **NOT** included as part of this proposal.
- The encounter, abatement and/or removal of contaminated soils or other environmental hazards relative to construction of this proposed site, are **NOT** included as part of the cost proposal.
- Special permits or fee's are **NOT** included as part of this proposal.
- Removal of existing electronic equipment, generator or associated equipment, and antenna systems from the site 1704 has **NOT** been included as part of this proposal.
- Assumes FAA / FCC tower application approvals
- Assumes any / all environmental impact study requirements are a State of Michigan responsibility and completed by December 1, 2003.
- Assumes 200 AMP, 120 / 240 volt, single phase electrical service is available as w/o additional cost for step-down transformers or other Special requirements.
- Assumes no additional load studies need to be performed.
- No cost for repair of damaged of existing electronic communication equipment.

Because this proposal is based upon the Scope of Work provided by DIT personnel, an informal site visit, noted assumptions and State responsibilities, Motorola reserves the right to modify this proposal should deviations occur.

PAYMENT TERMS

The contract revision total is $1,210,574.00. Except for the first payment, which is due when the State of Michigan issues the contract change notice. The State of Michigan agrees to make payments to Motorola within twenty-five (25) days after the date of invoices that will be submitted by Motorola according to the following payment schedule:

30% of the contract revision value upon award for mobilization;
60% of the contract revision value upon shipment of equipment;
10% of the contract revision value upon acceptance.

EQUIPMENT AND SERVICES COST PROPOSAL:

Equipment **$466,498.00**

- Site access and compound development materials
- 12’ x 26’ (type B) Equipment Shelter w/ 45 kW generator
- 800 MHz antenna systems
- 800 MHz equipment for a six (6) channel site w/ Mutual Aid.
- Microwave antenna system w/ dehydrator
- Microwave /ACS equipment
- UPS system

Services **$695,384.00**

- Site construction
  - Site preparation and development
  - Shelter / generator placement
  - Utility connection(s)
- Antenna and feedline system installations and sweeps
  - Microwave systems
  - 800 MHz systems
- Installation, integration of microwave / ACS equipment
- Installation, integration of 800 MHz equipment
- Optimization and spec. testing of microwave and 800 MHz system equipment
- Tower / Shelter inspections and testing
- Field Functional testing
- As-built documentation
- Shipping
- Administrative, Engineering and Project Management services, to design and implement the equipment and services necessary to construct and integrate this new site.

Spare Equipment $ 48,962.00

- Site controller
- Router
- Switch
- MDR8000 Microwave Radio
- Quantar ASTRO 25 Site Repeater

The total to provide equipment and services as described above: **$1,210,574.00**

This proposal is valid through December 1, 2003 and assumes an authorization to proceed on or before that date.

MPSCS Site 1704 Jackson (SOM add on)

Statement of Work (SOW)

Motorola has assembled this Statement of Work (SOW) to identify the work and resources to be supplied to successfully design, implement, and optimize the proposed communications system for MPSCS, Dept. of Information Technology Communications Division.

This document represents Motorola's most current understanding of the system design, operation, and architecture requested, based on MPSCS, Dept. of Information Technology Communications Division's specification. Changes to this document will be made by formal request, by either party, and approved by the other. This document will become part of the negotiated contract between Motorola and MPSCS, Dept. of Information Technology Communications Division. Changes requested after the contract is implemented will be accomplished via the Change Order Procedure detailed in this SOW.

The SOW is based on the Work Breakdown Structures (WBS) involved in the installation, the installation standards to be followed, and the assignment of responsibilities for all deliverables to successfully deliver, implement, and optimize the proposed communications system.

Scope

Motorola will supply, optimize, and install all equipment required to provide a complete and operational site that interfaces with the existing State of Michigan two-way communication infrastructure.

The major deliverables included in Motorola's proposal:

- Delivery, installation, and optimization of a six (6) channel IR system that interfaces with the State of Michigan system.
- Delivery, installation, and optimization of a one channel Mutual Aid Transmitter that interfaces with the State of Michigan system.
- A 12X26 building with an interior 45kw generator and 15kw UPS.
- Perimeter fencing with interior crushed gravel treatment.

The system will be detailed in a project schedule 30 days after the contract is signed.

The implementation of the radio system must occur smoothly and seamlessly with minimum disruptions to any MPSCS user. To ensure this transition and successful project completion, the following will be accomplished:

- Design reviews between MPSCS, Dept. of Information Technology Communications Division and Motorola to ensure all the operational and functional requirements of MPSCS, Dept. of Information Technology Communications Division are met.

- Development of individual rack drawings for each equipment site.

- Installation and optimization of all equipment to specification.

- Successful system acceptance according to the procedures detailed in the Motorola contract.

Project Manager Overview

Motorola's Project Manager has full responsibility for the successful completion of the project and will be the focal point for all communications between MPSCS, Dept. of Information Technology Communications Division and Motorola. The Project Manager will be responsible for the total project in accordance with the contractual schedule requirements and the technical and financial objectives of the contract. Responsibilities include: review and control of the project schedule, equipment orders, deliveries, subcontracts, installation, system testing, optimization, documentation, training, and coordination to ensure a completely operational system. Finally, the Project Manager will ensure the equipment and services purchased from subcontractors meet or exceed the specifications set forth by MPSCS, Dept. of Information Technology Communications Division and Motorola.

The project manager will, at a minimum, be deliver the following to the MPSCS, Dept. of Information Technology Communications Division:

- Weekly status meeting with the MPSCS, Dept. of Information Technology Communications Division Project Supervisor.

- Coordinate status meeting attendance by necessary parties representing Motorola, i.e. Engineering, Subcontractors, etc.

- Monthly updates (or more often as necessary) to the Project Schedule.

General Requirements

Motorola Responsibilities

Motorola will supply the equipment that is required to implement the communication system and the required items for supporting sub-systems. Motorola will furnish all necessary mounting hardware, peripheral equipment, fasteners, fixtures, cabling, connectors, and other equipment installation tools, along with labor, to provide a complete functional system to MPSCS, Dept. of Information Technology Communications Division. All Motorola provided equipment used in the system is designed and manufactured to meet or exceed the minimum technical standards required for operation.

All work shall be performed in a good workmanship manner consistent with high quality commercial practice and, when applicable, in accordance with Motorola's "Quality Standards". Motorola will exercise the care and diligence generally associated with the design and implementation of the best quality Radio Communications System.

This proposal does not include any allowance for encountering asbestos, hazardous or toxic materials, wastes, and/or other similar conditions at any of the proposed locations. Motorola will not be responsible for inspection, clean up, removal, abatement, etc. of the hazardous material. If any delays are experienced as a result of the suspicion of, or encountering of, hazardous materials, MPSCS, Dept. of Information Technology Communications Division will extend the scheduled completion date for the specific sites affected. The schedule extension will be based on the actual delay experienced and be subject to the contract change order process.

MPSCS, Dept. of Information Technology Communications Division Responsibilities

Motorola understands that a project of this size is a large undertaking. For successful completion of the project, coordination between the MPSCS, Dept. of Information Technology Communications Division and Motorola is imperative. The importance of a communicative, working relationship cannot be overstated.

Many assumptions were made in developing the proposal for MPSCS, Dept. of Information Technology Communications Division. These assumptions may result in uncontrollable delays once the project is started. Some areas of assumptions and concern are: site and construction approvals, availability of drawings and specifications, and site availability/approvals.

Motorola is prepared to assist the MPSCS, Dept. of Information Technology Communications Division in the development and implementation of any contingency plans as they arise and relate to the successful completion of the Mason Oceana communication project.

The MPSCS, Dept. of Information Technology Communications Division responsibilities are summarized in this SOW.

Assumptions and Clarifications

A project of this size creates many questions as the proposal process unfolds. This requires assumptions and clarifications be incorporated to allow the process to continue. Each of the sections that have assumptions and clarifications are so noted in the respective section. Motorola and the MPSCS, Dept. of Information Technology Communications Division have attempted to clarify as many uncertainties as possible, however, a few remain. If there are changes to the assumptions during the negotiation process with MPSCS, Dept. of Information Technology Communications Division, Motorola reserves the right to make corresponding changes to the SOW, Equipment List, Pricing and other contract exhibits. The changes will be noted in a Memorandum of Change and incorporated into Contract Changes made after Contract will be managed through the Change Order Procedure, as outlined in this document.

Substitute Equipment

Motorola has identified in the proposal, and with this Statement of Work, all equipment required to implement the delineated system. If MPSCS, Dept. of Information Technology Communications Division desires to supply substitute equipment, Motorola must approve the equipment as compatible with the overall system design and integrity.

Standards of Work

All equipment provided for each site and the installation techniques used for that equipment shall comply with: State/County code and BOCA code, where applicable; Motorola Quality Standards for Fixed Network Equipment (FNE) Installations (R56); National Electric Code; and all other applicable codes and ordinances.

<u>Assumption:</u> All Motorola work will fall under the umbrella of the MPSCS specification. This means that all local codes and zoning ordinances are not applicable to site construction and/or work. Any change to this action will alter this statement of work and require a project change order.

System Equipment Layout

The overall system configuration is presented by subsystem. All equipment will be further delineated by site. This will require approval by MPSCS, Dept. of Information Technology Communications Division prior to actual installation.
All Motorola supplied communications equipment will be installed in racks. Open cable trays and raceways will be acceptable for communications and control cables. All cables will be properly tied and wrapped to meet R-56 installation standards.

System Implementation

System implementation includes all required services, including system engineering, equipment manufacturing, equipment delivery, system staging, installation, system integration, performance verification, and documentation. A project schedule will be determined once MPSCS, Dept. of Information Technology Communications Division has secured the land for the proposed site.

RF Channel Plan

Motorola has designed the RF system to minimize radio frequency interference with other frequencies currently licensed with the FCC. Motorola is not responsible for co-channel interference due to errors in frequency coordination by APCO, any other unlisted frequencies, or the improper design, installation, or operation of non-Motorola systems.

Existing MPSCS, Dept. of Information Technology Communications Division Owned Equipment
Motorola's system design does not take into account the removal of existing electronic equipment. Motorola will be responsible for the removal of the existing fencing around the existing building only.

Radio Coverage

System coverage is determined by the mounting height allowed on the existing tower. A coverage demonstration is not included in this project since the coverage provided by this site is already determined by the antenna height limits.

Beneficial Use

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

Interfaces

Motorola will provide clearly indicate demarcations for existing equipment interfacing. Motorola is not responsible for the installation, programming, modification or optimization of existing equipment.

Leased Telephone Lines/Hardware Circuits

MPSCS, Dept. of Information Technology Communications Division shall be responsible for the procurement, installation, or monthly rental of any required leased telephone lines and/or hardwire circuits for the new system, or T1 lines if required. The demarcation point for such circuits is to be within 6 cable feet from the equipment interface. Motorola shall provide the detail on the quantity, type and locations for each circuit needed to complete the system design.

Prior Notification

Once the communication system has been accepted or conditionally accepted, as outlined in this SOW, and is placed into service, Motorola agrees not to perform any subsequent work on the system unless such work is coordinated in advance with MPSCS, Dept. of Information Technology Communications Division. During this period of time, MPSCS, Dept. of Information Technology Communications Division may designate that their project supervisor be on site prior to the initiation of any such work.

Construction Permits

MPSCS, Dept. of Information Technology Communications Division will be responsible for obtaining the required local and state building permits.

Licensing

MPSCS, Dept. of Information Technology Communications Division is responsible for filing and fees to the corresponding agency for coordination and procurement of all radio system frequencies included in the system design. If required Motorola can make a recommendation for an outside agency to assist with filing FCC licensing paper work.

FAA Clearances

MPSCS, Dept. of Information Technology Communications Division will be responsible for assisting Motorola in obtaining the required FAA permits.

Site and Equipment Requirements

Tower Analysis

MPSCS, Dept. of Information Technology Communications Division has total tower responsibilities as part of this project. Motorola has been advised by MPSCS, Dept. of Information Technology Communications Division that the existing tower has been analyzed

and deemed specified to support the need microwave dishes and line as well as the transmit and receive antennas.

Note: Tower and foundation modifications are not included in this proposal. Should modifications be required as a result of the tower analysis, Motorola will process a change order for the required work.

Soil Testing

Motorola has assumed that all soil conditions are normal and will meet the industry standards for building construction. Should soil studies not meet this standard a project change order may be required to include need construction modifications.

Technical Equipment

All equipment furnished by Motorola for this system will meet or exceed all FCC requirements and the technical requirements delineated by this Statement of Work. This system will be designed, manufactured, installed, tested and optimized with the care and diligence generally applied to highly reliable radio communications systems. The equipment will meet or exceed physical requirements as specified by the MPSCS, Dept. of Information Technology Communications Division.

System Expansion

Motorola has designed this system as a stand-alone interface to the State of Michigan System.

Site Development and Requirements - General

Motorola Responsibilities

Motorola is responsible for site modifications including but not limited to the placement of building. The site will be finished in accordance with the State of Michigan requirements. This includes building fencing, weed beerier, crushed stone ground cover and Motorola's R56 site grounding sub-system.

MPSCS, Dept. of Information Technology Communications Division Responsibilities

MPSCS, Dept. of Information Technology Communications Division is responsible for providing and permitting the area required for site construction. In addition, MPSCS, Dept. of Information Technology Communications Division will be responsible for site surveys including topography and boundary maps.

Individual Site Detail

Fixed Network Equipment (FNE)

Motorola Responsibilities

Provide and install the following equipment:

- Six IR base stations.
- Mutual Aid base stations
- Combiner equipment.
- Multi coupler equipment.
- MOSCAD alarm system
- Microwave link to site 1702

Antennas

Antenna networks (antennas, transmission lines, antenna mounts, and peripheral hardware) shall be installed at the sites in locations delineated by Motorola. Antennas, feedlines, connectors, mounting hardware, cable hangers, upper/lower ground kits and surge protection shall be provided and installed by Motorola as part of this proposal. Connectors utilized in all applications in this system are those connectors, which the cable manufacturer recommends for the specific cable utilized for a specific application. Weatherproofing of all connectors in this system installation shall meet or exceed manufacturer's recommendations and shall be performed in accordance with the recommendations contained in Motorola National Service publication number R56, "Quality Standards - FNE Installations.

Antenna transmission line will be mounted with the manufactured recommended stainless and galvanized hardware. The lines will be secured at a maximum of every 4 feet.

Motorola will provide and install:

- Two transmit antenna arrays.

- One receive antenna.
- Transmit and receive antenna will have 1 5/8”/ 7/8” transmission line.
- Two microwave dishes
- Microwave will use EW63 transmission line.

Site Preparation

Motorola Responsibilities

Construction

- Provide and install a 12X26' communications shelter
- Provide and install generator inside the equipment building.
- Provide and install ice bridge.
- Design and install ground system for shelter and interface to tower ground.

Fencing

- Motorola will provide 50' x 50' fenced enclosure.
- Electrical Installation
- Provide generator backup power system.
- Provide main AC disconnect, meter pan and generator transfer panels.

Additional MPSCS, Dept. of Information Technology Communications Division Responsibilities

- Provide approval to use site.
- Provide access to site as required.
- Provide construction permits.
- All tower lighting and alarm interface.

Site Lightning and Surge Protection - General

Motorola Responsibilities

Antenna and Line

Motorola is responsible for the installation of a lightning protection device for each run of transmission line. The lightning protection device will be equal to or greater to industry standards.

Each transmission line run will be grounded at the top and the bottom of the communication tower.

Equipment Grounding

Motorola will ground each equipment rack using a #6 AWG THHN green jacked conductor. The ground conductor will be mechanically connected to the equipment rack at one end and to a single point ground bar at the other end.

Tower, Building and Generator Grounding

Motorola will ground the building, tower and generator using a common ground system. For more details please refer the Motorola R56 grounding standard.

System Staging

Overview

Motorola will factory stage the MPSCS, Dept. of Information Technology Communications Division 800 MHz communication equipment and test the equipment at our Customer Center for System Integration (CCSI) facility in Schaumburg, IL.

At the CCSI facility, the 800 MHz equipment will be completely assembled in an area of Motorola's plant facilities. The equipment will be set up in accordance with floor plan equipment layouts and elevation scale drawings for each communication site, provided by Motorola's Project Manager. All cables will be cut to length, connectorized, and labeled. After assembly, all equipment will be individually tested. Systems Factory technicians and engineers will then fully test the system as it will be used in its final application as detailed in Motorola's proposal. Upon completion the equipment will be shipped to the field.

System and Equipment Installation

Motorola Responsibilities

General

Motorola and its subcontractors will perform all work and tasks required to implement and optimize the MPSCS, Dept. of Information Technology Communications Division Radio Communications System. All manufacturers' recommendations will be strictly adhered to in the assembly of the communication system.

Conditions

Motorola will commence work at a respective work site only after the required MPSCS, Dept. of Information Technology Communications Division tasks are substantially completed and the MPSCS, Dept. of Information Technology Communications Division designated Project Supervisor has notified Motorola to proceed with the work at the site. Motorola will install equipment provided in this Statement of Work only once.

Motorola and its subcontractors will coordinate with the MPSCS, Dept. of Information Technology Communications Division all site access requirements prior to commencing work.

System Field Installation

Field installation of the infrastructure is based on a pre-staged system. The site will be delivered via dedicated carrier. All RF and data cabling will be connectorized and labeled.

Base Station Equipment

In addition to the General Installation Tasks as previously described above, the following tasks shall be performed for repeaters:

- Verify levels on repeaters at each transmitter site.
- Install all required interfaces.

MOSCAD Alarm System

Motorola will install as part of the fixed network equipment, a MOSCAD alarm system. This sub-system will be designed and implemented according to the State of Michigan specification. The alarms will be used by the State to monitor specific site conditions

MPSCS, Dept. of Information Technology Communications Division Responsibilities

System Task List Review

- Provide a MPSCS, Dept. of Information Technology Communications Division Project Supervisor who will be the single point of contact to work closely with Motorola's Program Manager. This Project Supervisor is to have the authority to make decisions in a timely manner.

- Acquire timely site permissions and access to specified listed sites. Primary concerns include use of the specified room, and access; and the required approvals from the MPSCS, Dept. of Information Technology Communications Division's various agencies to mount antennas on the specified areas on specified buildings.

- Provide access to all MPSCS, Dept. of Information Technology Communications Division (work sites) that will receive equipment during and after normal working hours. These sites include but not limited to site 1702 for microwave installation, sites 1102, 2504, 1106, 1108 for mutual aid, MOSCAD, dacs cross connects updates.

- Provide timely acceptance of completed work at the site.

Network Integration/System Optimization Tasks

General

For the purpose of the Statement of Work, it is assumed that the terms "network integration" and "system optimization" are synonymous. The term "optimized" will be used to define final status of the specified site.

Network integration for the system will include the following tasks:

- Verify that all system hardware is operating to published specifications and software is installed and operational.
- Verify and document all required board jumpers as required.
- Verify and document the proper configuration and interconnection of all site components and interfaces.
- Verify that local AC power conforms to minimum performance standards of all equipment.
- Verify that UPS systems and standby generators are operational.
- Install all jumpers between all cross connects.
- Optimize and document all end-to-end audio and data levels.

IR Base Stations

The following Network Integration tasks shall be performed for trunking simulcast repeaters. Test and document antenna system; perform electronic sweeps on transmit and receive transmission lines.

Test and verify tower top amplifier operation and gain and verify redundant backup operation.
Optimize and document repeater levels (audio, RF, and control).

System Cutover Plan

Overview

MPSCS, Dept. of Information Technology Communications Division may make the system operational upon completion of the equipment installation, optimization and demonstration. Motorola will work in conjunction with the MPSCS, Dept. of Information Technology Communications Division Project Manager to develop a cutover plan that minimizes the impact on MPSCS, Dept. of Information Technology Communications Division operations.

Acceptance

Acceptance Testing

Motorola will conduct system acceptance testing on a subsystem basis for infrastructure type equipment.

Milestone Acceptance

Motorola and MPSCS, Dept. of Information Technology Communications Division will establish schedule and project milestones within 30 days of the contract signing. Motorola will be responsible for providing documentation of milestone completion to the MPSCS, Dept. of Information Technology Communications Division. The MPSCS, Dept. of Information Technology Communications Division will be responsible for signature on milestone completion once verification of work has been accepted.

A Milestone will be considered accepted when (a) the task has been successfully completed and documented; and (b) inspection has been completed by Motorola and the Project Supervisor for MPSCS, Dept. of Information Technology Communications Division.

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM
SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.	Description	Unit Price
OPTIONAL SUBSCRIBER UNITS				
MOBILE RADIOS - ASTRO SPECTRA				
All SPECTRA Mobile Radios include: Enhanced Smartnet Operation Trunked ID Display 10 Watt Audio 3 dB gain antenna Multi-Zone Operation ASTRO Project 25 CAI Mobile Subscriber Software Feature License Administrative Charges Shipping charges				
1	1	T99DX129W	Astro Spectra W3	$3,464.00
2	1	T99DX129W/G625	Astro Spectra W3 with DES -OFB Encryption	$3,907.00
3	1	T99DX130W	Astro Spectra W4 - Dash Mount	$2,679.00
4	1	T99DX130W/G625	Astro Spectra W4 - Dash Mount with DES -OFB Encryption	$3,122.00
5	1	T99DX130W/W496	Astro Spectra W4 - Remote Mount	$2,835.00
6	1	T99DX130W/W496/G625	Astro Spectra W4 - Remote Mount with DES -OFB Encryption	$3,278.00
7	1	T99DX131W	Astro Spectra W5 - Dash Mount	$2,679.00
8	1	T99DX131W/G625	Astro Spectra W5 - Dash Mount with DES -OFB Encryption	$3,122.00

9	1	T99DX131W/W496	Astro Spectra W5 - Remote Mount	$2,835.00
10	1	T99DX131W/W496/G625	Astro Spectra W5 - Remote Mount with DES -OFB Encryption	$3,278.00
11	1	T99DX132W	Astro Spectra W7 - Dash Mount	$2,943.00
12	1	T99DX132W/G625	Astro Spectra W7 - Dash Mount with DES -OFB Encryption	$3,386.00
13	1	T99DX132W/W496	Astro Spectra W7 - Remote Mount	$3,100.00
14	1	T99DX132W/W496/G625	Astro Spectra W7 - Remote Mount with DES -OFB Encryption	$3,543.00
15	1	T99DX133W	Astro Spectra W9 - Remote Mount	$3,543.00
16	1	T99DX133W/G625	Astro Spectra W9 - Remote Mount with DES -OFB Encryption	$3,907.00
17	1	T99DX177W	Astro Spectra W5 Motorcycle Radio	$3,456.00
	ASTRO SPECTRA Mobile Radio Options			
18	1	W269	Siren PA Module	$377.00
19	1	W665	Control Station Operation (compatible with dash mount radios only)	$322.00
20	1	G625	DES-XL Operation	$443.00
21	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,780.00

MOBILE RADIOS - ASTRO SPECTRA PLUS

All SPECTRA Mobile Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Mobile Subscriber Software Feature License
- ASTRO IV&D Capable
- Administrative Charges
- Shipping charges

22	1	D04UJH9SW3N	Astro Spectra Plus W3	$3,761.00
23	1	D04UJH9SW3N/W625	Astro Spectra Plus W3 with DES -OFB Encryption	$4,204.00
24	1	D04UJF9SW4N	Astro Spectra Plus W4 - Dash Mount	$2,979.00
25	1	D04UJF9SW4N/W625	Astro Spectra Plus W4 - Dash Mount with DES -OFB Encryption	$3,422.00
26	1	D04UJF9SW4N/W496	Astro Spectra Plus W4 - Remote Mount	$3,145.00
27	1	D04UJF9SW4N/W496/W625	Astro Spectra Plus W4 - Remote Mount with DES -OFB Encryption	$3,588.00
28	1	D04UJF9SW5N	Astro Spectra Plus W5 - Dash Mount	$2,979.00
29	1	D04UJF9SW5N/W625	Astro Spectra Plus W5 - Dash Mount with DES -OFB Encryption	$3,422.00
30	1	D04UJF9SW5N/W496	Astro Spectra Plus W5 - Remote Mount	$3,145.00
31	1	D04UJF9SW5N/W496/W625	Astro Spectra Plus W5 - Remote Mount with DES -OFB Encryption	$3,588.00
32	1	D04UJH9SW7N	Astro Spectra Plus W7 - Dash Mount	$3,240.00
33	1	D04UJH9SW7N/W625	Astro Spectra Plus W7 - Dash Mount with DES -OFB Encryption	$3,683.00

34	1	D04UJH9SW7N/W496	Astro Spectra Plus W7 - Remote Mount	$3,390.00
35	1	D04UJH9SW7N/W496/W625	Astro Spectra Plus W7 - Remote Mount with DES -OFB Encryption	$3,833.00
36	1	D04UJH9SW9N	Astro Spectra Plus W9 - Remote Mount	$3,761.00
37	1	D04UJH9SW9N/W625	Astro Spectra Plus W9 - Remote Mount with DES -OFB Encryption	$4,204.00
38	1	M04UGF9SW5N	Astro Spectra Plus W5 Motorcycle Radio	$4,209.00

ASTRO SPECTRA Plus Mobile Radio Options

39	1	W269	Siren PA Module	$376.00
40	1	W665	Control Station Operation (compatible with dash mount radios only)	$322.00
41	1	G625	DES-XL Operation	$443.00
42	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,780.00

MOBILE RADIOS - XTL5000

All XTL5000 Mobile Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI

		Mobile Subscriber Software Feature License ASTRO IV&D Capable Administrative Charges Shipping charges		
1	1	M20URS9PW1N/G72	XTL5000 - W3	$3,800.00
2	1	M20URS9PW1N/G72E	XTL5000 - W3 with DES -OFB Encryption	$4,254.00
3	1	M20URS9PW1N/G73	XTL5000 - W4 - Dash Mount	$3,306.00
4	1	M20URS9PW1N/G73E	XTL5000 - W4 - Dash Mount with DES - OFB Encryption	$3,760.00
5	1	M20URS9PW1N/G73/G67	XTL5000 - W4 - Remote Mount	$3,430.00
6	1	M20URS9PW1N/G73E/G67	XTL5000 - W4 - Remote Mount with DES -OFB Encryption	$3,884.00
7	1	M20URS9PW1N/G79	XTL5000 - W5 - Dash Mount	$3,306.00
8	1	M20URS9PW1N/G79E	XTL5000 - W5 - Dash Mount with DES - OFB Encryption	$3,760.00
9	1	M20URS9PW1N/G79/G67	XTL5000 - W5 - Remote Mount	$3,430.00
10	1	M20URS9PW1N/G79E/G67	XTL5000 - W5 - Remote Mount with DES -OFB Encryption	$3,884.00
11	1	M20URS9PW1N/G80	XTL5000 - W7 - Dash Mount	$3,420.00
12	1	M20URS9PW1N/G80E	XTL5000 - W7 - Dash Mount with DES - OFB Encryption	$3,874.00
13	1	M20URS9PW1N/G80/G67	XTL5000 - W7 - Remote Mount	$3,543.00
14	1	M20URS9PW1N/G80E/G67	XTL5000 - W7 - Remote Mount with DES -OFB Encryption	$3,887.00
15	1	M20URS9PW1N/G81	XTL5000 - W9 - Remote Mount	$3,800.00

16	1	M20URS9PW1N/G81E	XTL5000 - W9 - Remote Mount with DES -OFB Encryption	$4,254.00
17	1	M20URS9PW1N/G83	XTL5000 - W5 Motorcycle Radio	$4,130.00
	XTL5000 Mobile Radio Options			
18	1	W269	Siren PA Module	$319.00
19	1	W665	Control Station Operation (compatible with dash mount radios only)	$132.00
20	1	G625	DES-XL Operation	$389.00
21	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,780.00

CONTROL STATIONS - ASTRO SPECTRA

All SPECTRA Control Station Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Mobile Subscriber Software Feature License
- Administrative Charges
- Shipping charges

43	1	T99DX132W/W665	Astro Spectra W7 - Control Station	$3,736.00
44	1	T99DX132W/W665/G625	Astro Spectra W7 - Control Station with DES -OFB Encryption	$4,179.00

45	1	L99DX259L/L146	Astro Spectra W7 - Consolette Control Station with tone remote control	$5,722.00
46	1	L99DX259L/L146/Q625	Astro Spectra W7 - Consolette with TRC & DES -OFB Encryption	$6,165.00
47	1	L99DX254L	Astro Spectra W9 - Consolette Control Station with digital remote control	$6,002.00
48	1	L99DX254L/Q625	Astro Spectra W9 - Consolette with DRC & DES -OFB Encryption	$6,445.00
	ASTRO SPECTRA Control Station Radio Options			
49	1	L3030	MC3000 Digital Remote Control	$865.00
50	1	L3208	Junction box for MC3000 (1 required for up to 6 MC3000)	$677.00
50	1	L3213	MC1000 Desktop Tone Remote	$465.00
51	1	G625	DES-XL Operation	$443.00
52	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,780.00

CONTROL STATIONS - ASTRO SPECTRA PLUS

All SPECTRA PLUS Control Station Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- ASTRO IV&D Capable
- Mobile Subscriber Software Feature License
- Administrative Charges
- Shipping charges

39	1	D04UJH9SW7N/W665	Astro Spectra Plus W7 - Control Station	$3,635.00

40	1	D04UJH9SW7N/W665/W625	Astro Spectra Plus W7 - Control Station with DES -OFB Encryption	$4,078.00

PORTABLE RADIOS - XTS3000

All XTS3000 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

41	1	HO9UCF9PW7N	Astro XTS3000 Portable Radio - Model II	$2,564.00
42	1	HO9UCF9PW7N/Q625	Astro XTS3000 Portable Radio - Model II with DES OFB Encryption	$3,007.00
43	1	HO9UCH9PW7N	Astro XTS3000 Portable Radio - Model III	$3,007.00
44	1	HO9UCH9PW7N/Q625	Astro XTS3000 Portable Radio - Model III with DES OFB Encryption	$3,450.00

ASTRO XTS3000 Portable Radio Options & Accessories

45	1	NMN6193	Remote Speaker Microphone	$63.00
46	1	NTN6124	Comport Integrated Microphone/Receiver	$321.00
47	1	NTN8381	Leather Swivel Carry Case	$24.00
48	1	NTN1177	Six Unit Multi-charger	$507.00
49	1	NTN1873	Single Unit Charger	$125.00
50	1	N2001	XTVA Vehicular Adapter with 3 dB gain antenna	$1,253.00

51	1	N2001/NLF1258	XTVA Vehicular Adapter with 15 watt amplifier and 3 dB gain ant.	$1,678.00
52	1	Q229	Handheld Control Head for XTVA	$312.00
53	1	Q625	DES-XL Operation	$443.00
54	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,780.00
55	1	NTN8923	High Capacity NiMH Battery	$84.00

PORTABLE RADIOS - XTS5000

All XTS5000 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- ASTRO IV&D Capability
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

56	1	H18UCF9PW6N	Astro XTS5000 Portable Radio - Model II	$3,073.00
57	1	H18UCF9PW6N/Q625	Astro XTS5000 Portable Radio - Model II with DES OFB Encryption	$3,516.00
58	1	H18UCH9PW7N	Astro XTS5000 Portable Radio - Model III	$3,277.00

59	1	H18UCH9PW7N/Q625	Astro XTS5000 Portable Radio - Model III with DES OFB Encryption	$3,720.00

ASTRO XTS5000 Portable Radio Options & Accessories

60	1	NMN6193	Remote Speaker Microphone	$63.00
61	1	NTN6124	Comport Integrated Microphone/Receiver	$322.00
62	1	NTN8381	Leather Swivel Carry Case	$24.00
63	1	NTN1177	Six Unit Multi-charger	$507.00
64	1	NTN1873	Single Unit Charger	$125.00
65	1	N2001	XTVA Vehicular Adapter with 3 dB gain antenna	$1,253.00
66	1	N2001/NLF1258	XTVA Vehicular Adapter with 15 watt amplifier and 3 dB gain antenna	$1,678.00
67	1	Q229	Handheld Control Head for XTVA	$312.00
68	1	Q625	DES-XL Operation	$443.00
69	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,780.00
70	1	NTN8923	High Capacity NiMH Battery	$84.00

PORTABLE RADIOS - XTS2500

All XTS2500 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI

		Portable Subscriber Software Feature License Administrative Charges Shipping charges		
71	1	H46UCC9PW5N	Astro XTS2500 Portable Radio - Model I	$1,706.00
72	1	H46UCF9PW6N	Astro XTS2500 Portable Radio - Model II	$2,096.00
73	1	H46UCH9PW7N	Astro XTS2500 Portable Radio - Model III	$2,356.00
		ASTRO XTS2500 Portable Radio Options & Accessories		
74	1	NMN6193	Remote Speaker Microphone	$62.00
75	1	NTN6124	Comport Integrated Microphone/Receiver	$322.00
76	1	NNTN4116	Leather Swivel Carry Case	$45.00
77	1	NTN1177	Six Unit Multi-charger	$507.00
78	1	NTN1873	Single Unit Charger	$125.00
79	1	NTN9858	High Capacity NiMH Battery	$106.00

Note: Prices above are valid until March 19, 2005, and are subject to an annual adjustment based on the Detroit CPI thereafter.

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM
SUPPLEMENTAL PRICE SHEET - Local Units of Government

Item	Qty	Model/Part No.	Description	Unit Price
OPTIONAL SUBSCRIBER UNITS				
MOBILE RADIOS - ASTRO SPECTRA				
All SPECTRA Mobile Radios include: Enhanced Smartnet Operation Trunked ID Display 10 Watt Audio 3 dB gain antenna Multi-Zone Operation ASTRO Project 25 CAI Mobile Subscriber Software Feature License Administrative Charges Shipping charges				
1	1	T99DX129W	Astro Spectra W3	$3,927.00
2	1	T99DX129W/G625	Astro Spectra W3 with DES -OFB Encryption	$4,381.00
3	1	T99DX130W	Astro Spectra W4 - Dash Mount	$3,284.00
4	1	T99DX130W/G625	Astro Spectra W4 - Dash Mount with DES -OFB Encryption	$3,783.00
5	1	T99DX130W/W496	Astro Spectra W4 - Remote Mount	$3,444.00
6	1	T99DX130W/W496/G625	Astro Spectra W4 - Remote Mount with DES -OFB Encryption	$3,898.00
7	1	T99DX131W	Astro Spectra W5 - Dash Mount	$3,284.00
8	1	T99DX131W/G625	Astro Spectra W5 - Dash Mount with DES -OFB Encryption	$3,783.00

9	1	T99DX131W/W496	Astro Spectra W5 - Remote Mount	$3,444.00
10	1	T99DX131W/W496/G625	Astro Spectra W5 - Remote Mount with DES -OFB Encryption	$3,898.00
11	1	T99DX132W	Astro Spectra W7 - Dash Mount	$3,545.00
12	1	T99DX132W/G625	Astro Spectra W7 - Dash Mount with DES -OFB Encryption	$3,999.00
13	1	T99DX132W/W496	Astro Spectra W7 - Remote Mount	$3,704.00
14	1	T99DX132W/W496/G625	Astro Spectra W7 - Remote Mount with DES -OFB Encryption	$4,158.00
15	1	T99DX133W	Astro Spectra W9 - Remote Mount	$3,917.00
16	1	T99DX133W/G625	Astro Spectra W9 - Remote Mount with DES -OFB Encryption	$4,371.00
17	1	T99DX177W	Astro Spectra W5 Motorcycle Radio	$4,186.00
	ASTRO SPECTRA Mobile Radio Options			
18	1	W269	Siren PA Module	$386.00
19	1	W665	Control Station Operation (compatible with dash mount radios only)	$329.00
20	1	G625	DES-XL Operation	$454.00
21	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00

MOBILE RADIOS - ASTRO SPECTRA PLUS

All SPECTRA Mobile Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Mobile Subscriber Software Feature License
- ASTRO IV&D Capable
- Administrative Charges
- Shipping charges

22	1	D04UJH9SW3N	Astro Spectra Plus W3	$4,561.00
23	1	D04UJH9SW3N/W625	Astro Spectra Plus W3 with DES -OFB Encryption	$5,015.00
24	1	D04UJF9SW4N	Astro Spectra Plus W4 - Dash Mount	$3,898.00
25	1	D04UJF9SW4N/W625	Astro Spectra Plus W4 - Dash Mount with DES -OFB Encryption	$4,352.00
26	1	D04UJF9SW4N/W496	Astro Spectra Plus W4 - Remote Mount	$4,062.00
27	1	D04UJF9SW4N/W496/W625	Astro Spectra Plus W4 - Remote Mount with DES -OFB Encryption	$4,516.00
28	1	D04UJF9SW5N	Astro Spectra Plus W5 - Dash Mount	$3,898.00
29	1	D04UJF9SW5N/W625	Astro Spectra Plus W5 - Dash Mount with DES -OFB Encryption	$4,352.00
30	1	D04UJF9SW5N/W496	Astro Spectra Plus W5 - Remote Mount	$4,062.00
31	1	D04UJF9SW5N/W496/W625	Astro Spectra Plus W5 - Remote Mount with DES -OFB Encryption	$4,516.00
32	1	D04UJH9SW7N	Astro Spectra Plus W7 - Dash Mount	$4,165.00
33	1	D04UJH9SW7N/W625	Astro Spectra Plus W7 - Dash Mount with DES -OFB Encryption	$4,619.00

34	1	D04UJH9SW7N/W496	Astro Spectra Plus W7 - Remote Mount	$4,332.00
35	1	D04UJH9SW7N/W496/W625	Astro Spectra Plus W7 - Remote Mount with DES -OFB Encryption	$4,786.00
36	1	D04UJH9SW9N	Astro Spectra Plus W9 - Remote Mount	$4,561.00
37	1	D04UJH9SW9N/W625	Astro Spectra Plus W9 - Remote Mount with DES -OFB Encryption	$5,015.00
38	1	M04UGF9SW5N	Astro Spectra Plus W5 Motorcycle Radio	$5,035.00
	ASTRO SPECTRA Plus Mobile Radio Options			
39	1	W269	Siren PA Module	$386.00
40	1	W665	Control Station Operation (compatible with dash mount radios only)	$329.00
41	1	G625	DES-XL Operation	$454.00
42	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00

MOBILE RADIOS - XTL5000

All XTL5000 Mobile Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation

		ASTRO Project 25 CAI Mobile Subscriber Software Feature License ASTRO IV&D Capable Administrative Charges Shipping charges		
1	1	M20URS9PW1N/G72	XTL5000 - W3	$3,959.00
2	1	M20URS9PW1N/G72E	XTL5000 - W3 with DES -OFB Encryption	$4,413.00
3	1	M20URS9PW1N/G73	XTL5000 - W4 - Dash Mount	$3,444.00
4	1	M20URS9PW1N/G73E	XTL5000 - W4 - Dash Mount with DES - OFB Encryption	$3,898.00
5	1	M20URS9PW1N/G73/G67	XTL5000 - W4 - Remote Mount	$3,573.00
6	1	M20URS9PW1N/G73E/G67	XTL5000 - W4 - Remote Mount with DES -OFB Encryption	$4,027.00
7	1	M20URS9PW1N/G79	XTL5000 - W5 - Dash Mount	$3,444.00
8	1	M20URS9PW1N/G79E	XTL5000 - W5 - Dash Mount with DES - OFB Encryption	$3,898.00
9	1	M20URS9PW1N/G79/G67	XTL5000 - W5 - Remote Mount	$3,573.00
10	1	M20URS9PW1N/G79E/G67	XTL5000 - W5 - Remote Mount with DES -OFB Encryption	$4,027.00
11	1	M20URS9PW1N/G80	XTL5000 - W7 - Dash Mount	$3,562.00
12	1	M20URS9PW1N/G80E	XTL5000 - W7 - Dash Mount with DES - OFB Encryption	$4,016.00
13	1	M20URS9PW1N/G80/G67	XTL5000 - W7 - Remote Mount	$3,691.00
14	1	M20URS9PW1N/G80E/G67	XTL5000 - W7 - Remote Mount with DES -OFB Encryption	$4,145.00
15	1	M20URS9PW1N/G81	XTL5000 - W9 - Remote Mount	$3,959.00

16	1	M20URS9PW1N/G81E	XTL5000 - W9 - Remote Mount with DES -OFB Encryption	$4,413.00
17	1	M20URS9PW1N/G83	XTL5000 - W5 Motorcycle Radio	$4,302.00
	XTL5000 Mobile Radio Options			
18	1	W269	Siren PA Module	$478.00
19	1	W665	Control Station Operation (compatible with dash mount radios only)	$329.00
20	1	G625	DES-XL Operation	$569.00
21	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00

CONTROL STATIONS - ASTRO SPECTRA

All SPECTRA Control Station Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Mobile Subscriber Software Feature License
- Administrative Charges
- Shipping charges

43	1	T99DX132W/W665	Astro Spectra W7 - Control Station	$4,076.00

44	1	T99DX132W/W665/G625	Astro Spectra W7 - Control Station with DES -OFB Encryption	$4,530.00
45	1	L99DX259L/L146	Astro Spectra W7 - Consolette Control Station with tone remote cont.	$6,590.00
46	1	L99DX259L/L146/Q625	Astro Spectra W7 - Consolette with TRC & DES -OFB Encryption	$7,044.00
47	1	L99DX254L	Astro Spectra W9 - Consolette Control Station with digital remote	$6,531.00
48	1	L99DX254L/Q625	Astro Spectra W9 - Consolette with DRC & DES -OFB Encryption	$6,985.00
	ASTRO SPECTRA Control Station Radio Options			
49	1	L3223	MC3000 Digital Remote Control	$886.00
50	1	L3208	Junction box for MC3000 (1 required for up to 6 MC3000)	$694.00
50	1	L3213	MC1000 Desktop Tone Remote	$476.00
51	1	G625	DES-XL Operation	$454.00
52	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00

CONTROL STATIONS - ASTRO SPECTRA PLUS

All SPECTRA PLUS Control Station Radios include:

- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- ASTRO IV&D Capable
- Mobile Subscriber Software Feature License
- Administrative Charges

Shipping charges

39	1	D04UJH9SW7N/W665	Astro Spectra Plus W7 - Control Station	$4,661.00
40	1	D04UJH9SW7N/W665/W625	Astro Spectra Plus W7 - Control Station with DES -OFB Encryption	$5,115.00

PORTABLE RADIOS - XTS3000

All XTS3000 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

41	1	HO9UCF9PW7N	Astro XTS3000 Portable Radio - Model II	$3,268.00
42	1	HO9UCF9PW7N/Q625	Astro XTS3000 Portable Radio - Model II with DES OFB Encryption	$3,722.00
43	1	HO9UCH9PW7N	Astro XTS3000 Portable Radio - Model III	$3,639.00
44	1	HO9UCH9PW7N/Q625	Astro XTS3000 Portable Radio - Model III with DES OFB Encryption	$4,093.00

ASTRO XTS3000 Portable Radio Options & Accessories

45	1	NMN6193	Remote Speaker Microphone	$65.00
46	1	NTN6124	Comport Integrated Microphone/Receiver	$330.00
47	1	NTN8381	Leather Swivel Carry Case	$25.00
48	1	NTN1177	Six Unit Multi-charger	$520.00

49	1	NTN1873	Single Unit Charger	$128.00
50	1	N2001	XTVA Vehicular Adapter with 3 dB gain antenna	$1,283.00
51	1	N2001/NLF1258	XTVA Vehicular Adapter with 15 watt amplifier and 3 dB gain ant.	$1,719.00
52	1	Q229	Handheld Control Head for XTVA	$320.00
53	1	Q625	DES-XL Operation	$454.00
54	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00
55	1	NTN8923	High Capacity NiMH Battery	$86.00

PORTABLE RADIOS - XTS5000

All XTS5000 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- ASTRO IV&D Capability
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

56	1	H18UCF9PW6N	Astro XTS5000 Portable Radio - Model II	$3,268.00
57	1	H18UCF9PW6N/Q625	Astro XTS5000 Portable Radio - Model II with DES OFB Encryption	$3,722.00
58	1	H18UCH9PW7N	Astro XTS5000 Portable Radio - Model III	$3,639.00

59	1	H18UCH9PW7N/Q625	Astro XTS5000 Portable Radio - Model III with DES OFB Encryption	$4,093.00
	ASTRO XTS5000 Portable Radio Options & Accessories			
60	1	NMN6193	Remote Speaker Microphone	$65.00
61	1	NTN6124	Comport Integrated Microphone/Receiver	$330.00
62	1	NTN8381	Leather Swivel Carry Case	$25.00
63	1	NTN1177	Six Unit Multi-charger	$520.00
64	1	NTN1873	Single Unit Charger	$128.00
65	1	N2001	XTVA Vehicular Adapter with 3 dB gain antenna	$1,283.00
66	1	N2001/NLF1258	XTVA Vehicular Adapter with 15 watt amplifier and 3 dB gain antenna	$1,719.00
67	1	Q229	Handheld Control Head for XTVA	$320.00
68	1	Q625	DES-XL Operation	$454.00
69	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00
70	1	NTN8923	High Capacity NiMH Battery	$86.00

PORTABLE RADIOS - XTS2500

All XTS2500 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Portable Subscriber Software Feature License
- Administrative Charges

		Shipping charges		
71	1	H46UCC9PW5N	Astro XTS2500 Portable Radio - Model I	$1,920.00
72	1	H46UCF9PW6N	Astro XTS2500 Portable Radio - Model II	$2,330.00
73	1	H46UCH9PW7N	Astro XTS2500 Portable Radio - Model III	$2,509.00
	ASTRO XTS2500 Portable Radio Options & Accessories			
74	1	NMN6193	Remote Speaker Microphone	$65.00
75	1	NTN6124	Comport Integrated Microphone/Receiver	$330.00
76	1	NNTN4116	Leather Swivel Carry Case	$46.00
77	1	NTN1177	Six Unit Multi-charger	$520.00
78	1	NTN1873	Single Unit Charger	$128.00
79	1	NTN9858	High Capacity NiMH Battery	$112.00

Note: Prices above are valid until March 19, 2005, and are subject to an annual adjustment based on the Detroit CPI thereafter.

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

SECTION	CATEGORY	MODEL DESCRIPTION	PRODUCT CODES (APC)	DISC. %
1.0	**MOBILE RADIOS**	ASTRO SPECTRA & ACCS	320, 374,761,	20%
			276,412	
		MCS2000 CONV/TRD ALL	623, 722	20%
		LCS2000	760, 619,807,821	20%
		SPECTRA MOTORCYCLE	624,581,270	20.00 %
		VEH RPTR SYS (VRS)	287	15%
		SECURE PORTABLE		
		REPEATER	570	5%
		MARATRAC	776	20%
		BASE INTERFACE	351	15%
		GTX	867	30%
		RADIUS ALL	ALL APC'S	20%
		CDM SERIES	103, 554, 577, 109,	30%
		VEHICULAR REPEATER	287	15%
1.1	**MOBILE ACCESSORY.**	ANTENNAS	644,555,455	15%
2.0	**FIXED STATIONS**	SIMULCAST CONTROLLER	335	15%
		MTR2000	512	20%
		QUANTAR,QUANTRO	537,301,509,409	20%
			448, 482	20%
		SPECTRA CONSOLETTE	374 761	20%
		RADIUS ALL	ALL APC'S	20%
2.1	**MICROWAVE**	BATTERY CHARGERS	207	5%
2.2	**FIXED STATION**	ALL ITEMS	207,274,201,351,740	10%
	ACCESSORIES		273,374,761	20%
2.3	**FIXED STATION**	MC Series	124	16%
	CONTROLS	COMMAND PLUS	740,129	16%
		COMMAND STAR	124	16%
		CENTRACOM GOLD	404,202 228,322	21%
		CONTROL MODULES	228,244	21%
		FLASHPORT	729	0%

		FURNITURE	202,229,708	10%
		CRT CONSOLE	708	5%
		911 TELEPHONE PRODUCTS	118	10%
		DICTAPHONE	229	5%
		MC3000 Digital	124	16%
2.5	**ANTENNA SYSTEMS**	ALL ITEMS	207,291,229	10%
2.7	**RECEIVERS**	MINITOR IV	183, 839	10%
		SPECTRA TAC	273	16%
		QUANTAR RECEIVER	743,509	15%
		ASTRO TAC RECEIVER	743, 360, 225, 677,	15%
		MTR2000 RECEIVER	512	15%
3.0	**PORTABLE RADIOS**	ASTRO XTS3000	620,408,505,476	20%
		ASTRO XTS5000	721	20%
		ASTRO XTS2500	205	20%
		HT1000	402,476	30%
		JT1000	402,476	30%
		MT2000	355	30%
		MTX	511	25%
		MTS2000	432,466,476,129	20%
		LTS2000	678,795	20%
		MT1000	546	16%
		ASTRO VEH ADAPTER	465	15%
		HT750 & HT1250	672,749	30%
		RADIUS ALL	ALL APC'S	20%
4.0	**PAGERS**	ALL PAGERS		10%
4.1	**PAGING ENCODERS**	ZETRON 640,2100,2200	226	15%
5.0	**SECURENET**	COMPARATOR	424	20%
		VOICE MODEM KEY MGMT. CONTROLLER	643 137	16% 15%
		CONSOLE INTERFACE	424	20%
		KVL3000	201,462,414,454	16%
		ASTROTAC	525	20%

		ASTRO DIU	524	20%
6.2	**TRUNKED RADIO**	SMARTNET SYSTEMS	277	15%
		RF-ATA	786	15%
		SMARTNET	277	15%
		SMARTNET II	131	15%
		SIMS II, SIP, SYS. WATCH	647	15%
		LAS	747	15%
		PROGRAM KEY	647	15%
		SMARTZONE	280,281	15%
		FNX 2000	495	15%
7.0	**FLASHPORT**	SOFTWARE UPGRADES	430,823,729,195	0%
11.0	**DATA SYSTEMS**	WORKSTATION 520 & 800	736	20%
		WORKSTATION 300 & 350	450	10%
		Mobile Laptop 800	343	20%
		PRM660, VRM660	855	10%
		VRM500, 650, & 850	503,508, 554,855	12%
		RNC3000	381, 403	12%
		QUANTAR	509,680	12%
		MAGIC PIPE Software	381	0%
		DATA INFRASTRUCTURE	403	5%
		Lund MW520 Mount	291	10%
		Mobile Computing Accessories	170	10%
13.0	**FIXED & MOBILE DATA**	MOSCAD, MCP	214	10%
		INTRAC	275,403,683,469	15%
14.0	**INTEGRATED SOLUTIONS**	SCA	ALL APCS	5%
		TX APPLICATION	232	0%
		PRINTRAK	333, 611	0%
		SUNCOAST	842	0%
		POWERCOM	981	0%
15.0	**SERVICE PRODUCTS**	INFRAS BOARD REPAIR	290	10%
		INFORMATION SERVICES	768	10%
		RADIO SUPPORT CENTER	964A	10%
		FIELD RESPONSE SERVICES	984	10%

16.0	**PARTS & ACCESSORIES**	ALL	ALL	15%

NOTES:

1) DISCOUNTS APPLY TO ALL EQUIPMENT OPTIONS THAT ARE COVERED BY THE SAME PRODUCT DOES (APC NUMBER). OPTIONS THAT EXTEND EQUIPMENT WARRANTY, SUCH AS OPTION NUMBER R150 AND R209 ARE NOT DISCOUNTED. THESE ARE CLEARLY IDENTIFIED AS "EXTENDED WARRANTY" OR "EXTENDED PERFORMANCE AGREEMENT."

2) ANY "DROP SHIP" ITEM NOT OTHERWISE IDENTIFIED BY A PRODUCT CODE (APC) IS DISCOUNTED AT 10%.

3) ALL ACCESSORIES ORDERED THROUGH MOTOROLA PARTS AND AFTER MARKET ACCESSORIES DIVISION IS 15% DISCOUNT

4) VALUE-ADDED SERVICES INCLUDED WITH THIS CONTRACT ARE:

A) ON-SITE HELP WITH SYSTEM DESIGN AND ENGINEERING BEFORE THE PURCHASE

B) ASSISTANCE WITH ANALYSES OF AGENCY OPERATIONS, SPECIFIC TO COMMUNICATIONS, TO IDENTIFY POTENTIAL IMPROVEMENTS IN OPERATIONAL EFFICIENCY.

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Mobile Data Pilot

This contract revision identifies the equipment and services included in the mobile data pilot that is being implemented at MPSCS tower sites.

Purpose:
Provide State of Michigan with an 800MHz Conventional Project 25 Data System and Wireless Applications

Scope:

1. Install, optimize and test the following Fixed End Equipment:
   4 - 800MHz Conventional Stations
   1 - Message Switch
   1 - WNG Gateway
   1 - RNC Controller

2. Provide 15 Spectra Radios and 9 Data Devices

3. Provide Messaging, Alarming, Video Snap Shot and GPS Applications

Cost:
Change Order Impact: $0.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM
SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.	Description	Unit Price	2003 price increase rollback	Additi price reduct
OPTIONAL SUBSCRIBER UNITS						
MOBILE RADIOS - ASTRO SPECTRA						
All SPECTRA Mobile Radios include: Enhanced Smartnet Operation Trunked ID Display 10 Watt Audio 3 dB gain antenna Multi-Zone Operation ASTRO Project 25 CAI Mobile Subscriber Software Feature License Administrative Charges Shipping charges						
1	1	T99DX129W	Astro Spectra W3	$3,543.00	$3,464.00	
2	1	T99DX129W/G625	Astro Spectra W3 with DES -OFB Encryption	$3,997.00	$3,907.00	
3	1	T99DX130W	Astro Spectra W4 - Dash Mount	$2,739.00	$2,679.00	
4	1	T99DX130W/G625	Astro Spectra W4 - Dash Mount with DES -OFB Encryption	$3,193.00	$3,122.00	

5	1	T99DX130W/W496	Astro Spectra W4 - Remote Mount	$2,899.00	$2,835.00
6	1	T99DX130W/W496/G625	Astro Spectra W4 - Remote Mount with DES -OFB Encryption	$3,353.00	$3,278.00
7	1	T99DX131W	Astro Spectra W5 - Dash Mount	$2,739.00	$2,679.00
8	1	T99DX131W/G625	Astro Spectra W5 - Dash Mount with DES -OFB Encryption	$3,193.00	$3,122.00
9	1	T99DX131W/W496	Astro Spectra W5 - Remote Mount	$2,899.00	$2,835.00
10	1	T99DX131W/W496/G625	Astro Spectra W5 - Remote Mount with DES -OFB Encryption	$3,353.00	$3,278.00
11	1	T99DX132W	Astro Spectra W7 - Dash Mount	$3,009.00	$2,943.00
12	1	T99DX132W/G625	Astro Spectra W7 - Dash Mount with DES -OFB Encryption	$3,463.00	$3,386.00
13	1	T99DX132W/W496	Astro Spectra W7 - Remote Mount	$3,170.00	$3,100.00
14	1	T99DX132W/W496/G625	Astro Spectra W7 - Remote Mount with DES -OFB Encryption	$3,624.00	$3,543.00
15	1	T99DX133W	Astro Spectra W9 - Remote Mount	$3,543.00	$3,464.00
16	1	T99DX133W/G625	Astro Spectra W9 - Remote Mount with DES -OFB Encryption	$3,997.00	$3,907.00
17	1	T99DX177W	Astro Spectra W5 Motorcycle Radio	$3,541.00	$3,456.00

ASTRO SPECTRA Mobile Radio Options

18	1	W269	Siren PA Module	$386.00	$377.00	
19	1	W665	Control Station Operation (compatible with dash mount radios only)	$329.00	$322.00	
20	1	G625	DES-XL Operation	$454.00	$443.00	
21	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00	$2,780.00	

MOBILE RADIOS - ASTRO SPECTRA PLUS

All SPECTRA Mobile Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Mobile Subscriber Software Feature License
- ASTRO IV&D Capable
- Administrative Charges
- Shipping charges

22	1	D04UJH9SW3N	Astro Spectra Plus W3	$4,046.00	$3,951.00	$3

23	1	D04UJH9SW3N/W625	Astro Spectra Plus W3 with DES -OFB Encryption	$4,500.00	$4,394.00	$4
24	1	D04UJF9SW4N	Astro Spectra Plus W4 - Dash Mount	$3,218.00	$3,142.00	$2
25	1	D04UJF9SW4N/W625	Astro Spectra Plus W4 - Dash Mount with DES -OFB Encryption	$3,672.00	$3,585.00	$3
26	1	D04UJF9SW4N/W496	Astro Spectra Plus W4 - Remote Mount	$3,383.00	$3,303.00	$3
27	1	D04UJF9SW4N/W496/W625	Astro Spectra Plus W4 - Remote Mount with DES -OFB Encryption	$3,837.00	$3,746.00	$3
28	1	D04UJF9SW5N	Astro Spectra Plus W5 - Dash Mount	$3,218.00	$3,142.00	$2
29	1	D04UJF9SW5N/W625	Astro Spectra Plus W5 - Dash Mount with DES -OFB Encryption	$3,672.00	$3,585.00	$3
30	1	D04UJF9SW5N/W496	Astro Spectra Plus W5 - Remote Mount	$3,383.00	$3,303.00	$3
31	1	D04UJF9SW5N/W496/W625	Astro Spectra Plus W5 - Remote Mount with DES -OFB Encryption	$3,837.00	$3,746.00	$3
32	1	D04UJH9SW7N	Astro Spectra Plus W7 - Dash Mount	$3,497.00	$3,415.00	$3
33	1	D04UJH9SW7N/W625	Astro Spectra Plus W7 - Dash Mount with DES -OFB Encryption	$3,951.00	$3,858.00	$3
34	1	D04UJH9SW7N/W496	Astro Spectra Plus W7 - Remote Mount	$3,662.00	$3,576.00	$3
35	1	D04UJH9SW7N/W496/W625	Astro Spectra Plus W7 - Remote Mount with DES -OFB Encryption	$4,116.00	$4,019.00	$3
36	1	D04UJH9SW9N	Astro Spectra Plus W9 - Remote Mount	$4,046.00	$3,951.00	$3
37	1	D04UJH9SW9N/W625	Astro Spectra Plus W9 - Remote Mount with DES -OFB Encryption	$4,500.00	$4,394.00	$4
38	1	M04UGF9SW5N	Astro Spectra Plus W5 Motorcycle Radio	$4,514.00	$4,405.00	$4

ASTRO SPECTRA Plus Mobile Radio Options

39	1	W269	Siren PA Module	$386.00	$376.00
40	1	W665	Control Station Operation (compatible with dash mount radios only)	$329.00	$322.00
41	1	G625	DES-XL Operation	$454.00	$443.00
42	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00	$2,780.00

MOBILE RADIOS - XTL5000

All XTL5000 Mobile Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Mobile Subscriber Software Feature License
- ASTRO IV&D Capable

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

		Administrative Charges Shipping charges			
1	1	M20URS9PW1N/G72	XTL5000 - W3	$3,800.00	New Radio Model
2	1	M20URS9PW1N/G72E	XTL5000 - W3 with DES -OFB Encryption	$4,254.00	New Radio Model
3	1	M20URS9PW1N/G73	XTL5000 - W4 - Dash Mount	$3,306.00	New Radio Model
4	1	M20URS9PW1N/G73E	XTL5000 - W4 - Dash Mount with DES -OFB Encryption	$3,760.00	New Radio Model
5	1	M20URS9PW1N/G73/G67	XTL5000 - W4 - Remote Mount	$3,430.00	New Radio Model
6	1	M20URS9PW1N/G73E/G67	XTL5000 - W4 - Remote Mount with DES -OFB Encryption	$3,884.00	New Radio Model
7	1	M20URS9PW1N/G79	XTL5000 - W5 - Dash Mount	$3,306.00	New Radio Model
8	1	M20URS9PW1N/G79E	XTL5000 - W5 - Dash Mount with DES -OFB Encryption	$3,760.00	New Radio Model
9	1	M20URS9PW1N/G79/G67	XTL5000 - W5 - Remote Mount	$3,430.00	New Radio Model
10	1	M20URS9PW1N/G79E/G67	XTL5000 - W5 - Remote Mount with DES -OFB Encryption	$3,884.00	New Radio Model
11	1	M20URS9PW1N/G80	XTL5000 - W7 - Dash Mount	$3,420.00	New Radio Model
12	1	M20URS9PW1N/G80E	XTL5000 - W7 - Dash Mount with DES -OFB Encryption	$3,874.00	New Radio Model
13	1	M20URS9PW1N/G80/G67	XTL5000 - W7 - Remote Mount	$3,543.00	New Radio Model
14	1	M20URS9PW1N/G80E/G67	XTL5000 - W7 - Remote Mount with DES -OFB Encryption	$3,887.00	New Radio Model

15	1	M20URS9PW1N/G81	XTL5000 - W9 - Remote Mount	$3,800.00	New Radio Model
16	1	M20URS9PW1N/G81E	XTL5000 - W9 - Remote Mount with DES -OFB Encryption	$4,254.00	New Radio Model
17	1	M20URS9PW1N/G83	XTL5000 - W5 Motorcycle Radio	$4,130.00	New Radio Model
	XTL5000 Mobile Radio Options				
18	1	W269	Siren PA Module	$478.00	New Radio Model
19	1	W665	Control Station Operation (compatible with dash mount radios only)	$329.00	New Radio Model
20	1	G625	DES-XL Operation	$569.00	New Radio Model
21	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00	$2,780.00

CONTROL STATIONS - ASTRO SPECTRA

All SPECTRA Control Station Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio

		Multi-Zone Operation ASTRO Project 25 CAI Mobile Subscriber Software Feature License Administrative Charges Shipping charges				
43	1	T99DX132W/W665	Astro Spectra W7 - Control Station	$3,826.00	$3,736.00	
44	1	T99DX132W/W665/G625	Astro Spectra W7 - Control Station with DES -OFB Encryption	$4,280.00	$4,179.00	
45	1	L99DX259L/L146	Astro Spectra W7 - Consolette Control Station with tone remote control	$6,590.00	$6,435.00	$5
46	1	L99DX259L/L146/Q625	Astro Spectra W7 - Consolette with TRC & DES -OFB Encryption	$7,044.00	$6,878.00	$6
47	1	L99DX254L	Astro Spectra W9 - Consolette Control Station with digital remote control	$6,531.00	$6,377.00	$6
48	1	L99DX254L/Q625	Astro Spectra W9 - Consolette with DRC & DES -OFB Encryption	$6,985.00	$6,820.00	$6
	ASTRO SPECTRA Control Station Radio Options					
49	1	L3030	MC3000 Digital Remote Control	$886.00	$865.00	
50	1	L3208	Junction box for MC3000 (1 required for up to 6 MC3000)	$694.00	$677.00	
50	1	L3213	MC1000 Desktop Tone Remote	$476.00	$465.00	
51	1	G625	DES-XL Operation	$454.00	$443.00	

52	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00	$2,780.00	

CONTROL STATIONS - ASTRO SPECTRA PLUS

All SPECTRA PLUS Control Station Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- 10 Watt Audio
- 3 dB gain antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- ASTRO IV&D Capable
- Mobile Subscriber Software Feature License
- Administrative Charges
- Shipping charges

39	1	D04UJH9SW7N/W665	Astro Spectra Plus W7 - Control Station	$3,826.00	$3,735.00	$3
40	1	D04UJH9SW7N/W665/W625	Astro Spectra Plus W7 - Control Station with DES -OFB Encryption	$4,280.00	$4,178.00	$4

PORTABLE RADIOS - XTS3000

All XTS3000 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

41	1	HO9UCF9PW7N	Astro XTS3000 Portable Radio - Model II	$2,626.00	$2,564.00
42	1	HO9UCF9PW7N/Q625	Astro XTS3000 Portable Radio - Model II with DES OFB Encryption	$3,080.00	$3,007.00
43	1	HO9UCH9PW7N	Astro XTS3000 Portable Radio - Model III	$3,083.00	$3,007.00
44	1	HO9UCH9PW7N/Q625	Astro XTS3000 Portable Radio - Model III with DES OFB Encryption	$3,537.00	$3,450.00

ASTRO XTS3000 Portable Radio Options & Accessories

45	1	NMN6193	Remote Speaker Microphone	$65.00	$63.00
46	1	NTN6124	Comport Integrated Microphone/Receiver	$330.00	$321.00
47	1	NTN8381	Leather Swivel Carry Case	$25.00	$24.00

48	1	NTN1177	Six Unit Multi-charger	$520.00	$507.00
49	1	NTN1873	Single Unit Charger	$128.00	$125.00
50	1	N2001	XTVA Vehicular Adapter with 3 dB gain antenna	$1,284.00	$1,253.00
51	1	N2001/NLF1258	XTVA Vehicular Adapter with 15 watt amplifier and 3 dB gain ant.	$1,719.00	$1,678.00
52	1	Q229	Handheld Control Head for XTVA	$320.00	$312.00
53	1	Q625	DES-XL Operation	$454.00	$443.00
54	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00	$2,780.00
55	1	NTN8923	High Capacity NiMH Battery	$86.00	$84.00

PORTABLE RADIOS - XTS5000

All XTS5000 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- ASTRO IV&D Capability
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

56	1	H18UCF9PW6N	Astro XTS5000 Portable Radio - Model II	$2,626.00	$2,564.00	$3
57	1	H18UCF9PW6N/Q625	Astro XTS5000 Portable Radio - Model II with DES OFB Encryption	$3,080.00	$3,007.00	$3
58	1	H18UCH9PW7N	Astro XTS5000 Portable Radio - Model III	$3,038.00	$2,967.00	$3
59	1	H18UCH9PW7N/Q625	Astro XTS5000 Portable Radio - Model III with DES OFB Encryption	$3,492.00	$3,410.00	$3

ASTRO XTS5000 Portable Radio Options & Accessories

60	1	NMN6193	Remote Speaker Microphone	$65.00	$63.00
61	1	NTN6124	Comport Integrated Microphone/Receiver	$330.00	$322.00
62	1	NTN8381	Leather Swivel Carry Case	$25.00	$24.00
63	1	NTN1177	Six Unit Multi-charger	$520.00	$507.00
64	1	NTN1873	Single Unit Charger	$128.00	$125.00
65	1	N2001	XTVA Vehicular Adapter with 3 dB gain antenna	$1,284.00	$1,253.00
66	1	N2001/NLF1258	XTVA Vehicular Adapter with 15 watt amplifier and 3 dB gain antenna	$1,719.00	$1,678.00
67	1	Q229	Handheld Control Head for XTVA	$320.00	$312.00
68	1	Q625	DES-XL Operation	$454.00	$443.00
69	1	T6717	KVL3000 PLUS Encryption Keyloader	$2,847.00	$2,780.00
70	1	NTN8923	High Capacity NiMH Battery	$86.00	$84.00

PORTABLE RADIOS - XTS2500

All XTS2500 Portable Radios include:
- Enhanced Smartnet Operation
- Trunked ID Display
- Belt Clip
- Dipole Antenna
- Multi-Zone Operation
- ASTRO Project 25 CAI
- Portable Subscriber Software Feature License
- Administrative Charges
- Shipping charges

71	1	H46UCC9PW5N	Astro XTS2500 Portable Radio - Model I	$1,920.00	$1,875.00	$1
72	1	H46UCF9PW6N	Astro XTS2500 Portable Radio - Model II	$2,330.00	$2,275.00	$2
73	1	H46UCH9PW7N	Astro XTS2500 Portable Radio - Model III	$2,509.00	$2,450.00	$2

ASTRO XTS2500 Portable Radio Options & Accessories

74	1	NMN6193	Remote Speaker Microphone	$65.00	$63.00
75	1	NTN6124	Comport Integrated Microphone/Receiver	$330.00	$322.00
76	1	NNTN4116	Leather Swivel Carry Case	$46.00	$45.00
77	1	NTN1177	Six Unit Multi-charger	$520.00	$507.00
78	1	NTN1873	Single Unit Charger	$128.00	$125.00
79	1	NTN9858	High Capacity NiMH Battery	$109.00	$106.00

Note: Prices above are valid until March 19, 2005, and are subject to an annual adjustment based on the Detroit CPI thereafter

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

SECTION	CATEGORY	MODEL DESCRIPTION	PRODUCT CODES (APC)	DISC. %	2002 DISC	Disc Inc
1.0	**MOBILE RADIOS**	ASTRO SPECTRA & ACCS	320, 374,761,	20%	16%	

					276,412			
				MCS2000 CONV/TRD ALL	623, 722	20%	15%	
				LCS2000	760, 619,807,821	20%	15%	

			SPECTRA MOTORCYCLE		624,581,270		20.00%	16%
			VEH RPTR SYS (VRS)		287		15%	15%

				SECURE PORTABLE					
				REPEATER		570		5%	5%
				MARATRAC		776		20%	18%

			BASE INTERFACE		351		15%	15%	
			GTX		867		30%	15%	

			RADIUS ALL		ALL APC'S		20%	20%
			CDM SERIES		103, 554, 577, 109,		30%	20%
			VEHICULAR REPEATER		287		15%	15%

1.1		**MOBILE ACCESSORY.**		ANTENNAS		644,555,455	15%	15%

2.0		**FIXED STATIONS**		SIMULCAST CONTROLLER		335	15%	15%
				MTR2000		512	20%	15%

			QUANTAR,QUANTRO		537,301,509,409		20%	19%
					448, 482		20%	19%
			SPECTRA CONSOLETTE		374 761		20%	0%

				RADIUS ALL		ALL APC'S		20%	20%

2.1	**MICROWAVE**	BATTERY CHARGERS	207	5%	5%	
2.2	**FIXED STATION**	ALL ITEMS	207,274,201,351,740	10%	5%	

		ACCESSORIES			273,374,761		20%	5%

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

SECTION		**CATEGORY**		**MODEL DESCRIPTION**		**PRODUCT CODES (APC)**		**DISC. %**	**2002 DISC**	**Disc Inc**

2.3		**FIXED STATION**		MC Series		124	16%	16%
		CONTROLS		COMMAND PLUS		740,129	16%	16%

			COMMAND STAR		124		16%	16%
			CENTRACOM GOLD		404,202 228,322		21%	21%
			CONTROL MODULES		228,244		21%	21%

			FLASHPORT		729		0%	0%
			FURNITURE		202,229,708		10%	5%
			CRT CONSOLE		708		5%	5%

			911 TELEPHONE PRODUCTS		118		10%	10%
			DICTAPHONE		229		5%	5%

			MC3000 Digital		124		16%	16%
2.5		**ANTENNA SYSTEMS**	ALL ITEMS		207,291,229		10%	5%

2.7		**RECEIVERS**		MINITOR IV		183, 839	10%	10%

			SPECTRA TAC	273	16%	16%	
			QUANTAR RECEIVER	743,509	15%	15%	
			ASTRO TAC RECEIVER	743, 360, 225, 677,	15%	15%	

			MTR2000 RECEIVER		512		15%	15%
3.0		**PORTABLE RADIOS**	ASTRO XTS3000		620,408,505,476		20%	15%

			ASTRO XTS5000		721		20%	15%
			ASTRO XTS2500		205		20%	15%

			HT1000		402,476		30%	25%
			JT1000		402,476		30%	25%
			MT2000		355		30%	20%

			MTX		511		25%	15%	
			MTS2000		432,466,476,129		20%	15%	

			LTS2000		678,795		20%	15%
			MT1000		546		16%	16%
			ASTRO VEH ADAPTER		465		15%	15%

			HT750 & HT1250		672,749		30%	20%
			RADIUS ALL		ALL APC'S		20%	20%

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

SECTION	CATEGORY	MODEL DESCRIPTION	PRODUCT CODES (APC)	DISC. %	2002 DISC	Disc Inc
4.0	**PAGERS**	ALL PAGERS		10%	15%	

4.1		**PAGING ENCODERS**		ZETRON 640,2100,2200		226	15%	15%

5.0		**SECURENET**		COMPARATOR		424	20%	16%
				VOICE MODEM		643	16%	16%

			KEY MGMT. CONTROLLER		137		15%	15%
			CONSOLE INTERFACE		424		20%	16%
			KVL3000		201,462,414,454		16%	16%

			ASTROTAC		525		20%	16%
			ASTRO DIU		524		20%	16%

6.2		**TRUNKED RADIO**		SMARTNET SYSTEMS		277	15%	15%
				RF-ATA		786	15%	15%

				SMARTNET		277		15%	15%
				SMARTNET II		131		15%	15%
				SIMS II, SIP, SYS. WATCH		647		15%	15%

			LAS		747		15%	15%	
			PROGRAM KEY		647		15%	15%	

			SMARTZONE	280,281	15%	15%	
			FNX 2000	495	15%	15%	

7.0	**FLASHPORT**	SOFTWARE UPGRADES	430,823,729,195	0%	0%
11.0	**DATA SYSTEMS**	WORKSTATION 520 & 800	736	20%	15%

				WORKSTATION 300 & 350		450		10%	10%
				Mobile Laptop 800		343		20%	10%

			PRM660, VRM660		855		10%	10%
			VRM500, 650, & 850		503,508, 554,855		12%	10%
			RNC3000		381, 403		12%	5%

				QUANTAR		509,680		12%	5%
				MAGIC PIPE Software		381		0%	0%

			DATA INFRASTRUCTURE	403	5%	5%	
			Lund MW520 Mount	291	10%	10%	
			Mobile Computing Accessories	170	10%	10%	

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

SECTION	CATEGORY	MODEL DESCRIPTION	PRODUCT CODES (APC)	DISC. %	2002 DISC	Disc Inc
13.0	**FIXED & MOBILE DATA**	MOSCAD, MCP	214	10%	10%	

				INTRAC		275,403,683,469		15%	15%

14.0	**INTEGRATED SOLUTIONS**	SCA	ALL APCS	5%	0%	
		TX APPLICATION	232	0%	0%	
		PRINTRAK	333, 611	0%	0%	

			SUNCOAST		842		0%	0%	
			POWERCOM		981		0%	0%	

15.0		**SERVICE PRODUCTS**		INFRAS BOARD REPAIR		290	10%	0%
				INFORMATION SERVICES		768	10%	0%

			RADIO SUPPORT CENTER		964A		10%	0%
			FIELD RESPONSE SERVICES		984		10%	0%

16.0	**PARTS & ACCESSORIES**	ALL	ALL	15%	10%	

NOTES:

1) DISCOUNTS APPLY TO ALL EQUIPMENT OPTIONS THAT ARE COVERED BY

THE SAME PRODUCT DOES (APC NUMBER). OPTIONS THAT EXTEND

EQUIPMENT WARRANTY, SUCH AS OPTION NUMBER R150 AND R209 ARE

NOT DISCOUNTED. THESE ARE CLEARLY IDENTIFIED AS "EXTENDED

WARRANTY" OR "EXTENDED PERFORMANCE AGREEMENT."

2) ANY "DROP SHIP" ITEM NOT OTHERWISE IDENTIFIED BY A PRODUCT CODE

(APC) IS DISCOUNTED AT 10%.

3) ALL ACCESSORIES ORDERED THROUGH MOTOROLA PARTS

AND AFTER MARKET ACCESSORIES DIVISION IS 15% DISCOUNT

4) VALUE-ADDED SERVICES INCLUDED WITH THIS CONTRACT ARE:

A) ON-SITE HELP WITH SYSTEM DESIGN AND ENGINEERING BEFORE THE

PURCHASE

B) ASSISTANCE WITH ANALYSES OF AGENCY OPERATIONS, SPECIFIC

TO COMMUNICATIONS, TO IDENTIFY POTENTIAL IMPROVEMENTS IN

OPERATIONAL EFFICIENCY.

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

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Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **July 23, 2002**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 25
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452** **r.uslan@motorola.com**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached pricing corrections hereby replace those attached in CCN #24, (Motorola Revision 19) for XTS2500 radios II and III for both State and local users. All other terms, conditions, and specifications remain the same. This CCN corresponds to Motorola revision #21.

AUTHORITY/REASON:

Per vendor's request from Chuck Cusino in a letter dated 6/10/02 and agreement from agency, Tom Miller, in a letter dated 6/11/02 and in accordance with the modification clause of contract.

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $223,266,678.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **May 2, 2002**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 24
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached modifications are hereby incorporated into this contract. Modifications include pricing adjustments. This change includes no modifications in terms and conditions and corresponds to Motorola Revision #19.

AUTHORITY/REASON:

Per vendor's request from Gordy Webb and Chuck Cusino in a letter dated 4/3/02 and agreement from agency by Tom Miller dated 4/10/02 and in accordance with the modification clause.

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $223,266,678.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

SECTION	CATEGORY	MODEL DESCRIPTION	PRODUCT CODES (APC)	DISC. %
1.0	**MOBILE RADIOS**			
		SPECTRA 800 900	407, 270, 276, 581	
			566,604,270, 617	16%
		ASTRO SPECTRA & ACCS	320, 374,761,	15%
			276,412	
		MCS2000 CONV/TRD ALL	623, 722	15%
		LCS2000	760, 619,807,821	15%
		SPECTRA MOTORCYCLE		
		SMTNET SMTZONE	581, 270	16%
		SPECTRA MOTORCYCLE	624	30.50%
		VEH RPTR SYS (VRS)	287	15%
		SECURE PORTABLE		
		REPEATER	570	5%
		MARATRAC	776	18%
		MAXTRAC 100 & 300	428,189	29.50%
		BASE INTERFACE	351	15%
		GTX	867	15%
		RADIUS ALL	ALL APC'S	20%
		CDM SERIES	103, 554, 577, 109,	20%
			792	20%
1.1	**MOBILE ACCESSORY.**	ANTENNAS	644,555,455	15%
2.0	**FIXED STATIONS**	SIMULCAST CONTROLLER	335	15%
		MTR2000	512	15%
		QUANTAR,QUANTRO	537,301,509,409	19%
			448, 482	19%
		RADIUS ALL	ALL APC'S	20%
2.1	**MICROWAVE**	BATTERY CHARGERS	207	5%
2.2	**FIXED STATION**	ALL ITEMS	207,274,201,740	5%

	ACCESSORIES		351,708,273	
2.3	**FIXED STATION**	MC Series	124	16%
	CONTROLS	COMMAND PLUS	740,129	16%
		COMMAND STAR	124	16%
		CENTRACOM GOLD	404,202 228	21%
		CONTROL MODULES	228,244	21%
		FLASHPORT	729	0%
		FURNITURE	202,229,708	5%
		CRT CONSOLE	708	5%
		911 TELEPHONE PRODUCTS	118	10%
		DICTAPHONE	229	5%
		MC3000 Digital	124	16%
2.5	**ANTENNA SYSTEMS**	ALL ITEMS	207,291,229	5%
SECTION	**CATEGORY**	**MODEL DESCRIPTION**	**PRODUCT CODES (APC)**	**DISC. %**
2.7	**RECEIVERS**	MINITOR III	183	10%
		SPECTRA TAC	273	16%
		QUANTAR RECEIVER	743,509	15%
		ASTRO TAC RECEIVER	743, 360, 225, 677,	15%
		MTR2000 RECEIVER	512	15%
3.0	**PORTABLE RADIOS**	ASTRO XTS3000	620,408,505,476	15%
		ASTRO SABER	310,465,256	15%
		ASTRO XTS5000	721	15%
		ASTRO XTS2500	205	15%
		HT1000	402,476	25%
		JT1000	402,476	25%

		MT2000	355	20%
		MTX8000 & MTX9000	511	15%
		MTS2000	432,466,476,129	15%
		LTS2000	678,795	15%
		VISAR	720,414	18%
		MT1000	546	16%
		SABER	654,655,471,656	
			657,571,256	25%
		SABER ACCS	500,256	15%
		GTX	866	15%
		ASTRO VEH ADAPTER	465	15%
		HT750	672	20%
		HT1250	749	20%
		RADIUS ALL	ALL APC'S	20%
4.0	**PAGERS**			
		ADVISOR ELITE	183	15%
		ADVISOR GOLD	183	15%
		JAZZ	183	15%
		WORDLINE	183	15%
4.1	**PAGING ENCODERS**			
		ZETRON 640,2100,2200	226	15%
		METROPAGE	257	5%
		WORD SENDER	728	0%
		SEL CALL	706	5%
		DATANET	233	5%
5.0	**SECURENET**			
		COMPARATOR	424	16%
		VOICE MODEM	643	16%
		KEY MGMT. CONTROLLER	137	15%
		CONSOLE INTERFACE	424	16%
		KVL3000	201,462,414,454	16%

		ASTROTAC	525	16%
		ASTRO DIU	524	16%
SECTION	**CATEGORY**	**MODEL DESCRIPTION**	**PRODUCT CODES (APC)**	**DISC. %**
6.1	**PRIVACY PLUS**	SYSTEM WATCH	647,747	15%
		MBE	152	10%
6.2	**TRUNKED RADIO**	SMARTWORKS	277	15%
		STARTSITE	495	10%
		STARTSITE EXPRESS	495	10%
		RF-ATA	786	15%
		SMARTNET	277	15%
		SMARTNET II	131	15%
		SIMS II, SIP, SYS. WATCH	647	15%
		LAS	747	15%
		PROGRAM KEY	647	15%
		SMARTZONE	280,281	15%
		FNX 2000	495	15%
7.0	**FLASHPORT**	SOFTWARE UPGRADES	430,823,729,195	0%
11.0	**DATA SYSTEMS**	PLANTRONICS/ITRONICS	170	0%
		WORKSTATION 520	736	15%
		WORKSTATION 300 & 350	450	10%
		PRM660, VRM660	855	10%
		VRM500	503, 554,855	10%
		VRM650	508	10%
		RNC3000	381, 403	5%
		QUANTAR	509,680	5%
		MAGIC PIPE Software	381	0%
		DATA INFRASTRUCTURE	403	5%
		Lund MW520 Mount	291	10%

				SDI MW Mount		170		10%
				Panasonic CF27		170		10%
				Panasonic Accessories		170		10%
				Kodiak Mounting Hardware		170		10%
				LEDco Mounting Hardware		170		10%
				Pentax Pocket Jet		170		10%
				Scan Tech Magstripe		170		10%
				Mobile Computing Accessories		170		10%
12.0		**HEALTHCARE**		CENTRACOM EMS		405		15%
13.0		**FIXED & MOBILE DATA**		MOSCAD, MCP		214		10%
				INTRAC		275,403,683,469		15%
14.0		**RADIOWARE**		SCA		ALL APCS		0%
				TX APPLICATION		232		0%

NOTES:

1) DISCOUNTS APPLY TO ALL EQUIPMENT OPTIONS THAT ARE COVERED BY THE SAME PRODUCT DOES (APC NUMBER). OPTIONS THAT EXTEND EQUIPMENT WARRANTY, SUCH AS OPTION NUMBER R150 AND R209 ARE NOT DISCOUNTED. THESE ARE CLEARLY IDENTIFIED AS "EXTENDED WARRANTY" OR "EXTENDED PERFORMANCE AGREEMENT."

2) ANY "DROP SHIP" ITEM NOT OTHERWISE IDENTIFIED BY A PRODUCT CODE (APC) IS DISCOUNTED AT 5%.

3) FREE VALUE-ADDED SERVICES INCLUDED WITH THIS CONTRACT ARE:

A) ON-SITE HELP WITH SYSTEM DESIGN AND ENGINEERING BEFORE THE PURCHASE

B) NO CHARGE FOR ASSISTANCE AND PREPARATION OF RADIO LICENSE APPLICATIONS.

C) NO COST PROCESS ANALYSES OF AGENCY OPERATIONS, SPECIFIC TO COMMUNICATIONS, TO IDENTIFY POTENTIAL IMPROVEMENTS IN OPERATIONAL EFFICIENCY.

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **January 9, 2002**
ACQUISITION SERVICES
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 23 (Revised)
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **dba Motorola Communications & Electronics, Inc.** **85 Harristown Rd.** **Glen Rock, NJ 07452**	TELEPHONE **Rich Brancle** **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, as included with CCN #19 attachments, the vendor contact and mail code for this contract is hereby changed from mail code 022 to <u>mail code 004</u>:

Rich Brancle
85 Harristown Rd.
Glen Rock, NJ 07452
Phone: (210) 447-7564

AUTHORITY/REASON:

Per agency's request from Harry Warner dated 12/19/01 and vendor's approval by Chuck Cusino dated 12/19/01 and in accordance with the modification clause.

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $223,266,678.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **December 20, 2001**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 23
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Rich Brancle** **85 Harristown Rd.** **Glen Rock, NJ 07452**	TELEPHONE Rich Brancle **(201) 447-7564** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, as included with CCN #19 attachments, the Vendor Contract for this contract is hereby changed to:

Rich Brancle
85 Harristown Rd.
Glen Rock, NJ 07452
Phone: (210) 447-7564

AUTHORITY/REASON:

Per agency's request from Harry Warner dated 12/19/01 and vendor's approval by Chuck Cusino dated 12/19/01 and in accordance with the modification clause.

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $223,266,678.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **December 7, 2001**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 22 (Correction of CCN #20)
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Please note correction: Change Notice #20 for this contract should be reflecting a $14,100,000.00 INCREASE, rather than the $14,000,000.00 noted.

AUTHORITY/REASON:

Per DMB/OOP and agency's request from Greg DeCamp per phone conversation on 12/4/01 and in accordance with the modification clause.

INCREASE: $100,000.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $223,266,678.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **November 6, 2001**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 21
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached document is hereby incorporated into this contract.

AUTHORITY/REASON:

Per agency's request from Tom Miller in a letter dated October 26, 2001 and in accordance with the modification clause.

INCREASE: $20,239,783.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $223,166,678.00

CONTRACT CHANGE NOTICE NO. 21 TO THE STATE OF MICHIGAN 800 MHz RADIO SYSTEM & TELECOMMUNICATIONS BACKBONE NETWORK CONTRACT NO. 071B5000240 BETWEEN THE STATE OF MICHIGAN AND MOTOROLA, INC. DATED DECEMBER 8, 1994

Pursuant to Terms and Conditions of Section 1.41 **General**, subparagraph B, the following modifications are hereby made:

1) In Contract Terms and Conditions, Section 1.1. Definitions, add the following:

3b. ACS Equipment: Shall mean the Alarm and Control System equipment which is Motorola's commercially named MOSCAD product and includes remote terminal units with modules, central processing units, servers and workstations.

4a. ASTRO® 5.0 System: Shall mean all equipment, services and documentation identified in the Detailed Design Plans for Phases 1,2, and 3. ASTRO is a registered trademark name used by Motorola.

22.a. ASTRO® 25 IP Platform: Shall mean Motorola's ASTRO® 25 IP Platform which consist of the voice only feature set, Central and Fixed Equipment, Subscribers, associated Administrative, Installation and Shipping Charges and as more fully described in this contract change notice.

2) In Contract Terms and Conditions, Section 1.1. Definitions, delete item 58 and replace with the following:

1. TBN Equipment: Shall mean microwave, multiplex, and Digital Access and Cross Connect management system (DMS) equipment of the Telecommunications Backbone Network (TBN).

3) In Contract Terms and Conditions, Section 1.2. Scope of Work, add the following paragraphs to the end of subsection A:

As part of the on-going enhancements to the 800 MHz radio system and in conjunction with technology advancements in Motorola's ASTRO® product line, the System shall be upgraded to the ASTRO® 25 IP Platform.

For ease of description and identification only, the 800 MHz radio system upgrade to provide a statewide ASTRO® 25 IP Platform network will be accomplished by the design and implementation of the following phases:

Phase Name	Description
Phase 4 ASTRO® 25 IP Platform Implementation	ASTRO® 25 IP Platform to be described in the Detailed Design Plan for Phase 4.
Phases 1,2,3 ASTRO® 25 IP Platform	Modification to the Central, Fixed, and ACS Equipment to be installed under the Detailed Design Plan(s)for Phases 1, 2, and 3.

4) In Contract Terms and Conditions, Section 1.3.2. State's Responsibilities, add the following paragraph:

M) Michigan Public Safety Communications System (MPSCS) Marketing

A. The State and Motorola shall participate in a joint marketing effort to support and promote the MPSCS to State Departments and local units of government from January 1, 2002 through December 31, 2004. The marketing effort shall include, but not be limited to, the following:

1. Subscriber units available to State Departments will be added to the State of Michigan's Chief Information Officer's Telecom web site. Motorola shall provide pricing and model numbers consistent with pricing in this contract and identify a contact person for questions and ordering information.

2. The State shall coordinate and, in conjunction with Motorola, make presentations to all State Departments to provide information about the benefits of the MPSCS, subscriber information, and how to order equipment.

3. The State shall develop, in conjunction with Motorola, a detailed marketing strategy to promote the MPSCS to local units of government through presentations which will provide information about the MPSCS and how to join.

5) In Contract Terms and Conditions, Section 1.4. Terms of Contract, add the following paragraph:

G. After Phase 4 acceptance the State may purchase additional ASTRO® 25 IP Platform Subscriber units and ASTRO® 25 IP Platform base stations at the prices quoted in this contract change notice through March 19, 2004, being hereinafter referred to as the " ASTRO® 25 IP Platform Price Validity Date". The State shall be entitled to purchase additional ASTRO® 25 IP Platform Subscriber and ASTRO® 25 IP Platform base station equipment after the ASTRO® 25 IP Platform Price Validity Date at the prices quoted in this contract change notice, adjusted annually on the ASTRO® 25 IP Platform Price Validity Date anniversary. Annual adjustment shall be based upon the previous year's prices and changes in the Detroit Consumer's Price Index (CPI) over the subsequent twelve (12) month period. For the ASTRO® 5.0 System, the price for the System Subscriber unit Software license to use the Software shall not increase during the term of the Contract.

6) In Contract Terms and Conditions, Section 1.10. Terms of Contract, add the following paragraph:

C. Title to the Hardware and accessories purchased under this Contract for Phase 4 System (800 MHz Radio System and Telecommunications Backbone Network)shall pass to the State upon inventory and shipment from the factory.

7) In Exhibit C, Section 1.2.4.2., Statewide Acceptance Test, delete and replace this section with the following:

1.2.4.2 ASTRO® 5.0 System Acceptance and ASTRO® 25 IP Platform System Statewide Acceptance

1.2.4.2.1 ASTRO® 5.0 System Acceptance Test

An ASTRO® 5.0 System Acceptance Test confirming automatic Phase 1, 2, and 3 communications and Phase 1, 2, and 3 features and functions shall be performed. The test shall, at a minimum, use multiple talkgroups in which all of the districts are tested for automatic roaming communications with each other District and verify all specified features and functions. The Parties agree that the ASTRO® 5.0 System installed in Phases 1, 2, and 3 will be accepted as a stand alone system.

In order to insure successful System performance, the ASTRO® 5.0 System Acceptance Test shall not begin until thirty (30) days after Phase 3 Acceptance, or whenever the final Subscriber unit is installed, whichever occurs first. In no event shall the period from the Phase 3 Acceptance to the completion of the ASTRO® 5.0 System Acceptance Test be less than sixty (60) days.

1.2.4.2.2 ASTRO® 25 IP Platform System Statewide Acceptance Test

A Final ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Test confirming automatic Statewide communications and all Statewide features and functions shall be performed. The test shall, at a minimum, use multiple talkgroups in which all of the districts are tested for automatic roaming communications with each other District and verify all specified Statewide features and functions.

In order to insure successful System performance, the ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Test shall not begin until thirty (30) days after the final Phase ASTRO® 25 IP Platform Acceptance, or whenever the final Subscriber unit is installed or upgraded, whichever occurs first. In no event shall the period from the final Phase ASTRO® 25 IP Platform Acceptance to the completion of the ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Test be less than sixty (60) days.

8) In Contract Terms and Conditions, Section 1.23. Payment Terms, replace with the entire section with the following:

1.23. Payment Terms

A. The State will pay Motorola and Motorola shall accept as full compensation, satisfaction and payment for said work and any direct or indirect costs or expenses incurred by Motorola in connection with said work including, but not limited to, cost of supervision, labor, tools, equipment, transportation, insurance, taxes, overhead and profit, the lump sum price for System components as set forth in its respective Contract Release(s). Such lump sum prices will be determined based upon the listing of equipment and services required for each Installation Site or major System component specified in Exhibit A and the prices specified in Exhibit E. The cost to the State for all work hereunder, shall not exceed One hundred eighty-seven million, two hundred seventy-five thousand, nine hundred fifteen dollars and no cents ($187,275,915.00) except as modified by Contract Change Notice(s).

9) **In Contract Terms and Conditions, Section 1.23.1., Phase 1 - The 800 MHz System, TBN System, and Facilities, delete this section and replace with the following:**

1.23.1. Phase 1 -The 800 MHz System, TBN System, and Facilities

Item	Description	Payment Milestone
1	All Central and Fixed Equipment, TBN Equipment, Facilities and Associated Administrative, Installation, Shipping, and Training	90% of all costs upon achievement of Phase 1 Acceptance Milestone
2	All Subscriber Equipment (mobiles, Vehicular repeater systems, control stations) and Associated Administrative, Installation, Shipping, and Training	90% of all costs upon achievement of Phase 1 Installation Milestone
3	All Subscriber Equipment(portables) and Associated Administrative, Installation, Shipping, and Training	90% of all costs upon delivery to the State
4	System Carrying Charges	100% of all costs upon achievement of Phase 1 Acceptance Milestone, or 100% of Phase Cost upon achievement of Associated Phase Acceptance Milestone as outlined in Section 1.22.G
5	All Equipment, Administrative, Installation, Shipping, and Training	10% of all costs of Phase 1 upon achievement of Phase 3 Acceptance and ASTRO®5.0 System Acceptance Milestones.

10) **In Contract Terms and Conditions, Section 1.23.2., Phases 2, 3, and 4 – Facilities, delete this section and replace with the following:**

1.23.2. Phases 2, and 3 -Facilities

Item	Description	Payment Milestone
1	Site Development per site	20 % of Total Site Costs upon achievement of Site Development Milestone
2	Tower and Prefabricated Building Installation per site	40 % of Total Site Costs upon achievement of Tower and Prefabricated Building Installation Milestone
3	Final Site Development per site	20 % of Total Site Costs upon achievement of Final Site Development Milestone
4	Site Development, Tower and Prefabricated Building, Final Site Development per phase	10 % of Total Site Costs upon achievement of Phase Acceptance Milestone
5	System Site Development, Tower and Prefabricated Building, Final Site Development	10 % of Total Site Costs upon achievement of Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones.

1.23.2.1. Phase 4 - Facilities

Item	Description	Payment Milestone
1	Site Development per site	20 % of Total Site Costs upon achievement of Site Development Milestone
2	Tower and Prefabricated Building Installation per site	40 % of Total Site Costs upon achievement of Tower and Prefabricated Building Installation Milestone
3	Final Site Development per site and Site Development, Tower and Prefabricated Building, Final Site Development per phase	30 % of Total Site Costs upon achievement of Final Site Development Milestone
4	System Site Development, Tower and Prefabricated Building, Final Site Development	10 % of Total Site Costs upon achievement of Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance

11) In Contract Terms and Conditions, Section 1.23.3., Phases 2, 3, and 4 – Renovations and Additions, delete this section and replace with the following:

1.23.3. Phases 1, 2 and 3, -Renovations and Additions (Facilities)

Item	Description	Payment Milestone
1	Renovations and Additions	Payment milestones shall be as defined in the Phase DDP. System acceptance as written in the applicable DDP shall be defined as ASTRO®5.0 System Acceptance.

1.23.3.1. Phase 4 -Renovations and Additions (Facilities)

Item	Description	Payment Milestone
1	Renovations and Additions	Payment milestones shall be as defined in the Phase DDP.

12) In Contract Terms and Conditions, Section 1.23.4., Phases 2, 3 and 4 –800 MHz System, delete this section and replace with the following:

1.23.4. Phases 2 and 3 - 800 MHz System

Item	Description	Payment Milestone
1	Central and Fixed equipment.	60 % of Total 800 MHz Equipment and Installation Costs upon achievement of the 800 MHz Equipment Installation Milestone
2	Central and Fixed equipment.	20 % of Total 800 MHz Equipment and Installation Costs upon achievement of the 800 MHz Equipment Integration Milestone
3	Central and Fixed equipment.	10 % of Total 800 MHz Equipment and Installation Costs upon achievement of Phase Acceptance Milestone
4	Central and Fixed equipment.	10 % of Total 800 MHz Equipment and Installation Costs upon achievement of Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones.
5	All Training Costs	100% of costs for Phase 2 and 3 upon conducting and acceptance of the training
6	APCO 25 Trunking Suite	90% of all charges upon successful completion of the Factory Tests for Phase 2, 800 MHz Central equipment
7	APCO 25 Trunking Suite	10% of all charges upon achievement of Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones.
8	Carrying Charges	100% of Phase Cost upon achievement of Associated Phase Acceptance Milestone as outlined in Section 1.23.G.

1.23.4.1. Phase 4 ASTRO® 25 IP Platform - 800 MHz System

Item	Description	Payment Milestone
1	Central, Fixed and ACS equipment	45 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs upon signing of the Detailed Design Plan for Phase 4 ASTRO® 25 IP Platform by the State
2	Central, Fixed and ACS equipment.	35 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs upon achievement of the 800 MHz Equipment Installation and Integration Milestones
3	Central, Fixed and ACS equipment.	10 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs upon achievement of the Phase 4 ASTRO® 25 IP Platform Acceptance Milestone
4	Central, Fixed and ACS equipment.	10 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs upon achievement of Final Phase Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance
5	All Training Costs	100% of costs for Phase 4 ASTRO® 25 IP Platform upon conducting and acceptance of the training

1.23.4.2. Phases 1, 2 and 3 ASTRO® 25 IP Platform - 800 MHz System

Item	Description	Payment Milestone
1	Central, Fixed and ACS equipment	45 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs upon signing of the Detailed Design Plan for the Phase ASTRO® 25 IP Platform by the State
2	Central, Fixed and ACS equipment.	35 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs upon achievement of the 800 MHz Equipment Installation and Integration Milestones
3	Central, Fixed and ACS equipment.	10 % of Total 800 MHz Equipment, ACS Equipment and Installation Cost in the applicable DDP upon achievement of the Phase ASTRO® 25 IP Platform Acceptance Milestone
4	Central, Fixed and ACS equipment.	10 % of Total 800 MHz Equipment, ACS Equipment, and Installation Costs in the applicable DDP upon achievement of the Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance
5	All Training Costs	100% of costs for Phases 1, 2, and 3 ASTRO® 25 IP Platform upon conducting and acceptance of the training

13) In Contract Terms and Conditions, Section 1.23.5., Phases 2, 3, and 4 – TBN System, delete this section and replace with the following:

1.23.5. Phases , 2 and 3 - TBN System

Item	Description	Payment Milestone
1	TBN Equipment	60 % of Total TBN Equipment and Installation Costs upon achievement of TBN Installation Milestone
2	TBN Equipment	20 % of Total TBN Equipment and Installation Costs upon achievement of TBN Integration Milestone
3	TBN Equipment	10 % of Total TBN Equipment and Installation Costs upon achievement of Phase Acceptance Milestone
4	TBN Equipment	10 % of Total TBN Equipment and Installation Costs upon achievement of Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones
5	All Training Costs	100% of costs for Phase 2 and 3 upon conducting and acceptance of the training

1.23.5.1. Phase 4 - TBN System

Item	Description	Payment Milestone
1	TBN Equipment	60 % of Total TBN Equipment and Installation Costs upon achievement of TBN Installation Milestone
2	TBN Equipment	30 % of Total TBN Equipment and Installation Costs upon achievement of TBN Integration Milestone
3	TBN Equipment	10 % of Total TBN Equipment and Installation Costs upon achievement of Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance
4	All Training Costs	100% of costs for Phase 4 upon conducting and acceptance of the training

14) In Contract Terms and Conditions, Section 1.23.6., Phase 2, 3, and 4 Subscriber Equipment, delete this section and replace with the following:

1.23.6. Phase 1, 2 and 3 Subscriber Equipment, Phase 4 ASTRO® 25 IP Platform Subscriber Equipment, and Phase 1, 2, and 3 ASTRO® 25 IP Platform Subscriber Equipment Upgrade(s)

1.23.6.1. Phase 1, 2 and 3 Subscriber Equipment

Item	Description	Payment Milestone
1	Subscriber Equipment(Mobiles, portables, control stations and vehicular repeaters)	90% of total costs upon achievement of Subscriber Installation Milestone
2	Subscriber Equipment	10 % of total costs upon achievement of Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones

1.23.6.1.1. Phase 4 ASTRO® 25 IP Platform Subscriber Equipment

Item	Description	Payment Milestone
1	Subscriber Equipment(Mobiles, portables, control stations and vehicular repeaters)	90% of the total costs upon delivery to the State's designated location and inventoried by the State.
2	Subscriber Equipment	10 % of total costs upon achievement of final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance

1.23.6.2. Phase 1,2, and 3 ASTRO® 25 IP Platform Subscriber Equipment Upgrade(s)

Item	Description	Payment Milestone
1	Subscriber Equipment(Mobiles, portables, control stations and vehicular repeaters)	90% of total costs upon achievement of Subscriber Installation Milestone
2	Subscriber Equipment	10 % of total costs upon achievement of final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance

15) In Contract Terms and Conditions, Section 1.23.7., Phase Warranty, delete this section and replace with the following:

1.23.7 Phase Warranty

1.23.7.1. Phase 1, 2 and 3 Warranty

Item	Description	Payment Milestone
1	Phase Warranty	90% of the warranty cost for that Phase, upon Phase Acceptance Milestone
2	Phase Warranty	10% of the total project warranty cost, upon achievement of Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones

1.23.7.2. Phase 4, and 1,2,3 ASTRO® 25 IP Platform Warranty

Item	Description	Payment Milestone
1	Phase Warranty	90% of the warranty cost for that Phase as defined in the respective DDP(s), upon Phase Acceptance Milestone
2	Phase Warranty	10% of the total project warranty cost, upon achievement of Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance

16) In Contract Terms and Conditions, Section 1. 23., add the following:

1.23.8. Delay Costs

Item	Description	Payment Milestone
1	Phase 4 ASTRO® 25 IP Platform Implementation Delay Costs	100% upon execution of this Contract Change Notice

17) In Contract Terms and Conditions, Section 1. 23., Paragraph G, add the following sub paragraph:

18) In Contract Terms and Conditions, subsections 1.38.1,, Conditions for System Acceptance Progression and 1.38.2, Successful Performance of the System, delete these two subsections and replace with the following:

1.38.1. Conditions for System Acceptance Progression

1.38.1.1. ASTRO® 5.0 System Acceptance

A. Successful completion of the Factory Tests shall be a prerequisite for shipping the System equipment to the Installation Sites.

B. The successful completion of the Installation Milestone shall be a prerequisite for initiating the tasks which lead to the achievement of the Integration Milestone.

C. The successful completion of the Integration Milestone shall be a prerequisite for initiating the tasks which lead to the achievement of the Phase Acceptance Milestone.

D. The successful completion of the Phase 3 Acceptance Milestone shall be a prerequisite for initiating the tasks which lead to the achievement of the ASTRO® 5.0 System Acceptance Milestone.

1.38.1.2. ASTRO® 25 IP Platform System Acceptance

A. Successful completion of the Phase 4 Factory Tests shall be a prerequisite for shipping the System equipment to the Installation Sites.

B. The successful completion of the Installation Milestone shall be a prerequisite for initiating the tasks which lead to the achievement of the Integration Milestone.

C. The successful completion of the Integration Milestone shall be a prerequisite for initiating the tasks which lead to the achievement of the Phase Acceptance Milestone.

D. The successful completion of the final Phase ASTRO® 25 IP Platform Acceptance Milestone shall be a prerequisite for initiating the tasks which lead to the achievement of the ASTRO® 25 IP Platform System Statewide Acceptance.

1.38.2. Successful Performance of the System

1.38.2.1. ASTRO® 5.0 Successful Performance

Successful performance of the System shall be defined as the System operating in accordance with the specifications in this Contract for a period of sixty (60) days following the achievement of the Phase 3 Acceptance Milestone and delivery of the agreed to documentation for Phases 1,2, and 3. Subscriber additions to the System for Phase 3 and the testing of the features and functions as described in Exhibit C, shall take place during this sixty (60) day period.

1.38.2.2. ASTRO® 25 IP Platform Successful Statewide Performance

Successful performance of the Statewide System shall be defined as the System operating in accordance with the specifications in this Contract for a period of sixty (60) days following the achievement of final Phase ASTRO® 25 IP Platform Acceptance Milestone.

19) In Exhibit D Section 1.2.1., 800 MHz Radio System, delete this section and replace with the following:

1.2.1.1. Phase 1, 2 and 3 - 800 MHz Radio System

Milestone #	Description	% of Total 800 MHz Equip. Costs
Milestone # 1 (Installation Milestone)	800 MHz (central and fixed; includes system controllers, system managers (TMS & PMS), audio switches, packet switches, repeaters, site control, and consoles) equipment delivered, inventoried, and powered.	60 % of Total 800 MHz Equipment and Installation Costs
Milestone # 2 (Integration Milestone)	Successful completion of Field Specification Tests as described in Exhibit C 800 MHz Testing and Acceptance	20 % of Total 800 MHz Equipment and Installation costs
Milestone # 3 (Phase Acceptance Milestone)	Successful completion of Field Functional/Operational tests for 800 MHz equipment as described in Exhibit C Testing and Acceptance, and resolution of installation Site delays as mutually agreed to by both Parties	10 % of Total 800 MHz Equipment and Installation Costs
Milestone # 4 (Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones)	Successful completion of ASTRO® 5.0 System Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all agreed to documentation.	10 % of Total 800 MHz Equipment and Installation Costs

1.2.1.2. Phase(s) 4 and 1, 2, 3, ASTRO® 25 IP Platform - 800 MHz Radio System

Milestone #	Description	
Milestone # 1 (Installation Milestone)	800 MHz (central and fixed; includes system controllers, system managers (TMS & PMS), audio switches, packet switches, repeaters, site control, and consoles) equipment delivered, inventoried, and powered.	See Section 1.23.4.1 and 1.23.4.2
Milestone # 2 (Integration Milestone)	Successful completion of Field Specification Tests as described in Exhibit C 800 MHz Testing and Acceptance	See Section 1.23.4.1 and 1.23.4.2
Milestone # 3 (Phase Acceptance Milestone)	Successful completion of Field Functional/Operational tests for 800 MHz equipment as described in Exhibit C Testing and Acceptance, and resolution of installation Site delays as mutually agreed to by both Parties.	See Section 1.23.4.1 and 1.23.4.2
Milestone # 4 (Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance)	Successful completion Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all agreed to documentation.	See Section 1.23.4.1 and 1.23.4.2

20) **In Exhibit D Section 1.2.2., Subscriber Equipment, delete this section and replace with the following:**

1.2.2.1. Subscriber Equipment Phases 1, 2 and 3

Milestone #	Description	% of Total Subscriber Equip. Costs
Milestone # 1 (Installation Milestone)	Equipment is inventoried by the State and installed at the State's designated sites, in designated vehicles, or delivered to the State's designated location	90 % of Subscriber Equipment and Installation Costs
Milestone # 2 (Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones)	Successful completion of the Final ASTRO® 5.0 System Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all agreed to documentation	10 % of Subscriber Equipment and Installation Costs

1.2.2.2. Subscriber Equipment Phase 4

Milestone #	Description	% of Total Subscriber Equip. Costs
Milestone # 1 (Installation Milestone)	Equipment is inventoried by the State and installed at the State's designated sites, in designated vehicles, or delivered to the State's designated location	90 % of Subscriber Equipment and Installation Costs
Milestone # 2 (Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform System Statewide Acceptance)	Successful completion of final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all agreed to documentation	10 % of Subscriber Equipment and Installation Costs

21) In Exhibit D Section 1.2.3., TBN Equipment, delete this section and replace with the following:

1.2.3.1. TBN Equipment Phase 1, 2 and 3

Milestone #	Description	% of Total TBN Equip. Costs
Milestone # 1 (Installation Milestone)	TBN (microwave, multiplex, alarm and control (ACS & DACS) equipment delivered, inventoried, and powered	60% of Total TBN Equipment and Installation Costs
Milestone # 2 (Integration Milestone)	Successful completion of Field Specification Tests as described in Exhibit C Testing and Acceptance for TBN equipment	20 % of Total TBN Equipment and Installation costs
Milestone # 3 (Phase Acceptance Milestone)	Successful completion of Field Functional/Operational for TBN equipment and Field Functional, Operational and Specifications Tests for Network Management equipment as described in Exhibit C Testing and Acceptance for TBN equipment, and resolution of installation Site delays as mutually agreed to by both Parties	10 % of Total TBN Equipment and Installation Costs
Milestone # 4 (Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones)	Successful completion of the Final ASTRO® 5.0 System Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all as -built documentation.	10 % of Total TBN Equipment and Installation Costs

1.2.3.2. TBN Equipment Phase 4

Milestone #	Description	% of Total TBN Equip. Costs
Milestone # 1 (Installation Milestone)	TBN (microwave, multiplex, alarm and control (DACS) equipment delivered, inventoried, and powered	60% of Total TBN Equipment and Installation Costs
Milestone # 2 (Integration Milestone)	Successful completion of Field Specification Tests as described in Exhibit C Testing and Acceptance for TBN equipment	30 % of Total TBN Equipment and Installation costs
Milestone # 3 (Phase Acceptance Milestone)	Successful completion of Field Functional/Operational for TBN equipment and Field Functional, Operational and Specifications Tests for Network Management equipment as described in Exhibit C Testing and Acceptance for TBN equipment, and resolution of installation Site delays as mutually agreed to by both Parties	0 % of Total TBN Equipment and Installation Costs
Milestone # 4 (Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance)	Successful completion of final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all agreed to documentation.	10 % of Total TBN Equipment and Installation Costs

22) **In Exhibit D Section 1.2.4., Facilities, delete this section and replace with the following:**

1.2.4.1. Facilities Phases 1, 2 and 3

Milestone #	Description	% of Total Site Costs
Milestone # 1 (Site Development Milestone)	Completion of clearing, rough grading, and installation of access road, tower, and shelter foundations.	20 % of Total Site Costs
Milestone # 2 (Tower and Prefabrication Building Installation Milestone)	Tower erection complete and inspected. Prefabricated building off loaded and on to foundations. Microwave and 800 MHz antenna systems installed.	40 % of Total Site Costs
Milestone # 3 (Final Site Development Milestone)	Completion of site restoral, final aggregate surfacing, and all fencing and site grounding. Prefabricated building systems, grounding and lighting protection system, and emergency power systems installed and inspected.	20 % of Total Site Costs
Milestone # 4 (Phase Acceptance Milestone)	Successful completion of Field Functional/Operational Tests and Phase Acceptance tests as described in Exhibit C for central and fixed equipment, and resolution of installation Site delays as mutually agreed to by both Parties.	10 % of Total Site Costs
Milestone # 5 (Phase 3 Acceptance and ASTRO® 5.0 System Acceptance Milestones)	Successful completion of Final ASTRO® 5.0 System Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all agreed to documentation.	10 % of Total Site Costs

1.2.4.2. Facilities Phase 4

Milestone #	Description	% of Total Site Costs
Milestone # 1 (Site Development Milestone)	Completion of clearing, rough grading, and installation of access road, tower, and shelter foundations.	20 % of Total Site Costs
Milestone # 2 (Tower and Prefabrication Building Installation Milestone)	Tower erection complete and inspected. Prefabricated building off loaded and on to foundations. Microwave and 800 MHz antenna systems installed.	40 % of Total Site Costs
Milestone # 3 (Final Site Development Milestone)	Completion of site restoral, final aggregate surfacing, and all fencing and site grounding. Prefabricated building systems, grounding and lighting protection system, and emergency power systems installed and inspected.	30 % of Total Site Costs
Milestone # 4 (Phase Acceptance Milestone)	Successful completion of Field Functional/Operational Tests and Phase Acceptance tests as described in Exhibit C for central and fixed equipment, and resolution of installation Site delays as mutually agreed to by both Parties.	0 % of Total Site Costs
Milestone # 5 (Final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance)	Successful completion of the final Phase ASTRO® 25 IP Platform Acceptance Milestone and ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Tests as described in Exhibit C for central and fixed equipment and delivery of all as -built documentation.	10% of Total Site Costs

23) In Exhibit C Section 1.1., General, delete the last sentence in the second paragraph and replace with the following:

ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance tests to confirm statewide roaming and communications capabilities will be part of the Final Acceptance.

24) In Exhibit C Section 1.1., General, in the test outline under Phase 4 Testing and Acceptance, change item I A to read as follows:

PHASE 4 TESTING AND ACCEPTANCE

I Factory Test (Stage) Phase 4
- A Functional, Operational and Specifications Tests
  - 1 Microwave TBN
  - 2 800 MHz ASTRO® 25 IP Platform System
  - 3 ACS Equipment

25) In Exhibit C Section 1.1., General, in the test outline add the following :

ASTRO® 25 IP Platform PHASES 1,2, and 3 TESTING AND ACCEPTANCE

I Factory Test (Stage)
- A Functional Tests
  - 1 800 MHz ASTRO® 25 IP Platform

II Field Testing
- A 800 MHz ASTRO® 25 IP Platform Radio and ACS Equipment Functional Tests
- B Benchmark Coverage Validation ASTRO® 25 IP Platform in six counties, mutually agreed upon by both parties, using the same test plan FACTWARE® files from original tests.

II ASTRO® 25 IP Platform Phases 1, 2, and 3 Acceptance
- A Successful Functional Tests
- B Coverage Validation Analysis

III Successful Subscriber Upgrade(s)

26) In Exhibit C Section 1.1.1., titled Test Plan, delete this section and replace with the following:

1.1.1. Test Plan

The test plans shall consist of procedures, check lists, forms, test equipment requirements, and recommended State personnel involvement. The tests shall be conducted to completely verify all features, functions and specifications of the ASTRO® 5.0 System and the Phase 4 ASTRO® 25 IP Platform with the voice feature including ACS Hardware and Software, TBN Hardware and Software, network management equipment, Sites, Towers, shelters and grounding. The test plans shall specifically address: 1) Factory Tests - The System shall be factory staged and tested by Phase at a location mutually agreed upon by both parties. The 800 MHz equipment, TMS network management equipment, DACS equipment and packet switch staging shall occur in Schaumburg, Illinois or at a location mutually agreed upon by both parties. The TBN equipment and ACS network management equipment staging shall occur at a location mutually agreed upon by both parties, 2) Field Specifications Tests - After the System has been installed, integrated and optimized for a District, Field Specifications Testing for the Sites and District shall commence. This testing shall also extend to Statewide specifications after all seven Districts have been tested and accepted, 3) Coverage Tests - After the System has been installed, integrated and optimized for a District, Coverage Testing shall commence. The State will allow this testing to be done in parallel with the Field Specifications Testing if the two tests do not interfere with one another, 4) Field Functional and Operational Tests - After the Field Specifications and Coverage Testing is successfully completed, field functional and operational tests shall be conducted by Site and District. This testing shall also extend to a Statewide roaming, functional and operational test after all seven Districts have been tested and accepted.

For Phase 1,2 and 3 ASTRO® 25 IP Platform, the following tests will be performed: factory, field functional, and coverage benchmark verification.

The test plans shall include descriptions of specific tests to verify operation of any equipment which, as a result of features and functions that are scheduled for implementation after the equipment has been installed, requires modifications to equipment installed and operating in the field.

Test plans for each of the tests shall be submitted to the State for approval, and modified by mutual agreement. After agreement, Motorola shall modify the test accordingly. Tests will not be considered valid tests unless the test plan has received prior written State approval. All tests will be monitored by the State and only State monitored tests shall be considered valid.

27) In Exhibit C section 1.2.4.2., Statewide Acceptance Test , delete the second paragraph and replace with the following

In order to insure successful System performance, the ASTRO® 25 IP Platform Statewide System Acceptance Test shall immediately follow the achievement of the final Phase ASTRO® 25 IP Platform Acceptance Milestone. In no event shall the period from the final Phase ASTRO® 25 IP Platform Acceptance Milestone to the completion of the Statewide Acceptance Test be less than sixty (60)days.

28) In Exhibit C section 1.2.4.3., Final Acceptance Certificate Sheet, delete this section and replace with the following:

1.2.4.3. Final ASTRO® 25 IP Platform with the voice feature Acceptance Certificate Sheet

Upon successful completion of the Final ASTRO® 25 IP Platform with the voice feature System Statewide Acceptance Test, a Certificate sheet shall be executed stating that Motorola has installed, tested and made operational, the Statewide System as specified by the System Contract. The Certificate contains a signature block for the State's Project Director and Motorola's Project Director which establishes Statewide Final Acceptance. The Certificate shall also provide mutually agreed Punchlist Items not requiring corrective action by Motorola.

29) In Exhibit C section 1.3.1., Factory Test, add this paragraph :

The Phase 4 800 MHz ASTRO® 25 IP Platform and ACS equipment, TMS network management, DACS equipment and packet switches have been fully integrated and tested in the factory. Factory tests were witnessed by the state and will be approved by the State pending issue of this Contract Change Notice.

30) In Exhibit C, section 1.4.1., Factory Tests, delete the first subsection and replace with the following:

The TBN equipment shall be tested in the factory. Factory tests shall be witnessed and approved by the State at the staging facility in Longview, Texas or at a location mutually agreed upon by both parties. Factory tests shall be conducted after a minimum 5 day "burn - in" period to allow infant mortality of components and completion of long term (5 day BER tests). A fixed 60 dB of attenuation shall be inserted in each path. Successful completion of the factory tests shall be a prerequisite to shipment and installation of the equipment in the field.

31) In Exhibit C, Section 1.5.1., Factory Test, delete the second subsection and replace with the following.

The ACS network management equipment has been fully integrated and tested in the factory with the Phase 4 800 MHz ASTRO® 25 IP Platform equipment. Successful operation and integration of the ACS and DMS network management equipment during the factory test shall be a prerequisite to shipment and installation of the equipment in the field.

32) In Exhibit B, Section 1.7. Remedial and Preventative Maintenance add the following:

1.7.4. Warranty Plan for the Phases 1,2, and 3 ASTRO® 25 IP Platform

1.7.4.1. First Echelon Field Support (1EFS)

First Echelon Field Support shall be provided by MSP and commence with the acceptance of the first stage ASTRO® 25 IP Platform upgrade as defined in the DDP(s).

1.7.4.2. Second Echelon Field Support (2EFS) for ASTRO® 25 IP Platform Upgrade

Second Echelon Field Support shall commence with the acceptance of the first stage ASTRO® 25 IP Platform upgrade as defined in the DDP(s) and will continue for 90 days after the final acceptance of the last stage ASTRO® 25 IP Platform upgrade as defined in the DDP(s).

1.7.4.3. System Support Center Service (SSCS) for ASTRO® 25 IP Platform Upgrade

System Support Center Service shall commence with the acceptance of the first stage ASTRO® 25 IP Platform upgrade as defined in the DDP(s) and will continue for 12 months after the final acceptance of the last stage ASTRO® 25 IP Platform upgrade as defined in the DDP(s).

33) Exhibit B, Section 1.7. Remedial and Preventative Maintenance add the following:

1.7.5. Phase 4 ASTRO® 25 IP Platform Warranty Support

1.7.5.1. Purpose

Motorola shall provide supplemental warranty support designated as Joint Remedial Maintenance(JRM). This support shall augment the State's Michigan State Police Communications Division technicians as the primary responders to all Phase 4 Central, Fixed and TBN Equipment warranty issues. Under this plan Motorola shall provide 3 dedicated technicians to support and assist the State technicians. State technicians will provide the primary warranty maintenance support and service for the Phase 4 Central, Fixed, and TBN Equipment during the first year following achievement of the Phase 4 ASTRO® 25 IP Platform System Acceptance Milestone. The JRM shall provide a three-echelon support strategy to the State technician to address Phase 4 System communications issues. The warranty period will start on the first day following the State's issue of the certificate for achievement of the Phase 4 ASTRO® 25 IP Platform System Acceptance Milestone and terminate exactly one year from that date.

1.7.5.2. Joint Remedial Maintenance Overview

1.7.5.2.1. General

Equipment covered under this plan is the Phase 4 Central, Fixed, and TBN Equipment. Demand Service Requests including any equipment not covered by a Motorola Warranty plan or a Motorola Maintenance agreement will be repaired on a time and material basis above the Contract rate.

1.7.5.2.2. Definitions

1.7.5.2.2.1. Principal Period of Maintenance

The principal period of maintenance (PPM) is defined as between the hours of 8:00 AM and 5:00 PM Monday through Friday excluding holidays.

1.7.5.2.2.2. Extended Period of Maintenance

The extended period of maintenance (EPM) will be any hours outside the PPM including Sundays and holidays, 24 hours a day, 7 days a week, 365 days a year.

1.7.5.3. State Responsibilities

A. The State technicians will diligently attempt to resolve all severity one and two warranty and System issues prior to contacting Motorola technicians during the EPM.

B. The State technicians will primarily respond to critical component service requests from the State Network Control Center (NCC).

C. The State technicians will primarily respond to non-critical component service requests from the State NCC.

D. The State communication personnel will provide access to sites inaccessible by Motorola technician vehicles. In the event a site or sites are inaccessible by Motorola technician vehicles, the State shall be responsible for providing transportation of Motorola technician(s) and equipment to site equipment shelters.

1.7.5.4. Motorola Responsibilities

A. Motorola technicians will provide supplemental warranty support during PPM and EPM hours.

B. Motorola will not be responsible for clearing sites or roads during winter conditions.

1.7.5.5. Response For Maintenance (RFM)

1.7.5.5.1. Service Response for Severity One Service Requests

When a severity 1 service request is received, the State NCC will contact the State technician during normal working hours, or page the State on call technician directly after hours, to dispatch the technician to the equipment site. The NCC will also contact the Motorola Field technician. Motorola will make every attempt to jointly support and service severity one calls. However, the State technicians will have the primary responsibility to respond and be the NCC's primary contact. The NCC will track site arrival, departures, status and NCC ticket number. The State technicians will provide call updates to the NCC.

1.7.5.5.2. Service Response for Severity Two Service Requests

When a severity 2 service request is received, the State NCC will contact the State technician during normal working hours to dispatch the technician to the equipment site. The NCC will also contact the Motorola Field technician during normal working hours to dispatch the technician to the equipment site. Motorola will make every attempt to jointly support and service severity two calls. However, the State technicians have the primary responsibility to respond and be the NCC's primary contact. At any time a State technician or a Motorola Field technician may respond to any service request by himself or herself. The NCC will track site arrival, departures, status and number. The State technicians will provide call updates to the NCC.

1.7.5.6. Joint Remedial Maintenance Exceptions

Motorola's Joint Remedial Maintenance obligation does not apply to the following.

1. The product is used in other than its normal and customary manner.

2. The product has been subject to misuse, accident, neglect or damage; acts of God; fire; riots; acts of war or any other conditions beyond the reasonable control of the service provider.

3. Unauthorized alterations or repairs have been made, or unapproved parts used in the equipment.

1.7.5.7. Echelons of Support

1.7.5.7.1. First Echelon Support

First echelon support will be provided by the State and supplemented by a Motorola technician. The supplemental Motorola technician information shall be provided to the State 60 days prior to Phase 4 Warranty start. Typical support services supplied by first echelon providers shall be; on site repair, preventative maintenance, programming capability, spare inventory, system performance verification, and exchange module placement and performance verification.

1.7.5.7.2. Second Echelon Support

Second echelon support shall be provided by the Motorola's Radio Support Center for extended support of mobile and portable equipment, and the Motorola System Support Center (SSC) for the support of Central and Fixed equipment. The Central and Fixed equipment support shall include remote diagnostics, telephone support to local servicers, a loaner and exchange module program, component level repairs on system boards, and automated certification of repaired boards before they are returned to the system. When second echelon support is required, the State NCC will open a Motorola Case ID with the Motorola SSC. The SSC shall initiate remote diagnostics and call tracking procedures.

1.7.5.7.3. Third Echelon Support

Third echelon support shall be provided by Motorola Customer Support Management, Motorola Field Engineering and Motorola Factory Engineering teams. This level of support brings individuals involved in equipment and system design to assist in resolution of difficult problems. The State positions of System Administrator, and Network Administrators are key to the performance of the system and the maintenance plan. The system terminals utilized by these personnel for controlling, monitoring, and managing this system are also utilized to diagnose (to a high level) system problems. Once these individuals determine the level of a system problem, a call shall made to the SSC. The SSC shall initiate remote diagnostics and call tracking procedures.

1.7.5.8. Service Call Procedures

1.7.5.8.1. System Service Call Procedure

The NCC will call the Motorola SSC to open a Case ID. Critical service requests shall be responded to within 2 hours from opening a Case ID through the SSC. Non critical service requests may be upgraded to critical (for 2 hour response) at this time by assigning a Demand Service Request (DSR) which shall be billed at the then prevailing time and material rates. Non-critical service requests shall be responded to prior to the end of the next business day. Motorola SSC shall track the service call, measure the response process and escalate when necessary to meet contractual requirements. Service calls shall be closed out after all repaired components/modules have been repaired, returned and verification of restoration with the State NCC.

1.7.5.8.2. Subscriber Service Call Procedures

1.7.5.8.2.1. Mobile Service Call Procedures

The State NCC will receive all MSP mobile service call requests and determine severity level (critical / non critical). A State technician will be assigned to the request. A Motorola Field Service technician shall be assigned to assist in the case if requested by the NCC. If a warranty repair is needed a Motorola CSR shall be generated by the SSC. This unit shall be shipped to the Motorola Rockford, Illinois repair depot for warranty repair. After delivery of the repaired units unit to the State, the Case ID shall be closed. Service calls shall be closed out after the repaired unit is returned.

1.7.5.8.2.2. NON-MSP Mobile Service Call Procedures

All "NON-MSP" mobiles and control stations, as defined in the DDP, will be delivered to the local Motorola Authorized Service Center for maintenance. A call to the Motorola SSC is not required. A detailed list of Motorola Authorized Service Centers shall be provided to the State 60 days prior to Phase 4 Warranty start.

1.7.5.9. Escalation Procedures

In the event the State NCC detects that an SSC request is not being adequately addressed, it may initiate inquiries to:

A. 1st – Eric Sudekum, Motorola Project Contract Delivery Manager

B. 2nd – Robert Batis, Motorola Project Implementation Manager

C. 3rd – Chuck Cousino, Motorola Project Director & Vice President

1.7.5.10. Preventative Maintenance

Preventative Maintenance will be performed jointly by the State technicians and the Motorola Field Service technicians on equipment prior to the end of the warranty period. These preventative maintenance checks will include, at a minimum, the following:

800 MHz Equipment	Once per year	Frequency Adjustment Output Power Checks RF Checks
TBN Equipment	Once per year	Frequency Adjustment Output Power Checks RF Levels

All annual preventative maintenance checks will be performed within the final 6 months of the warranty period. All preventative maintenance checks will be scheduled with minimum interruption to the State.

1.7.5.11. Service Facilities and Supported Site Locations

The Motorola Field Service Provider for Phase 4 warranty support shall be provided to the State 60 days prior to warranty start.

1.7.5.12. Supplemental Personnel

The supplemental Motorola technician personnel list for Phase 4 communications equipment warranty support shall be provided to the State 60 days prior to warranty start.

1.7.5.13. Control Station Service Locations

The State technicians will provide first echelon field service for Phase 4 control stations.

1.7.5.14. Spares

All spares (for Central, Fixed, TBN, and Facilities Equipment) will be jointly inventoried and signed off and subsequently transferred to the State prior to the start of Phase 4 warranty.

1.7.5.14.1. Mobile Spares

All mobile spares will be jointly inventoried and signed off and subsequently transferred to of the State prior to the start of Phase 4 warranty

1.7.5.14.2. Portable Spares

All portable spares will be jointly inventoried and signed off and subsequently transferred to of the State prior to the start of Phase 4 warranty

1.7.5.15. Sites and Facilities Warranty and Maintenance

The State will be responsible for all Phase 4 Site, Shelter, and Tower warranty and maintenance beginning December 1, 2001. This equipment includes but is not limited to:

1. Towers and Lighting Systems
2. Dehydrators
3. Generators, LP tanks and supporting components
4. All Grounding Systems
5. UPS and HVAC systems
6. Antenna & Lines
7. All sites and facility alarm and monitoring systems
8. Surge suppression
9. Prefabricated shelter and all its interior and exterior components
10. All fencing and gates.
11. All site improvements including but not limited to: Roadways, culverts, grading and seeding
12. Field service of this equipment will be maintained by the State. The Motorola Customer Support Manager shall provide assistance in manufactures warranty service on these items. Sites remaining incomplete on December 1, 2001 shall be completed as soon as weather allows and once completed and accepted the maintenance and warranty will immediately be the responsibility of the State.

34) In Exhibit B, Section 1.8.1.1., General, delete the last paragraph and replace with the following:

System Documentation - System documentation as mutually agreed upon by both parties shall include but not be limited to operation and maintenance manuals and as-built drawings which fully describe the installed System.

35) In Exhibit B, Section 1.8.1.2., Submittal Schedule, delete item number 26 activity and replace with the following:

As-builts drawings as identified in Section 1.8.1.1. (paper and electronic) for all equipment provided for the System, equipment inventory list.

36) In Exhibit B, Section 1.8.1.4., Submittals, delete the third paragraph and add the following:

For information submitted as "**DOCUMENTATION**", except for user operational manuals and technical maintenance manuals, Motorola shall prepare and submit three (3) copies of all as-built documentation, **as** identified in Section 1.8.1.1. ,produced under this contract. One (1) copy shall be delivered to each Site, the Engineer's Office, and to the State's Project Engineer.

37) In Exhibit B, Section 1.8.2.2.3., As-Built Drawings, delete the first and third paragraphs and replace with the following:

As-built drawings as identified in Section 1.8.1.1. will be delivered to the State as a precedence to the achievement of the Phase Acceptance Milestone and Statewide System Acceptance Milestone. Drawings will consist of the following:

One copy of the electronic files (AUTOCAD release 14 or as mutually agreed to by the State and Motorola) of the as-built drawings as identified in Section 1.8.1.1. shall be delivered to the State.

38) In Exhibit B, Section 1.9., Test Equipment, delete the first paragraph and replace with the following:

1.9. Test Equipment

Required test equipment to maintain the System is listed below. This test equipment will supplement Motorola standard technician compliment of hand tools and be available to the Motorola technician forces as the System is implemented. A list and pricing for the ASTRO® 25 IP Platform test equipment will be provided once they become available.

39) In Exhibit B, Section 1.10.2.3.2., Class Content add the following after "proposed for the Network Administrator:"

ASTRO® 25 IP Platform System Administration - This 4 hour class will provide the student an overview of the overall ASTRO® 25 IP Platform system ~~with voice feature~~ capability. They will receive training in IP address management and system configuration. This will support their task of controlling system access by end voice users.

40) In Exhibit B, Section 1.10.2.4.1.2., NCC Level Training, add the following classes:

ASTRO® 25 IP Platform System Administration - This 1 day (8 hour) class will provide the NCC personnel an understanding of the overall ASTRO® 25 IP Platform system ~~with voice feature~~ capability. They will receive training in IP address management and system configuration. In addition, key system level performance reports will be highlighted.

MOSCAD GCN - Training on the Graphic Central Network will provide a system level overview of the ACS System. Alarm reporting screens, ACS management and performance reports available will be discussed in depth. Day to day operational activities, system performance and upkeep requirements will be covered. The class is 1 day (8 hours).

41) In Exhibit B, Section 1.10.2.6.2., Class Content, add the following:

1.10.2.6.2.1. Phase 4 ASTRO® 25 IP Platform and Phase 1, 2, & 3 Upgrade Technical Training

Technical training for the State's technical staff is shown in Fig. 1.10.2.6.2.1a. As noted, one session of each class will be delivered for Phase 4 technicians. Two of each applicable session will be scheduled for the Phase 1, 2, & 3 technical personnel.

Class	Type	Location	Days	# OF SESSIONS P4	# OF SESSIONS P1, 2 & 3 Upgrade
System Training					
System Maintenance	TECH	State Facility	5	1	2
LAN / WAN	TECH	State Facility	5	1	2
Subsystem Workshop		State Facility	5	1	2
DACS	TECH	Tellabs Facility	4	1	N/A
Technical Training					
ASTRO Spectra/Plus Mobile/Station	TECH	State Facility	3	1	2
XTS 3000	TECH	State Facility	2	1	2
Quantar/IR	TECH	State Facility	3	1	N/A
Premisys TenSR Ch. Bank	TECH	State Facility	2	1	N/A
Digitac	TECH	State Facility	3	1	N/A
SmartZone System	TECH	WLS Facility	10	1	2
Elite Console	TECH	WLS Facility	5	1	N/A
MGEG	TECH	WLS Facility	5	1	2
DS1 / DS3 Radios	TECH	Alcatel Facility	5	1	N/A
DMX / RDI Mux	TECH	Alcatel Facility	4	1	N/A
UPS	TECH	BEST Facility	5	1	N/A
Switchmode Rect / Batt. B.U.	TECH	State Facility	1	1	N/A
MOSCAD Hardware	TECH	State Facility	3	1	2
MOSCAD System / Polling Eng.	O/V	State Facility	1	1	2

Fig. 1.10.2.6.2.1a – P4 ASTRO® 25 IP Platform and P1, 2 & 3 Upgrade Training

These classes will cover theory of operation, diagnostics, troubleshooting and repair of the subject equipment. Class size is limited to 12 students. The classes will be conducted at Motorola, vendor, or State facilities as noted.

42) In Exhibit A, Section 1.2., System Design Emphasis, third paragraph, change APCO 16 to read APCO 25 and delete the fourth paragraph and replace with the following:

The System shall connect the controllers with a packet based network technology utilizing a digital microwave telecommunications backbone network.

43) In Exhibit A, Section 1.3.1., Intent, first paragraph, delete the last sentence and replace with the following:

All System parameters as described in the contract shall be satisfactorily met and verified by the State before the System is accepted.

44) In Exhibit A , Section 1.3.2., Ease of Use, third paragraph delete the first sentence and replace with the following:

The System shall contain integrated communications controllers at the Site and zone levels to provide automatic communications for local, district-wide, and statewide users.

45) In Exhibit A, Section 1.3.3., Channel Operation, first paragraph delete the third and fourth sentences and replace with the following:

Any base station repeater shall be assigned at any time for emergency calls, data calls, or group dispatch calls. Channels shall be assigned only at those sites where Subscriber units addressed by the call are currently registered.

46) In Exhibit A, Section 1.3.3., Channel Operation, delete the second paragraph and replace with the following:

All channels at all sites shall trunk data, clear voice, and encrypted voice, and shall be equipped for the relay of all communications (data , clear voice, and encrypted voice,) and shall be available for utilization in local and wide area communications.

47) In Exhibit A, Section 1.5., APCO Compliance, delete the first sentence in first paragraph and replace with the following:

The ASTRO® 25 IP Platform with the voice feature shall be compliant with current APCO 25 standards listed below.

48) In Exhibit A, Section 1.5., APCO Compliance, delete the second paragraph and replace with the following:

APCO 25 standards are published by the Telecommunications Industry Association (TIA) and or American National Standards Institute (ANSI). The basic level of standards certification is released as a Telecommunications System Bulletin (TSB).

49) In Exhibit A, Section 1.5., paragraph A) , Common Air Interface (CAI) , delete the last sentence in the first paragraph and replace with the following:

All portions of the CAI have been adopted by APCO and issued by ANSI as a Full Standard.

50) In Exhibit A, Section 1.5., paragraph B), APCO Project 25, delete the second sentence in the second paragraph and replace with the following:

This shall provide the State with up to 64,000 unique ID's, 16,000 talkgroups.

51) In Exhibit A, Section 1.5., paragraph B), APCO Project 25 delete the first sentence in the third paragraph, and replace with the following:

If the APCO Project 25 Trunking Standard documents have not been published by APCO or TIA prior to by April 1, 1996, and the Parties agree that the APCO Project 25 Trunking Standards are not a valid System requirement, or a mutually agreed to date cannot be reached, the System shall be equipped with a proprietary signaling format that includes 16,000 talk groups and 64,000 unique radio IDs.

52) In Exhibit A, Section 1.5., paragraph C), APCO- 25 Encryption add the following sentence:

The suite provides for optional console encryption upgrade.

53) In Exhibit A, Section 1.5., paragraph E), APCO Inter RF Subsystem Interface, delete the entire paragraph and Table A.1 – APCO 25 Migration Impact and replace with the following:

A mutually agreed to ASTRO® 25 IP Platform Migration plan will be developed and included in the DDP.

54) In Exhibit A, Section 2.2., System Special Requirements, delete paragraph B.

55) In Exhibit A, Section 2.2., System Special Requirements, delete paragraph J and replace with the following:

J. The ASTRO® 25 IP Platform with the voice feature shall be capable of simulcast, data, and telephone interconnect operation.

56) In Exhibit A, Section 2.3., Wide Area Operation, and fourth paragraph delete this paragraph and replace with the following:

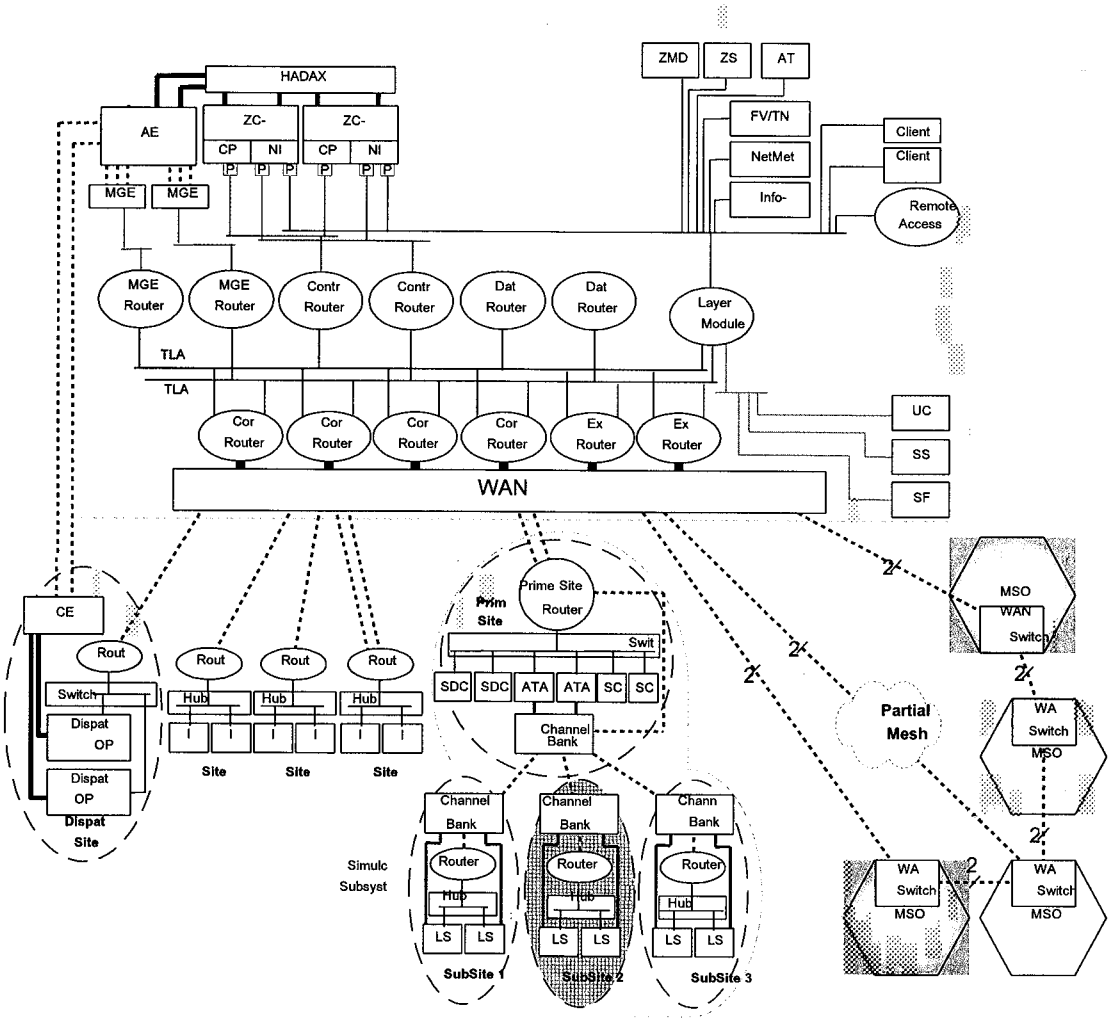
The System shall be divided into seven zones, aligned with the various MSP districts. Zone 1 covers MSP districts 1, and 3, Zone 2 covers MSP districts 2 and 3, Zones 3 covers districts 5 and 6, and Zones 4 and 5 cover MSP district 7, and Zone 6 and 7 cover district 8 in the upper peninsula. Audio and control data from each Site within a zone shall be fed back to the central equipment Site through the TBN. Until completion of the final phase ASTRO® 25 IP Platform upgrade the Upper Peninsula shall operate independently from the Lower Peninsula.

57) In Exhibit A, Section 2.3., Wide Area Operation, delete the fifth paragraph and replace with the following:

All communications within a zone shall be controlled through the zone controller. Each user in the system shall be affiliated with a certain talkgroup and Site in the System. The System shall always know which Site a user is operating at, and which talkgroup is selected on the user's radio. Zone controllers shall be connected through the enterprise network. All communications between zone controllers shall take place on this network.

58) In Exhibit A, Section 2.3., Wide Area Operation, delete " Figure 2.3 System Block Diagram" and paragraphs six through thirteen and add "Figure 2.3 A ASTRO® 25 IP Platform with the Voice feature architecture.

ASTRO® 25 IP Platform with the Voice feature architecture



59) In Exhibit A, Section 2.3., Wide Area Operation, delete the paragraph which begins with "The HLR " and replace with the following:

The HLR is distributed in each zone in the system.

60) In Exhibit A, Section 2.3., Wide Area Operation, delete the third sentence in the paragraph which begins with "The HLR " and replace with the following:

VLR functionality shall be resident in the local visited zone controller.

61) In Exhibit A, Section 2.3., Wide Area Operation , delete the fourth sentence in the paragraph which begins with "User A of talkgroup 1 " and replace with the following:

For the Gold Elite console configuration, the Zone Controller, the MGEG, and the AEB/CEB routes packetized audio and performs the conversion to circuit based audio.

62) In Exhibit A, Section 2.3., Wide Area Operation, delete the third sentence in the paragraph which begins with "While User B of talkgroup 1 " and replace with the following:

The Site signals the zone controller that a change of radio affiliation has taken place, and the zone controller updates its location information for that user.

63) In Exhibit A, Section 2.3., Wide Area Operation, delete the fourth sentence in the paragraph which begins with " User C, still " and replace with the following:

The zone controller and associated network components route the audio packet(s) between Site 30B, Site 31Z and the district 3 dispatch center, and issues a channel grant for the requesting user.

64) In Exhibit A, Section 2.3., Wide Area Operation, delete the second sentence in the paragraph which begins with " As the number of sites" and replace with the following:

As the number of sites required for a call increases, the probability of that call being queued also increases. To help process these calls more efficiently, the System shall have these voice features:

65) In Exhibit A, Section 2.3.1., Control Channel Scan, delete the first, second, and third sentences in the second paragraph and replace with the following:

The second list, called the adjacent Site list, is composed of the units current control channel, plus up to 7 adjacent control channels.. Each repeater in wide area trunking mode shall transmit a series of outbound signaling words (OSWs)/outbound signaling packets (OSP) which contain the zone/Site identification and the active control channel of each of its adjacent sites and the alternate control channels at the current Site. When a radio is affiliated with a Site, the adjacent Site list is comprised of the information obtained from the adjacent control channel OSWs/OSP from that Site.

66) In Exhibit A, Section 2.3.1., Control Channel Scan, delete the fourth sentence in the fifth paragraph and replace with the following:

This process shall be repeated a second time, then a full spectrum scan, and if a valid control channel is not found the radio shall go into failsoft mode.

67) In Exhibit A, Section 2.4., System Operation, delete the seventh paragraph and replace with the following:

The resource management functions of the System shall include the control and setup of the network switch, and configuration of all field units and console positions.

68) In Exhibit A, Section 2.4., System Operation, delete Figure 2.4 – System Architecture and replace with "Figure 2.4 ASTRO® 25 IP Platform System Architecture":

69) In Exhibit A, Section 2.4., System Operation, delete both sentences in the twelfth paragraph and replace with the following:

Compressing digital voice and associated network protocols shall minimize the amount of required TBN bandwidth. Additionally, bandwidth on the enterprise network shall not be dedicated to inactive resources.

70) In Exhibit A, Section 2.4., System Operation, delete the thirteenth paragraph and replace with the following:

The enterprise network does not limit the size of the System, or the number of zones that can be connected. As the System grows, additional network components can be added to meet capacity and reliability needs. These network components are configured in a partial mesh network that can provide for alternate routing in the event of failure. The availability of alternate routing is dependent on the available bandwidth on alternate paths.

71) In Exhibit A, Section 2.5., System Redundancy, delete the first, second and third paragraphs and replace with the following:

The central equipment Site shall provide continuous call processing and System operation even in the event of one or more unrelated points of failure. The zone controller will be comprised of redundant computer systems and a failover switch. One controller will be designated as the "active" controller and the other controller will be designated the "standby" controller. Specific hardware or software failure, will automatically initiate a zone controller switchover. The controllers will communicate between each other and determine which controller has more services available. Switch over can be manually initiated by the customer.

The enterprise network shall be designed with redundant components for fault tolerance and non-stop trunking operation. Both the power supply and system timer modules shall be provided with a hot standby backup. Redundant links to the zone controller shall also be provided.

Failure of zone controller and enterprise network components shall be reported to the TMS servers, allowing appropriate action to be taken to restore the System to normal operation. Redundant critical components in the zone controller and enterprise network shall be capable of replacement without interrupting trunking operation.

72) In Exhibit A, Section 2.5., System Redundancy, delete the second sentence in the fourth paragraph and replace with the following:

The switches shall have redundant power supplies, processors, and System interfaces.

73) In Exhibit A, Section 2.5., System Redundancy, delete the number "16" and replace with the number "25".

74) In Exhibit A, Section 2.5., System Redundancy, delete the first sentence in the eleventh paragraph and replace with the following:

The zone manager servers shall be accessed from PC's at each dispatch center.

75) In Exhibit A, Section 2.5., System Redundancy, delete the first and second sentences in the twelfth paragraph and replace with the following:

If a severe repeater alarm occurs, the System shall take the channel out of service and not assign it for use until the alarm condition has been remedied. Alarm conditions shall be reported to each zone's associated TMS server.

76) In Exhibit A, Section 2.6.1., Fleet Mapping, first sentence in the first paragraph and the last sentence of the fourth paragraph, delete "48,000 and replace with "64,000":.

77) In Exhibit A, Section 2.6.2., Priority Assignment, delete the last paragraph.

78) In Exhibit A, Section 2.6.4., Encryption, delete the third and fourth paragraphs and replace with the following:

All dispatch consoles are capable of receiving and transmitting encrypted calls. The encrypted signal shall be decoded by a digital voice encryption module. In the case of the ASTRO® 25 IP Platform with the voice feature with the Gold Elite consoles, these modules are located at the central Site MGEG. The corresponding MGEG decodes the audio packet, provides the packet to circuit conversion, and routes it through the audio switch and CEB to the appropriate Gold Elite console. In the case of the ASTRO® 25 IP Platform with the voice feature with packet based console PCs, the vocoding and encryption take place with in the appropriate affiliated console position. Encrypted calls shall be encoded at the transmitting radio and remain encrypted until received by the target radio. Calls shall be only decrypted in the fixed end if a console operator is involved. The call shall be decrypted at the MGEG for Elite. The call shall be decrypted at the console for IP consoles.

79) In Exhibit A, Section 2.6., Call Processing, add the following subsections:

2.6.5. Types of Calls

2.6.5.1 Voice (Unit to unit)Overview of an ASTRO 25 Talkgroup Voice Call Using IP Multicast: (see Figure 2.6.5.1)

Step 1: A Subscriber user presses the PTT on the radio to talk to other users in the talkgroup. The Subscriber transmits a Call Request on the RF control channel. The Call Request is received by the base station and forwarded to the Ethernet LAN.

Step 2: The IP enterprise network routes the Call Request packet to the Zone Controller. Upon receiving the Call Request message the Zone Controller communicates with an HLR/VLR to determine the location of all members in the requested talkgroup.

Step 3. The Zone Controller issues a Call Grant, which is distributed to the sites by the enterprise network.

Step 4: Upon receiving the Call Grant message, the sites extract the IP multicast address from the Call Grant and generate an IP multicast group join message. When a router receives an IP multicast group join message, it triggers an IP multicast routing table update process. Routers communicate with each other to set-up an IP multicast tree. This tree is used to distribute traffic to all sites participating in a call.

Step 5: The radio begins transmitting vocoded audio in IP packets with group address. The audio is received by the base station and forwarded to the Ethernet LAN.

Step 6: The IP Multicast audio stream is distributed to all the RF sites and console sites via the IP multicast tree.

When another member of the talkgroup transmits, the same multicast tree is used.

When a call is over or a talk group member wishes to leave the talk group, the site generates an IP multicast group Leave message. This Leave message prunes the IP multicast branch to prevent audio from flowing down the branch.

IP Multicast Voice Call Example

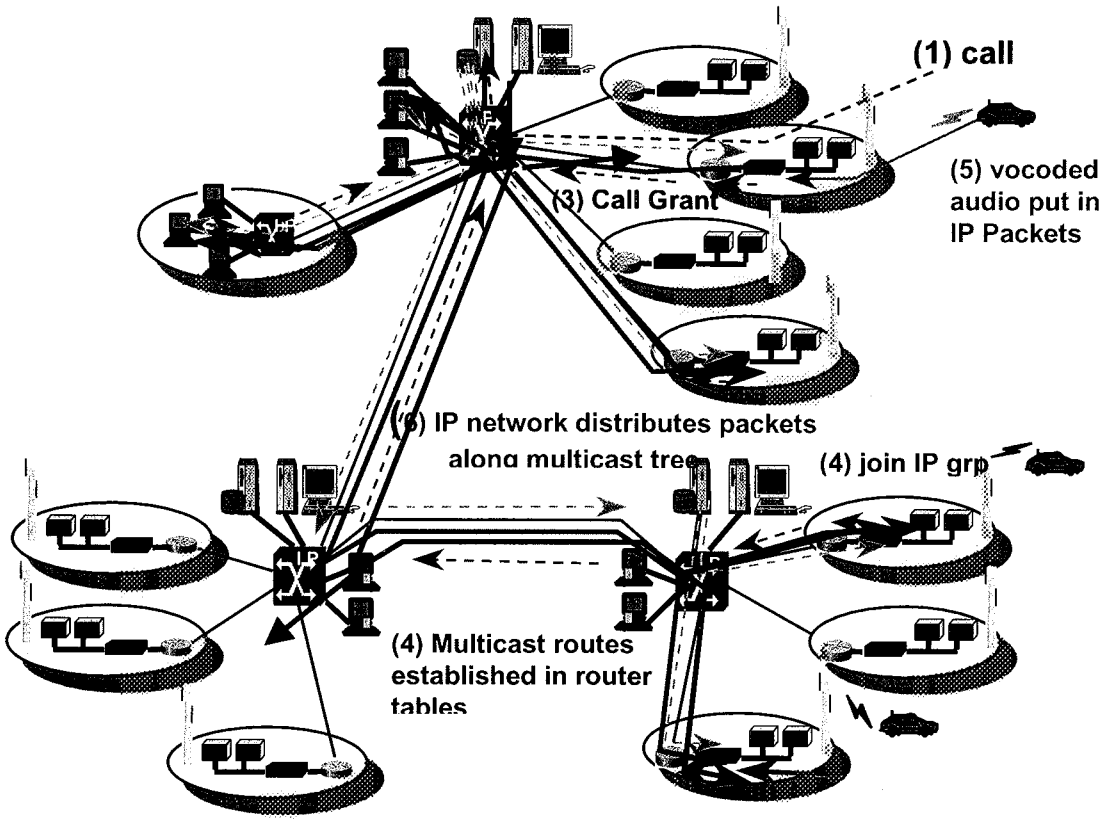


Figure 2.6.5.1

80) In Exhibit A , Section 2.7. , Call Function, third sentence of the twentieth paragraph change "8" to "14".

81) In Exhibit A, Section 2.7., Call Function, paragraph twenty-one add the following:

ASTRO® 25 IP Platform with the voice feature with packet consoles will provide similar DPI functionality via a Console Telephony Interface (CTI) server that is capable of direct interface to a local PBX/telco lines.

82) In Exhibit A, Section 2, subsections 2.8., Zone Controllers, 2.9. Audio Switch Equipment, and 2.10. Packet Switch Equipment, delete these sections:

83) In Exhibit A, Section 1.0., Scope, add the following

1.6. 746 Narrow Band

As part of the on-going enhancements to the MPSCS and Motorola's commitment to development of future technology for the State, Motorola offers to demonstrate (implement) a limited number of wireless products which will operate in the 746 MHz frequency band. This "field trial" is conditioned the following:

- The FCC must publish a final ruling (WT Docket 96-86 fourth report and order) on adoption of standards for the narrowband portion (general use, state license, and interoperability categories) of the radio spectrum comprised of broadcast TV channels 63,64,68, and 69 which has been reserved for public safety use.
- The publishing of these standards must occur prior to April 1, 2001.
- The State must obtain radio spectrum licenses from the FCC for the demonstration. Motorola will provide support of this effort.

Motorola will provide 746 MHz products, (RF base stations, Subscriber units, mobiles, and portables) which will operate seamlessly on future ASTRO® 25 IP Platform. The Subscriber units will demonstrate the ability to operate in the 746 MHz and 806/821 MHz frequency bands and include all features of the current MPSCS Subscriber units. RF base stations operating in the 746 MHz band will operate in every aspect of the system exactly like the 806 and 821 MHz RF base stations. Users will demonstrate the ability to roam from 746 MHz only sites to 806/821 MHz only sites to mixed 746 MHz and 806/821 MHz sites seamlessly and without manual intervention.

The number and location of these products and the field trail will be mutually agreed upon by both parities. The field trial will be conducted no later than 2 years after the FCC publishes its final ruling.

Upon the successful demonstration of these 746 MHz products, Motorola shall provide a change order to the State for purchase and implementation of the demonstrated products.

84) In Exhibit A, Section 2.11., Repeaters, delete the first sentence in the fourth paragraph and replace with the following:

All repeaters shall be provided with internal metering diagnostics and can be accessed and modified with Centralized Service Software via the Ethernet network.

85) In Exhibit A, Section 2.0., delete Section 2.13. Vehicular Repeaters:

86) In Exhibit A ,Section 2.0., 800 MHz System Functional Requirements add the following:

2.15. Subscriber Options for IP Voice and Data Upgrades

ASTRO® 25 IP Platform with the voice only feature includes a Subscriber capable of supporting voice. In order for the mobile Subscriber to operate in the data mode, an infrastructure upgrade will be required.

Motorola shall offer upgrades to the ASTRO® 25 IP Platform for specific Subscriber units through March 31, 2003 currently operating on the MPSCS ASTRO® 5.0 System. These specific units are the ASTRO Saber portable, XTS 3000 portable, and the ASTRO Spectra mobile.

Motorola shall offer a data upgrade to the ASTRO® 25 IP Platform for the ASTRO Spectra mobiles currently operating on the MPSCS ASTRO® 5.0 System through December 31, 2003.

2.15.1. ASTRO® 25 IP Platform Portables

1) XTS 2500 Units

The XTS 2500 introduces a complete, yet simplified feature set for operation on the ASTRO® 25 IP Platform with the voice only feature. In its initial introduction, the radio will be offered in a 9600 baud digital trunking only model and also in a limited 3600 digital trunking only model in the 700/800 MHz band. The XTS 2500 will follow the traditional 3 model approach. The differences between the 3 models are highlighted below.

	Model I	Model II	Model III
Modes	16	48	96
Fully Bitmap Display Lines / Characters per Line	None	6/16	6/16
Keypad	None	3 x 2(a)	3 x 6(a)

(a)The keypad for both XTS 2500 and XTS 5000 includes a new 4 way navigation key.

XTS 2500 is currently in the development stages.

PORTABLE FEATURES - REGARDLESS OF MODEL

The XTS 2500 is currently in the process of being developed, therefore, the features listed in this document are only a high level overview. The XTS 2500 offers a new smaller, lightweight, and easy to carry form factor. The radio will shall Military 810 Specifications. It is compatible with Motorola's existing XTS audio accessories. However, customers will not be able to use a vehicular adapter or the Public Safety microphone because these accessories require Radio Frequency capability out of the side connector.

The following are some of the XTS 2500 Key Features:

- 9600 baud Digital Trunking
- 10 Hour Battery Life Option with NiMH Ultra-High Capacity Battery
- Crystal Clear Digital Audio Quality
- Short Messaging Capability
- Large, Easy to Read 6 Line Backlit Display
  - 4 Lines of text; 2 lines Soft Icons
  - 16 Character fully Bitmapped Display
- Compatible with current XTS Audio Accessories
  - No Public Safety Microphone
  - No Vehicular Adapter
- Compatible with the existing ProSeries Batteries and Chargers
- Convenience Features
  - Time/Date Shown on Display
  - Smart Battery Fuel Gauge

2) XTS 5000

The XTS 5000 is capable of providing users with a single portable device to transmit and receive both voice and data. The XTS 5000 unit is ergonomically based on the design of the XTS 3000/XTS 3500 for minimal training. XTS 5000 units will provide a complete range of bands, models, high tier features, and leverage off the existing line of XTS accessories. XTS 5000 is currently in the development stages.

2.15.2. Existing Subscriber Units

1) ASTRO Saber Units

Due to cancellation plans for the ASTRO Saber product line, new Saber radios may not be ordered for operation on the ASTRO® 25 IP Platform with the voice only feature. However, FLASHport software upgrades will allow fielded units currently operating on the 5.0 platform to be upgraded to support voice only operation.

2) XTS 3000 Units

The XTS 3000 can be used in conjunction with the ASTRO® 25 IP Platform with the voice only feature in one of two methods:

a.) The radio can receive a FLASHport software upgrade which will allow fielded units currently operating on the 5.0 platform to support voice only operation.

b.) The radio may be traded in for credit that goes toward the purchase of a XTS 2500 or a XTS 5000 unit.

3) SPECTRA Mobile Units

ASTRO digital SPECTRA mobiles will require software upgrade for voice only operation..

2.16. Inter-Zone Network Transport Equipment

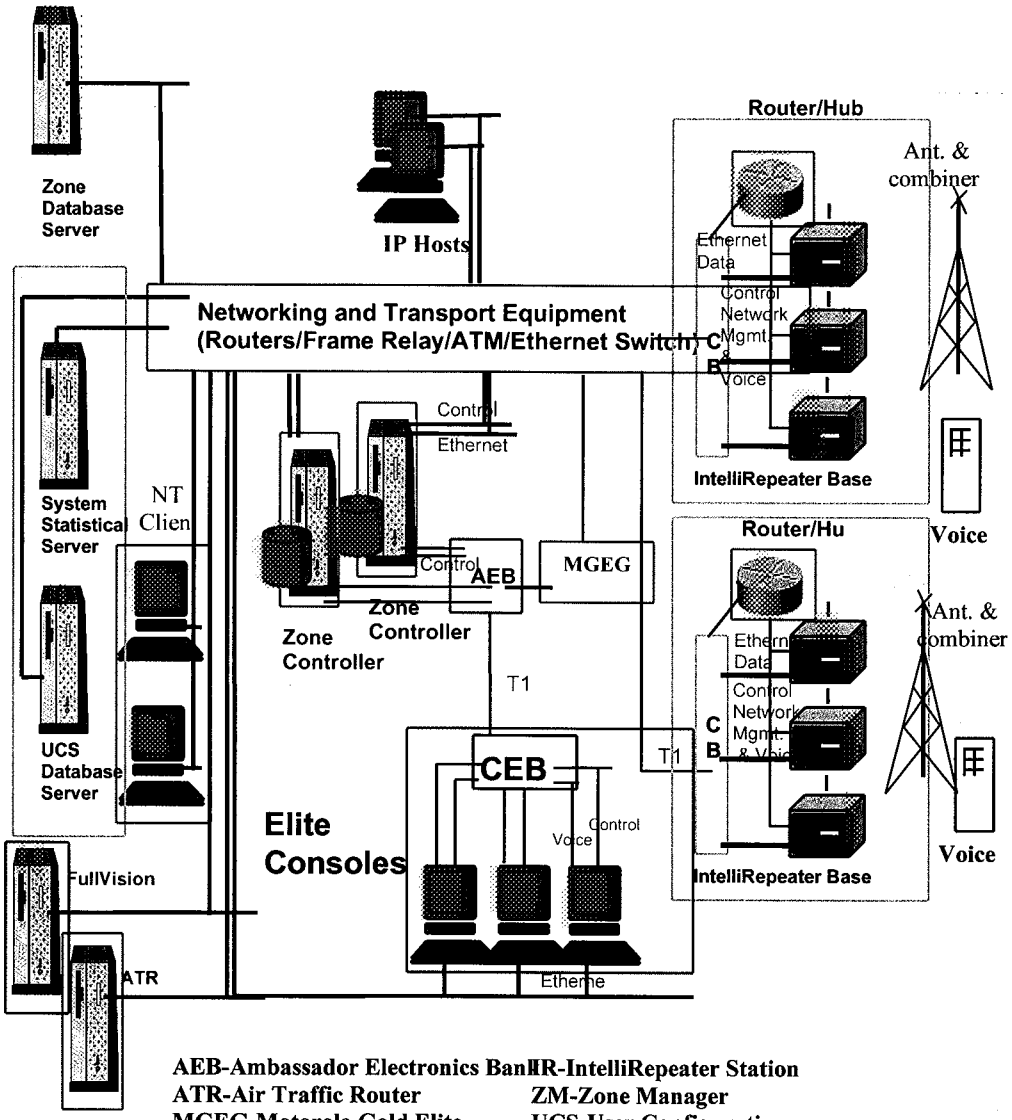
The Network Transport System (NTS) is made up of core equipment at each master site and boundary equipment at the remote locations this is referred to as the packet network . The system is designed to handle both site to site communication and site to multiple site communications. Communication sites consist of dispatch locations and transceiver sites.

The packet network consists of the Site Routers, Dispatch Routers, WAN Switch, LAN Switch and associated Core and Exit Routers. The Site Router provides the LAN to WAN connectivity at each RF site. The Dispatch Router provides the LAN to WAN connectivity at each Dispatch Site. The WAN Switch interfaces the Zone Core to RF Sites, Dispatch Sites, and system OSS, and connects Zones together through Intra-MSO and Inter-MSO links. Because this is mission critical traffic Motorola is providing a highly reliable solution which can include redundant logical and physical configurations.

Each location has IP addresses assigned and all applications share the network, which provides for robust network connectivity. A single virtual circuit now carries both the voice and data for each conversation rather then requiring separate channels for voice and control. Traffic is appropriately prioritized depending upon whether it is call control, voice, or network management.
This enterprise network is based on industry standard protocols and can be scaled to meet the customer requirements. Additional sites and channels can be easily added to the system if future growth requires more sites or channels.

See Drawing below titled: ASTRO® 25 IP Platform with the voice feature Transport Drawing

ASTRO® 25 IP Platform with the Voice feature Transport Drawing



AEB-Ambassador Electronics Bank
ATR-Air Traffic Router
MGEG-Motorola Gold Elite Gateway
SSS-System Statistical Server
IR-IntelliRepeater Station
ZM-Zone Manager
UCS-User Configuration Subsystem

2.16.1. Master/Central Site

2.16.1.1. Routers

The routers used in the system design are configured as core, exit, site, or dispatch. The location of the router will determine its function, and its interface. See Figure 2.16 Router Diagram.

2.16.1.1.1. Core Routers

The core routers are dynamically allocated resources located at the master site (Mobile Switching Office–MSO) and provide packet routing functions via IP addressing. Primarily, core routers handle intrazone routing functions between the MSO and remote/prime sites.

2.16.1.1.2. Exit Routers

The exit routers are dynamically allocated resources located at the master site (Mobile Switching Office–MSO) and provide packet routing functions via IP addressing. Primarily, exit routers handle interzone routing functions between MSO zones.

2.16.2. Remote Site

2.16.2.1. Site Router

The remote site routers perform the routing function between the MSO and corresponding remote location.

2.16.2.2. IR Upgraded

The IR site upgrade is comprised of associated hardware, software, and configuration changes which are required to accommodate the new ASTRO® 25 IP Platform functions.

2.16.3. Dispatch Site

2.16.3.1. Dispatch Router

The dispatch routers perform the routing function between the MSO and corresponding dispatch LAN.

2.17. Zone Equipment

2.17.1. Zone Controller(redundant)

The System shall provide control over communications routing using a zone controller. The zone controller shall utilize redundant architecture.

The CPU shall provide real time call processing and system management operation. Redundant operation of the zone controllers shall be used until fault detection. Disk drives shall be provided for storage and updates of the System and user databases. Redundant regulated power supplies shall be provided with parallel operation for continuous power.

2.17.2. WAN/LAN Switches

Enterprise LAN switch: An enterprise LAN switch is used per Zone to provide network connectivity to all servers, routers, Zone Controller, and data infrastructure. The switch is scalable by adding additional Ethernet modules. The switch is a chassis based product which allows for redundant supervisory modules and power supplies.

WAN switch: An enterprise WAN switch is used per Zone to provide network connectivity to all RF sites, dispatch sites and other Zones in the network. The switch is scalable by adding additional port modules. The switch is a chassis based product which allows for redundant supervisory modules and power supplies.

2.17.3. Audio Switch Equipment

The audio switch in conjunction with the MGEG and CEB shall provide the functionality of converting and routing audio in Gold Elite consoles.. The audio routing shall be controlled by the zone controller via redundant communication links.

The audio switch shall also provide all audio summing for the Gold Elite consoles.

2.17.4. Motorola Gold Elite Gateway (MGEG)

See Section 4 .2.1.

2.17.5. System Statistical Server(zone level)

The Zone System Statistical Server (ZSS) collects the historical data at the zone level. The zone level data is forwarded to the System Statistical Server(SSS).

2.17.6. Zone Database Server

Same function as the ASTRO® 5.0 System Zone Database Server (ZDS).

2.17.7. UCS Database Server(zone level)

Same function as the ASTRO® 5.0 System User Configuration Subsystem (UCS) however, the associated user server is eliminated.

2.17.8. ATR Server(zone level)

Air Traffic Router is responsible for collecting air traffic and zone activity to be distributed to the network management applications.

2.17.9. FullVision Server(zone level)

The FullVision™ Integrated Network Manager provides graphical alarm reporting for it's associated zone, this provides the same functionality as in the ASTRO® 5.0 System

2.18. System Equipment

2.18.1. System Statistical Server(system level)

System Statistical Server collects zone level statistics and compiles system level reports

2.18.2. FullVision System Server(system level)

The FullVision™ Integrated Network Manager provides graphical alarm reporting for it's associated zone, this provides the same functionality as in the ASTRO® 5.0 System.

87) In Exhibit A, Section 3.4.3., Zone Controller, delete the section and replace with the following:

MZC 3000 - General Specifications

Specification:	HARDWARE
Models:	T6497
Performance: *(CPUs and Memory)*	One Sun Sparc Engine CP 1500 440 MHz/256MB per Zone Controller
Operating System:	Solaris 2.7
Service Port Interface:	Sun XCP-TRN CPCI I/O Transition Card, TTYA
Power Required:	Two 15AMP 110V or Two 7 AMP 220V

SOFTWARE

Specification:	HARDWARE
Real-Time Operating System:	Solaris 2.7
General-Purpose Operating System:	Solaris 2.7

88) In Exhibit A, Section 3.4.4., Packet Switch delete the section:

89) In Exhibit A, Section 3.4.4.1., IGX Network Audible Alarm, delete the section:

90) In Exhibit A, Section 3.4.4., Packet Switch, delete the section:

91) In Exhibit A, Section 3.4.5., Audio Switch in the table below first paragraph change last row to read as follows:

AMB Audio Interface	Audio interface to CEB	Yes	Fully redundant interface and connections, Faults reported to TMS.

92) In Exhibit A, Section 3.5.1., Trunked Mobile Relay Base Stations, delete the last sentence in first paragraph, and replace with the following:

Metering and diagnostics shall be accessible and modifiable with Centralized Service Software via the Ethernet network.

93) In Exhibit A, Section 3.0 titled 800 MHz Equipment Technical Requirements, delete sections 3.10,3.11,3.11.1,3.11.2,3.11.2.1,3.11.2.2,3.11.3.3.12.3.12.1,3.12.2,and 3.13:

94) In Exhibit A, Section 4.2.1. , 800 Digital Interface Units, delete the section and replace with the following:

4.2.1. MOTOROLA GOLD ELITE GATEWAY

The Motorola Gold Elite Gateway (MGEG) is an interface device which allows CENTRACOM Gold Elite (TM) consoles to communicate on the ASTRO® 25 IP Platform System. This provides ASTRO® 25 IP

Platform trunking customers with the benefits of maintaining their current CENTRACOM Gold Elite console functionality.

The MGEG is capable of supporting over the air encryption services for ASTRO® 25 IP Platform with the voice only feature. Encryption keys shall continue to be managed using the Key Variable Loader (KVL).

95) In Exhibit A, Section 7, Network Management delete this section and replace with the following:

7.0. NETWORK MANAGEMENT

7.1. Network Management

7.1.1. Network Control Center

The System shall be equipped with network management equipment for control, diagnostic and automatic alarming capabilities for the 800 MHz trunking equipment, TBN equipment, towers and shelters. Network management equipment shall be installed at the Network Control Center (NCC) site 1108, the backup NCC at site 1102 and at other sites to be identified.

The NCC will be located at 4000 Collins Road, Lansing, MI, and operated by the Michigan State Police. The MSP will be responsible for the day to day operation of the System and the coordination of the maintenance.

7.1.2. District Dispatch Centers

District Dispatch Centers (DDC) shall be equipped for monitoring and control of the System. DDC locations are listed in Exhibit A, Section 4.1.1.

7.2. System Management - Alarm & Control System (ACS)

An Alarm and Control System (ACS) shall be provided for System management, which shall continuously monitor and control the 800 MHz trunking equipment, TBN equipment, shelters and towers. The ACS shall be equipped for monitoring and locating problems on all major System equipment, including as a minimum the following:

1) 800 MHz Trunking System Controllers,

2) 800 MHz Trunking System Packet Switch Network,

3) 800 MHz Audio Switching Equipment,

4) 800 MHz Central Electronics Bank Console Equipment,

5) 800 MHz Site Control Equipment,

6) 800 MHz RF Repeater Equipment,

7) 800 MHz Antenna System Equipment,

8) TBN Microwave Radio Equipment,

9) TBN DACS Equipment,

10) Multiplex and Channel Bank Equipment,

11) Shelter Environmental Equipment,

12) Shelter Security Equipment,

13) Shelter Electrical Equipment, and

14) Tower Lighting Equipment

The ACS shall employ a self-healing feature to ensure that alarms are always received by rerouting alarms to redundant computers at other locations. Equipment alarms shall be a relay contact, an analog voltage, or 8-bit word (ASCII-based) serial protocol. Any failure of the ACS shall not inhibit 800 MHz equipment operation. All alarms that are detected and identified as associated with the microwave radio sites will be reported to all graphic work stations. ACS shall include password access control and access to the database for data hand-off to a trouble ticket system. The State will define the information to be handed off from the ACS to the trouble ticket system. Motorola shall provide the format and the details of the physical handoff to the State. MSP will coordinate the integration of the third party software and the ACS data.

The ACS software shall be based on industry standard platforms includes as a minimum 1) MS 2000 Windows platform 2) Intouch Wonderware or equivalent graphics platform. The ACS hardware shall utilize standard computing processors, such as Intel Pentium and Motorola 68302 or later versions of each.

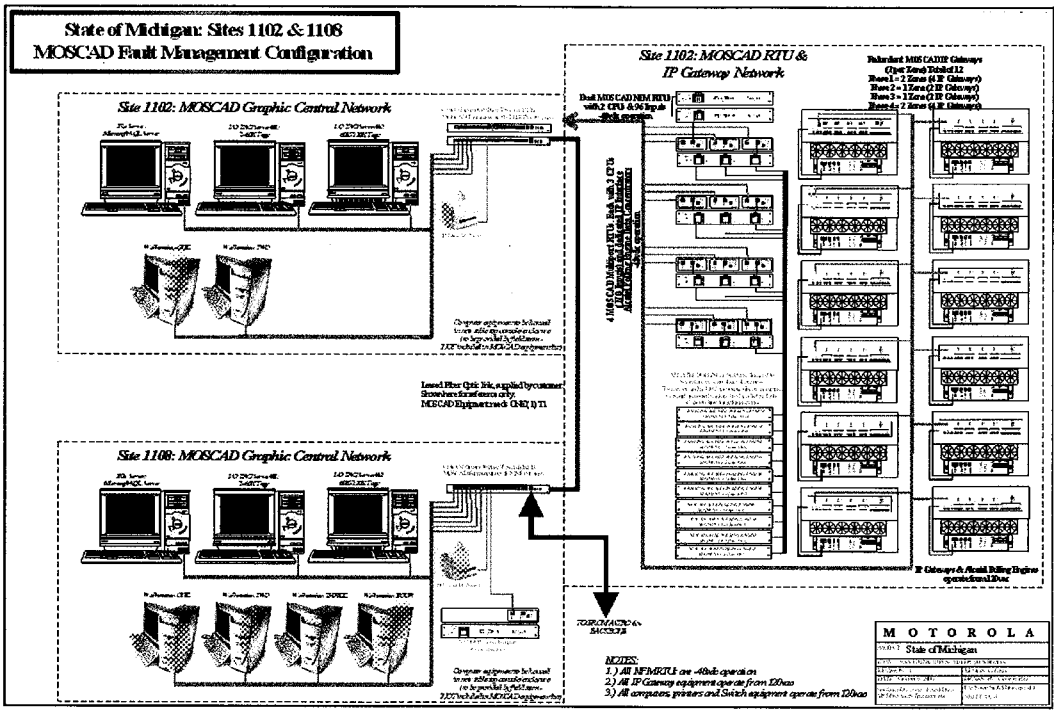


Figure 7.1 Moscad Overview

7.2.1. ACS Hardware

The ACS shall consist of four master stations with a total of eight Graphic Work Stations (GWS). The master stations shall be located at the NCC (1108), 1102 and other locations.

The ACS Master Station shall consist of a Windows Microsoft SQL File Server (FS),two I/O Tag Servers and Client Graphic Work Stations (GWS).

The master stations shall be interconnected via common network communications channels The network communications channel shall utilize the ASTRO® 25 IP Platform with voice only feature network, the radio service channel or DS0. The ACS system elements of the master stations are:

Equipment	Function
Alcatel RTU1	Connection to the primary polling engine
Alcatel RTU2	Connection to the secondary polling engine
Primary Polling Engine	Primary polling engine for the associated MCS-11 gear (Alcatel equipment)
Redundant Polling Engine	Secondary polling engine
IP Gateway 1	Conversion, IP encapsulated MDLC to Motorola open source encapsulated IP
IP Gateway 2	Redundant Gateway
NFM RTU	Local Site Alarms
I/O Tag Servers	Dual tag servers spilt the load of input and output services
SQL Server	Used for ACS database storage
GWS	Graphic Workstations used as clients
Cisco Enterprise LAN switch	This is the network connection into the ASTRO®25 system

- I/O Tag Server: Two I/O tag servers will be located at each master location to distribute process of alarm tag information.
- Minimum requirements for hardware Pentium Pro computer with a 300 MHz processor, 128 Mbytes RAM, 4 GB hard drive e, 32X CD-ROM drive, 100 MB ZIP drive, and monitor
- Graphic Work Stations (GWS): The GWS provides alarm network administration and monitoring functions.
- Minimum requirements Pentium Pro computer with a 300 MHz processor, 128 Mbytes RAM, 4 GB hard drive e, 32X CD-ROM drive, 100 MB ZIP drive, and monitor.

7.2.1.1. ACS Master Station Description

The four master stations, the IP Gateways and the new MOSCAD Network Fault Management (NFM) RTUs shall be connected to the ACS network via the ASTRO® 25 IP Platform with the voice only feature. The master stations communicate with the Site NFM RTUs and the Front End Processor (FEP) NFM RTUs (NFM with a software package used to interface to the polling engines) via the IP Gateway(s). The FEP NFM RTU(s) then communicate with the MCS-11 polling engine(s).

All of the NFM Remote Terminal Units (RTU) and MCS-11 devices that are employed to monitor alarm and status shall be connected to its associated ACS network segment and channel.

The ACS Master Station shall consist of a Windows Microsoft SQL File Server (FS),two I/O Tag Servers and Client Graphic Work Stations (GWS). Each Master Station will operate independently of the other Master Stations. The File Servers and I/O Tag Servers shall be connected to the IP Gateway(s). The GWSs shall access alarm information through the local network connection.

The FEP NFM RTU is a MOSCAD NFM RTU with an application specific software package installed and is dedicated to the polling engine interrogation and storing and routing of alarm and status event data. The operator sends control function commands from the GWS through the associated Gateway to the (MCS-11) FEP NFM RTU. The FEP NFM RTU then communicates with a designated polling engine. A single FEP NFM RTU module can control an MCS-11 polling engine (127 MCS-11 device addresses).
The IP Gateway is a smart unit, based on the Motorola 68360 microprocessor and includes on-board memory, communication channels and indicator LEDs. It provides the File Server with access to the ACS system. Access is achieved via a network connection to the Gateway. The Gateway provides the FS with a single IP interface to both the ASTRO® 25 IP Platform with the voice only feature and the microwave network (FEP NFM RTU). The Gateway to NFM RTU is based on the seven layers of the MDLC protocol. The IP Gateway uses the TCP/IP LAN Protocol for exchanging data application messages with the File Server software. The implementation of the IP Gateway interface allows the File Server to perform the following:

- Receive MOSCAD Site and FEP NFM RTUs COS events. Send commands to the MOSCAD Site and FEP NFM RTUs
- Send commands via broadcasts to any required group of NFM RTUs
- Download parameters (set-points) to the NFM RTU local process
- Receive spontaneous reports (contention) from NFM RTUs (both burst and event transmission)
- Support redundant IP Gateway configuration

The IP Gateway software provides MDLC services to the File Server(s). The MDLC application layer is used for receiving events, status and telemetry calculated data from the MOSCAD NFM RTUs to the File Server central applications. It is also used to send controls and process parameters from the File Servers to the MOSCAD NFM RTUs.

All display monitors within the ACS shall be 1024 x 768 Super VGA 17" color monitors.

7.2.1.2. ACS Remote Site (MOSCAD NFM RTU) Equipment

Each site shall have an intelligent Network Fault Management (NFM) Remote Terminal Unit (RTU). The NFM RTU shall collect and report: alarms and status conditions to the master stations. The RTU shall also be capable of dry contact output controls. The data communications speed shall be at least 2400 Bps. The minimum number of alarms shall be 32 inputs and 8 digital control outputs. Sites with a Zone Controller shall be provided with additional alarm or control expansion modules. Sites required to monitor other devices such as QUANTAR stations, Trak® time standards, or Premisys™ channel banks shall be equipped with the appropriate additional modules. The site NFM RTU alarms will be aligned to match the zones.

7.2.1.3. ACS Microwave Radio (MCS-11) Equipment

MCS-11 polling engines will provide the conversion of alarm and control information from the microwave radio overhead to the dedicated MOSCAD FEP NFM RTUs. The MCS-11 Polling Engine (PE) units shall continuously poll their associated Alcatel microwave radios and digital multiplex for status and alarm information. The alarms monitored in each radio and multiplexer are defined as Remote Detail Scanners, Remote Analog Scanner, and Remote Station Scanner (RSS). Control functionality will be processed through Remote Control Decoder (RCD) scanners . The State of Michigan system design will utilize several segments of digital service channels to poll all of the MCS-11 devices in the system. The existing segments for Phases 1,2 and 3 will not change. Microwave equipment alarms (MCS-11) will not be aligned with zones.

7.2.1.4. ACS Communications Functions

In the MPSCS the data links include the MCS-11 polling engines, FEP NFM RTU's, (interface to MCS-11 polling engine) NFM RTU's (primarily used to gather site alarms), IP Gateways and wireline modems for dial-

in access and paging. (Note: the term FEP refers to the unique function of the NFM RTU when used to interface to the polling engine.)

Each site's MOSCAD NFM Remote Terminal Unit (RTU) will collect and report alarms and status conditions of the physical and environmental status to the Master Stations. The communications interface ports of the RTUs and Master Stations shall be IP. Data will be transported on the ASTRO® 25 IP Platform with the voice only feature network.

The MOSCAD interface to the Alcatel MCS-11 data is accomplished with a Polling Engine. The Polling Engine continuously interrogates the Alcatel microwave radios and multiplex units in sequence. The Polling Engine acts as a protocol converter between MCS-11 (Alcatel devices) and MDLC (MOSCAD CPUs). The completed system shall be configured so that each segment's polling engine (primary engine) has a redundant polling engine (secondary). The MCS-11 data shall be brought back through an integral 64 Kbs overhead service channel found on all of the Alcatel radios provided. The MCS-11 data is synchronous serial data. The polling engine shall clock data out on the MCS-11 side at 64 Kbs with an RS-422 interface and >= 9.6 Kbs with an RS-232 interface on the MOSCAD side. Data from Polling engines located at sites other than 1102 will be transported back to the FEP NFM RTU via a DS0 or sub DS0 connection.

7.2.2. ACS Functional Requirements

The ACS shall, at a minimum, perform the following tasks:

1. Monitor hardware and physical alarms
2. Report the TBN system status
3. Allow for troubleshooting of TBN elements and system fault analysis
4. Provide real-time and historical performance for monitoring and analysis
5. Provide remote preventative maintenance
6. Store alarm event data
7. Provide remote control capability

7.2.2.1. ACS Functions

Four (4) ACS File Server (FS) computers shall be provided. The ACS system shall be configured to periodically poll the complete network. The periodic poll rate shall be field adjustable. The ACS FEP NFM RTUs and IP Gateways shall be located at 1102. The Polling engines shall be distributed by segment . This shall allow for continued operation during a system failure on the network backbone. Wherever possible the ACS shall be configured to support continued ACS operation to include alarm reporting and control during a single backbone failure on the network. This shall be accomplished by the use of redundant IP Gateways, Polling engines including the associated FEP NFM RTUs and multiple circuits between the master location and the redundant equipment as necessary. The ACS shall be configured so that during a local master failure the remote master locations shall continue to receive alarm information without interruption.

The MOSCAD File Servers collect real-time data from the sites, via the IP Gateways. The File Server (FS) receives and stores data from the IP Gateways so that it is available to the users. The Graphic Work Stations (GWSs) display information from each site and microwave device. The interface to the Alcatel MCS-11 alarm channel is accomplished with the use of two additional units a FEP NFM RTU and a separate unit known as the Polling Engine. The Polling Engine computer continuously interrogates the microwave radios in sequence, and translates information from one digital message format to the other. On one side, the Polling Engine provides MCS-11 protocol emulation and an RS-422 interface to the radio. On the other side it provides an RS232 interface to the FEP NFM RTU.

Data relating to RTUs and MCS-11 devices is loaded into the database in the corresponding IP Gateway. The operator sends control functions from the GWS through the IP Gateway to a designated NFM RTU or MCS-11 device.(Only the MCS-11 device uses the FEP NFM RTU and polling engine). If communications with the site is lost, the master will be updated to the current status when the communication link is restored. Communications failures will be displayed on the GWSs. The I/O servers automatically poll the NFM RTUs based upon user configurable time frames to verify communication with each site. MCS-11 communication failures are monitored and reported by the polling engines.

Each File Server will connect to an IP Gateway via the ASTRO® 25 IP Platform with the voice only feature network. The IP connection will allow the IP Gateway(s) to pass data to the File Server(s). When a site alarm (MDLC) Change of State (COS) occurs, the RTU will report the new site information through the IP Gateway to the File Servers(s), the File Server will store the data in its database. When a microwave/mux (MCS-11) COS occurs, the Polling Engine will collect and pass the information to the FEP NFM RTU, which will then pass the data through an IP Gateway to the File Servers. The Graphic Work Stations at each master site will acquire the new data via the IP network connection.

The MOSCAD ACS shall include the software module WIN-911™ or equivalent for alphanumeric alarm paging. The software shall provide for automatic alerting of specific technicians depending on the alarm location and/or type.

The ACS shall be segmented as needed to allow for sufficient address availability and message response times. Loading on each segment shall be designed so that a system COS report rate of 10% will allow all alarm messages to be displayed on all GWSs within 62 seconds.

The ACS shall also be equipped with an interrogation function. When an interrogation is initiated the interrogated RTU will update the system with its current alarm status. Selective interrogation of any site shall occur without interrupting the monitoring of the remaining network. This feature shall ensure that a Change Of State COS is not missed while the master is used to interrogate a specific site.

Direct scanning of alarm points for closure/no closure shall be provided. Troubleshooting is accomplished by direct scanning of alarm points and control activity. Additionally, the system shall provide for control activation/de-activation commands to switch or adjust network elements and verify operational capability.

The MOSCAD ACS shall be designed to periodically provide scheduled synchronization of time between all master locations; file servers and GWSs. At site 1102 the TRAK® GPS timing source shall be connected to the File Server. The File Servers clocks shall be updated periodically by the TRAK® and be synchronized to within 7 seconds. Both Parties shall investigate and mutually agree to a design approach which will minimize the loss of alarm(s) information between 1102 and 1108 sites which occurs due to the duplicate database(s) and separate file server configurations within the ASTRO® 25 IP Platform with voice only feature. The alarm time stamp shall be performed upon receipt of the message at the file servers.

The ACS Master Stations shall be equipped to allow remote dial-in access to the ACS for accessing the COS history files. A remote user computer shall be capable of accessing the File Server as long as the remote user has been assigned remote dial-in privileges, a valid password and has the application software loaded. The MOSCAD CPU modules shall be configured so that they can be downloaded with new template or file information directly from the GWS.

The ACS shall be capable of interfacing with Motorola's FullVision Network Manager. SNMP shall be available, this will allow for future connectivity to other MPSCS network management platforms. All control operations shall be under password or user name and privilege control as defined by the administrator

The system shall identify and report Severely Error Seconds (SES) on each microwave path. Collection of the SES information shall be performed by circuitry within the Alcatel microwave radio. This shall allow the radio to count and store up to 255 SESs in each polling cycle

7.2.3. ACS Remote Station (NFM RTU) Functions

The MOSCAD NFM RTU shall monitor status changes from an on/off (Bi-State) alarm input and report these to the master station. It shall also be capable of monitoring analog inputs and sending both high/low thresholds and actual analog values, and/or accepting serial data from various sources over asynchronous RS232 or RS485 links, if specifically equipped with the appropriate modules and software.

The Control relays can be operated automatically and without master station intervention by using locally stored logic consisting of specific alarm point conditions. The MCS-11 remote equipment shall be capable of reporting alarms, status conditions and analog readings. It shall also provide for the control operation of the associated MCS-11 device. The MCS-11 devices shall be the M1-3 multiplexers and the microwave radios.

7.2.4. ACS Master GWS User Functions

The GWS shall allow personnel to monitor and control the ACS. The GWS operates controls on a point and click basis. Alarm notifications and alarm priority levels shall be represented by various alarm color changes and an audible alert provided by the PC. The GWS shall utilize four levels of window categories:

1) Network Layout - Shall include the icons, which represent each specific region within the system.

2) Region Layout - Shall include an icon representing each unique site within the region. It shall also display communications routing (path) from one site to another site within the specific region.

3) Site Layout - Shall include one tab per device at the site. These shall include digital inputs, digital outputs, MCS-11 devices, and other serial communications devices.

4) Device Layout - Shall include the associated alarm point icons for the device that is being viewed.

The Network level and Region level maps shall be vector based. These maps shall be drawn by Motorola in a bitmap format and imported into the ACS. The window for the Site level and Device level will be created by Motorola and can be edited on the GWS by the user. Additionally, a map editor shall be provided for GWS configuration. It shall allow the user to define and select regions, define icons, place and select sites, place device icons, and place and define alarm icons.

Dial up access shall be available using a properly configured Windows based client PC running the application software. Password levels on the GWS and the dial-in port will control access. The ACS shall use a multi-user operating system (Windows based), so that the dial-in remote operation shall not interrupt alarm monitoring of the network.

All alarms shall be displayed graphically and in plain English text in a separate window on all of the GWSs. In addition any and all alarms shall be printed when selected using the report writer.

7.2.4.1. Network (State of Michigan) Level

The opening color display screen on the GWS at this level shall be an outline of the State of Michigan showing the borders of the regions. The Network level window map shall display locations monitored on a regional basis. Each region shall be represented by an icon.

When an alarm occurs, the specific region icon shall change colors to indicate which region has an alarm. The operator will click the region icon to open the Region window.

7.2.4.2. Region Level

The display on the GWS at this level shall be the outline of the particular region selected by the operator, with a labeled icon reflecting each site being monitored. Within the Region level window, when an alarm occurs the specific site icon shall change colors and indicate the site where an alarm has occurred. The operator will click on the site icon to open the Site level window.

7.2.4.3. Site Level

The Site level window shall show individual alarm points and equipment at each site. 32 bi-state alarm points shall be displayed within this window. Tabs shall be provided to navigate to specific MCS-11 devices or the 16 control points. The tabs shall flash to indicate where a specific alarm has occurred.

7.2.4.4. Device Level

The Device level window shall be the lowest level. It shall display the status and control points within the associated device. One text line per alarm shall be displayed and shall be user created to reflect the alarm type. When an alarm occurs, the specific alarm text shall change colors. This may reflect not only the circuit that has an alarm, but also the priority level of the alarm. See Figures 7.2.4.4a and 7.2.4.4b for color descriptions.

COLOR	ACTION	INDICATION
Green	On	Normal Condition
Green	Flashing	Unacknowledged Return to Normal Condition
Red	On	Acknowledged Service Affecting Alarm
Red	Flashing	Unacknowledged Service Affecting Alarm
Yellow	On	Status Indication Change

Figure 7.2.4.4a MOSCAD Alarm Point Color Matrix

COLOR	ACTION	INDICATION
	On	Unacknowledged Active Alarm
	On	Unacknowledged inactive Alarm
	On	Acknowledged Active Alarm

Figure 7.2.4.4b MOSCAD Text Color Matrix

7.2.4.5. Comm Screen

The Communications Screen shall display the status of data flow between the ACS elements. It shall have three tabs to allow navigation to the following areas of further detail:

- The MDLC tab shall display the system MOSCAD CPU configuration;
- The MCS-11 tab shall display a list of all sites with MCS-11 equipment;
- The System shall show all IP Gateway connections to GMC File Server facilities.

7.2.4.6. Alarm Summary Screen

The Alarm Summary Screen shall include a button to toggle between the two available alarm lists. The Alarm History list shall display all alarms since the last system boot, up to a limit of 2,000 alarm messages. These shall be displayed in different colors to indicate the status of each specific entry. The Alarm Summary list shall show only the active alarms in red. The Alarm Summary shall also be able to appear as a floating window to give the operator a continuous view of recent open alarms.

7.2.4.7. ACS Reports

Custom reports shall be available at anytime to the operator. Reports shall be generated from each GWS without disabling network monitoring, thus ensuring that COSs are not missed. Reports shall also be customized from any of the GWSs. The reports shall be generated from a Windows supported database. A Windows application interface will allow the user to create a customized report by using a series of drop-down lists and check boxes. These lists and boxes shall include date, device type, site number, and alarm state in any combination to include SESs. The File Server at each master ACS site will store the database. All other GWSs at a site will utilize the database via the local network connection. The reports shall be generated from the user-selected text fields which include: 1) Site Number 2) Device Name 3) Date and Time 4) Alarm and Control State. A History database log (minimum 150,000 events or 31 days) shall be available for reports as well. Real-Time Alarm Status will be made available through the Graphics Central alarm summary screen.

7.3. The 800 MHz Trunking Management System (TMS)

An 800 MHz Trunking Management System (TMS) shall be supplied as an integral part of the System. This shall include user access to databases for data entry and retrieval, record keeping, adjustment of system operational parameters and System usage data.

7.3.1. TMS Hardware

The TMS interfaces to the computers that control operation of 800 MHz radio site equipment. The TMS computers shall be standard mini or microcomputer equipment using custom software to provide the required functionality.

Hardware for the TMS shall consist of: 1)multiple application/database servers, 2) Client work stations (user stations), and 3) An Ethernet Network.

The servers shall provide users with the ability to log in and access the TMS applications over the Ethernet Network. TMS shall provide network printing capability. The servers shall be accessible the remote user work stations located at the various district dispatch centers. The user work stations shall be the user interface to the zone controller database. The user will enter configuration information, updates the database and monitors system operations through the terminals. These terminals shall be capable of either co-location with the zone controller or being networked from a remote location.

The user work stations shall be connected to the Ethernet Network and shall allow the user to view screens and monitor activity on the System. Through a keyboard, the user will access the software windows to enter or modify data. The four areas of the keyboard used by the Zone Manager shall be : 1) Alphanumeric Keys (enter or modify data by using these keys), 2) Function Keys (F1 - F10), 3) Display Edit Keypad (These are the keys located between the numeric keypad and the alphanumeric keys and used to maneuver within a window), and 4) Numeric Keypad (enters numeric data).

Connection of the remote user work stations to the servers shall be accomplished by means of DSU channels on the TBN or via remote Ethernet LAN. User work stations shall be provided at all seven of the District Dispatch locations, the NCC and at CID to allow access for trunking data entry or retrieval.

The ASTRO® 25 IP Platform shall have both Zone and System Statistical Database Servers, ZSS and SSS, which feed the dynamic and historical reports applications.

The above hardware is based on today's technology. As technology advances, this equipment may change. Motorola will communicate to the State any changes being made to the hardware. If new technologies and

methodology becomes available prior to implementation, Motorola may change specific hardware and physical location of the hardware. Functionality will NOT be affected and cost will NOT increase to the State.

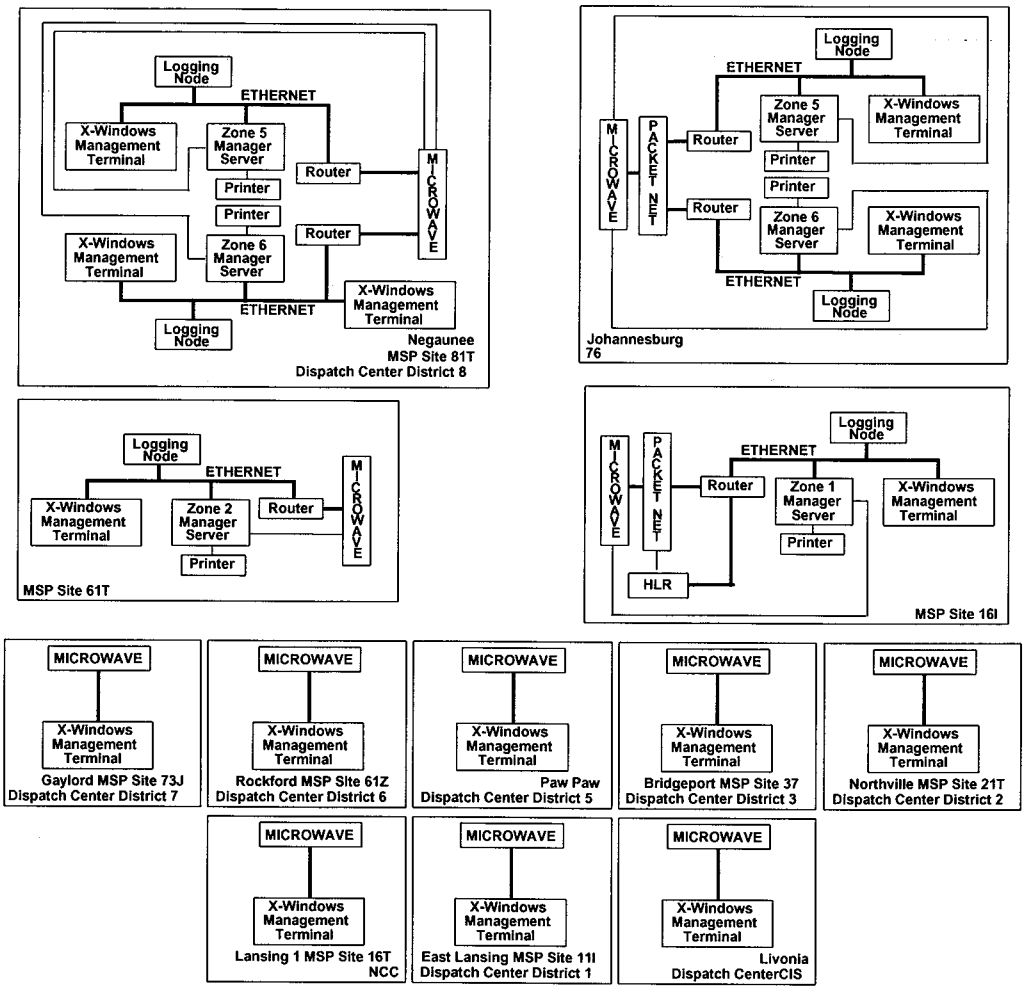


Figure 7.3 TMS Overview

7.3.2. TMS Functional Requirements

Wide area coverage and operations are to be maintained and controlled from the TMS. The TMS shall provide the capabilities to enable groups or individual units for operation on all sites or a limited number of sites as may be desired by the State. Similar flexibility is required for dispatch centers. The ability to limit the control of single dispatch centers to a limited number of or all of the sites, and, conversely, the ability of one or more sites to be controlled by multiple dispatch centers shall be provided. These functions include enabling, disabling, or altering the wide area capabilities of any unit or group regardless of the location of the radios and regardless of dispatcher knowledge of the location of the radio(s).

The TMS shall provide functional requirements consisting of:

Requirement	Operational Description
Password protected	Each operator on the TMS shall receive a separate password and is assigned to specific talkgroups. This shall protect the database from unauthorized users. In addition to the login password, certain functions shall be password protected, such as Dynamic Regrouping and deactivating radios over the air.
GUI /Menu driven screens	The TMS shall uses menu driven pictorial screens. Users shall not have to remember complicated commands. Users shall be led through menus by pictorial representations and selecting ICONS
Access to equipment parameters	Authorized operators shall have access to equipment parameters from any user terminal.
Maintain individual radio user profiles	Authorized operators shall have access to individual user databases. This allows parameters such as statewide capability, priority levels, busy override capability, and message or transmission trunking to be reviewed and modified if necessary.
Telephone interconnect	Authorized operators shall determine which users have access to use telephone interconnect. In addition, the operators shall be able to restrict certain users to dial only specific exchangers or area codes.
Set and adjust timing parameters	Authorized operators shall adjust the parameters listed below and, in addition: - Maximum interconnect call time per month for an individual 0 - 45,000 minutes - Time the system will hold a channel to wait for a wide area call at sites where all channels are busy. 0 - 255 sec
1) Call length	The times can be set independently for: Group dispatch calls 0 - 60 minutes Private calls 0 - 60 minutes Emergency calls 0 - infinity Telephone interconnect calls 0 - infinity
2) Repeater hang time	The hang time shall be set for talkgroups at 0 - 6.3 seconds
3) Emergency call hang time	The hang time shall be set for emergency calls at 0 - infinity
4) Telephone interconnect hang time.	The hang time shall be set for both individual and group interconnect calls at 0 - infinity
Establish individual and talkgroup priority levels	Authorized operators shall set and modify the priority levels for individuals and groups. Each user shall have separate priority levels: one for the individual, one for each talkgroup, and one for interconnect calls.
Radio site alarms	Repeater failures such as Transmitter Failure, Receiver Failure and Audio Path to IntelliRepeater Failure shall be reported at the TMS terminals. Alarms shall be reported as they occur and as historical reports.
Radio Site Diagnostics	Radio site diagnostics shall be reported at each dispatch center. Equipment alarms such as power variations (both forward and reflected power are monitored) shall be reported by the TMS.
Establish dynamic regrouping prestored plans	Operators shall be able to reassign radios to new talkgroups. This allows radio users who are not normally part of the same talkgroups to communicate with each other. Dispatchers shall be able to create plans in advance.

Activate prestored dynamic regrouping plan	Operators shall be able to activate regrouping plans that have been preplanned. When activated, each radio shall automatically send a message to the dispatcher, indicated that they have reached the new talkgroup.
Execute dynamic regrouping without prestored plans	Operators shall be able to regroup radio users one at a time from their terminals. Each radio shall send a message to the dispatcher indicating they have reached the new group.
Activate and deactivate radios over the air	Operators shall be able to inhibit the radio from transmitting and receiving any communications.
If the radio cannot be reached, continue to search until it can be deactivated	If a lot or stolen radio has been turned off when the inhibit command was issued, theTMS shall warn the dispatcher that the command has not been successful. At designated time intervals, the TMS shall continue to update the dispatcher on the status until the radio is inhibited.
Reinstate deactivated radios	Once the radio has been recovered, the dispatcher shall be able to return it to its full capabilities. Operators issue this command over the air from the TMS. No additional reprogramming is required.
Request and print system activity reports	Authorized operators shall be able to request system activity reports and have them printed at the local printer.
Statistical analysis of retrieved data	The zone controller shall route air traffic information to a separate server computer which shall be accessed via any of the client work station user terminals. Each zone shall have its own server computer which will then transmit all of its data to a central location for processing.
Monitor and log radio activity	The zone controller shall track all system activity and makes the information available at the user terminals. Information which shall be available includes the following:
a) Activity at a Repeater Site	The TMS shall track activity at a site based on a percentage of usage of that site.
b) Call type	Call type shall track whether the call was a group dispatch call, private conversation, or an interconnect call.
c) Caller ID	The caller's individual ID shall be recorded.
d) Called ID	For private conversations, the receiving radio's ID shall be recorded.
e) Time of call	The time the call was initiated shall be recorded. The length of time that the call took place shall also be recorded.
f) Which channel was used	The channels that were used for the call shall be recorded.
Control of multiple site calls	Each user terminal shall be connected to the zone controller and shall allow the dispatchers access to information in the controller, including multiple site operation. For example, dispatchers shall control which users can request multiple site calls, and whether some users should be restricted to operate only on a subset of sites.
Access zone controller databases	Each user terminal shall be connected to the zone controller and shall allow the dispatchers to have access to information including the following:
a) Determine which site an individual is operating on	Each time a radio user turns the radio on, turns the radio off, switches talkgroups, or travels to a new site, the radio shall automatically sends an affiliation message to the zone controller. The controller shall record the site information. If a dispatcher needs to know which site a user is operating on, that information shall be available.
b) Determine the number of users operating on the system	Operators shall be able to request a report through a user terminal to show the number of users currently active on the system.

c) Display emergency calls	Each time a radio user presses the emergency button, the user terminal shall issue an audible alert and visual alert. The screen shall display the user's name in plain English, along with the emergency condition.
d) All screen displays available	The TMS displays all of the screens described in this section. If the State chooses to have a third party write a software package for statistical analysis of retrieved data, that software will run on a separate computer.

TMS functions are grouped into these major categories:

A. Configuration Management of: 1) Subscribers , 2) Zone controller, 3) Sites, 4) User work stations, and 5) Reports 6) MGEG 7) PDG. TMS users shall be programmed for access to only specified units and talkgroups. The State determines what access capabilities each user will have.

Configuration Management shall enable the State to add, change, delete, and configure various objects including the zone controller, site, audio switch, data links, and ports.

Subscriber management shall enable the State to enable or disable access to various user functions, such as Private Call or Multigroup Call, on an individual user or on a Talkgroup basis.

Information on radio units in the system shall be stored and displayed on a system basis, not on a site or zone basis.

B. Fault Management for 1) Diagnostics of the RF site data links. Alarm messages shall be sent as soon as faults occur. No dialing up or polling shall be required to determine if an RF site link failure has occurred, 2) A history of failures of objects. This shall allow the State to discover trends and take the appropriate measures, 3) User terminal access to status of any device, such as repeaters, controllers, site links, etc., and to determine the current status of that object (operational, inoperative).

Through the Fault Management menu on the TMS terminals, the users shall be able to view current system alarms, alerts, system status, and history of system components. The user shall also be able to perform diagnostics and review current system resources and capabilities.

The fault management features shall be accessed through pop-up and pull down menus on the TMS terminals. Different windows within the fault management menu shall manage information for the entire system, for a class of objects or for one specific object.

Fault management shall contain the following windows: 1) Alarm /Alert Indicators, 2) Current Alert, 3) Alert History, 4) Current Alarms, 5) Alarm History, 6) Current Status, 7) Alert History Details and 8) Diagnostics.

Alarm / Alert Indicators Window - The Alarm / Alert Indicators window is in the upper left corner of the CRT screen. This window shall give an active and acknowledged count of alerts and alarms. This window also shall contain an Alert and an Alarm icon. These icons shall change colors to represent different active alert and alarm conditions in the system.

Users shall only receive, acknowledge and delete alarms for their assigned talkgroups or sites, based on password protection that the State designates.

Alerts shall be generated from a site or piece of equipment as it changes status, such as in-service to out-of-service. A 'beep' tone shall notify the user whenever an alert is generated. When the percentage of malfunctioning devices exceeds a programmed threshold limit, the TMS shall generate an alarm

Alarms shall have four priority levels which are based on the OSI fault management standard. An alarm shall change its priority level when it exceeds the programmed threshold limit set by the system. The table below lists the alarm priority levels and thresholds. An audible tone indicates to the user that an alarm has been generated.

Alarm Name	Level	Threshold
Critical	1	100%
Major	2	75%
Minor	3	50%
Warning	4	25%

To access either the Current Alert window or the Current Alarm window, a double click on the icon shall bring up that desired window.

Current Alert Window shall display those alerts currently active. The window shall be able to display alerts for the entire 800 MHz system, a class of objects or one specific object.

The most recent alerts shall appear in the top section. Alerts generated while the window is open shall appear in the bottom section.

The table below lists the Current Alert Window fields available

Field Name	Field Description
Date / Time	The date and time the alert is generated
State	The current status of the alert. This field reflects ACTIVE or ACK (acknowledged)
Object	The alias(1) path name of the object generating the alert
Status Text	The current status of the object generating the alert
Reason Text	Additional explanation for the objects current status

(1) All alias names are customizable. The State can give any object or path any alias name they choose.

Alarm History Window - This window shows deleted alarms.

Current Status Window shall display the current status for the selected class or object. The fields available are listed in the table below:

Field Name	Field Description
Display Object	The alias path name of the object displayed
Status	The current status of the object
Reason	Additional information on the current status of the object.

Alert History Details Window shall display messages from the TMS to assist a technician in troubleshooting a problem. These messages can be added to the TMS database at any time. This window lists the most recent technician messages. The table below lists the field available in this window.

Field Name	Field Description
Date / Time	The date and time the message was entered.
Object	The alias and object class of the object
Other (not labeled)	The message entered by the technician

Diagnostics Window shall access diagnostic information through pop-up menus selected in object windows. This menu option can perform one of the following operations on the selected object:

Object	Diagnostic Performed
Zone Controller	Enable/Disable
IntelliRepeater Site	Site Off/Site Test/Site Failsoft/Site Trunking/Wide Trunking

Manager Servers	Off/Disable/Enable/Reconnect

An example of the functions that can be performed on a Site are listed below in the table.

Diagnostic Name	Function Performed
Site Off	Disables the site
Site Reset	Tests the site
Site Failsoft	Site to enter failsoft
Site Trunking	Site enters site trunking mode
Wide Trunking	Site is fully operational in the wide area trunking mode

The failure analysis shall consist of the above steps which allow TMS users to: 1) Be notified if there is a problem, 2) Check the status of an object, 3) See what is wrong, 4) Run diagnostics and 5) Receive technician messages.

C. Voice Traffic Accounting/Performance Management for: 1) Statistical analysis, such as Call Duration for talkgroup calls, Call Duration for Emergency Calls and Call Duration for Private Calls, 2) Site Summaries including Duration of Talkgroup calls, How many talkgroup calls, Duration of busies, How many busies, Duration of Emergencies, How many Emergencies, Duration of Private Calls and How many Private Calls, 3) Individual Radio Summaries including Duration of Talkgroup calls, How many talkgroup calls, Duration of busies, How many busies, Duration of Private Calls, and How many Private Calls, and 4) Transaction Summary Reports per time period including Number of Emergencies and Number of Call Alerts.

Specific reports shall be: 1) Zone Summary Reports (based on State defined time intervals) to include Talkgroup call duration, Talkgroup call count, Talkgroup call busies duration, Talkgroup call busies count, Private Call duration, Private Call Count, Private Call busies duration, Private Call busies count, Emergency Call duration, Emergency Call count, and percent Usage, 2) Site Summary Reports (based on State defined time intervals) to include Talkgroup call duration, Talkgroup call count, Talkgroup call busies duration, Talkgroup call busies count, Private Call duration, Private Call busies duration, Private Call busies count, Emergency Call duration, and Emergency Call count, 3) Talkgroup Summary Reports (based on State defined time intervals) to include Talkgroup call duration, Talkgroup call count, Emergency Call duration, Emergency Call count, Busied calls duration, Busied calls count, Average call duration and percentage use, 4) Individual Radio Summary Reports (based on State defined time intervals) to include Talkgroup call duration, Talkgroup call count, Talkgroup call busies duration, Talkgroup call busies count, Private Call duration, Private Call Count, Private Call busies duration, Private Call busies count and 5) Transaction Summary Reports (based on State defined time intervals) to include Number of Emergency Calls and Number of Call Alerts.

D. Security Management for Using Agency Partitioning. User terminals shall be configured to allow users to access only their designated radio devices (radios, talkgroups and infrastructure). This allows for department autonomy while maintaining a single, statewide common infrastructure.

The user interface shall use windows to interact with the software applications. To assist the users, help windows shall be available from every screen. These windows shall explain the function and format of a screen. They shall also assist the user in performing tasks within the TMS application. The Help window shall contain two sections. The top section shall display help text for a selected topic. The bottom section shall display a list of related help reference topics. The topics appearing in the bottom of the window shall change according to the context in which the window was invoked.

A user shall be able to access a Help window through one of three different methods. These shall include: 1) pull-down window, The Help pull down menu shall appear on the far right hand side of the menu bar on all windows. This shall be designated with the single word, "Help", 2) function key, The Help function key shall be 'F1' on the keyboard. This key shall provide context sensitive information about a field, pop-up window or system object, and 3) push-button, Pop-up windows in Configuration Management and Fault Management

shall contain Help push buttons. By clicking a Help pushbutton, users shall be able to obtain information on the other push buttons in the pop-up window.

The TMS shall be a multi-tasking, multi-user operating system using the UNIX platform. Using resource locking, the TMS eliminates conflict among users with more than one dispatcher capable of being logged on at the same time. When more than one dispatcher is logged on, each shall have access to different radio databases. Also, a dispatcher shall be able to access more than one function on the same screen. Each dispatcher shall be given a logon password. This password authorizes them to access only a predefined set of radios and functions.

The TCP/IP protocol for the TMS shall use the network and transport layers of the OSI (Open System Interface) model for all devices which utilize the Ethernet LAN in the Manager system.

SNMP protocol is an Application layer of the OSI model and shall be used between the zone controller and any objects it manages including the audio switch and repeaters

Ethernet protocol is the physical and data link layer of the OSI model. The TMS shall use IEEE 802.3 standard protocol and the physical layer is used to actually connect the devices together.

In addition to the user terminals provided at each dispatch center, State officials shall be able to obtain access from other computer systems. Personnel must have properly authorized passwords. They must also have a terminal that runs X-windows and a dial-up modem.

7.4. Packet Switch Management

Details to be developed in the DDPs for Phase 4 ASTRO® 25 IP Platform and Phases 1,2, and 3 ASTRO® 25 IP Platform.

7.5. DACS Management

The Digital Access and Cross Connect (DACS) equipment shall be provided with a graphics oriented network management system (DMS). This management system shall provide network configuration, and a means of storing and reloading the configuration to support recovery from outages.

The management system shall provide a topology map which shows the DACS network. Icons shall represent the individual DACS elements and the T1 links that interconnect these network elements. The map will be used to identify and isolate network problems. Alarms shall be displayed on the console and the console shall have the ability to access detailed alarm screens. There shall also be alarm monitoring on the network at each DACS node.

The DMS shall be password protected to prevent unauthorized personnel from changing the network configuration. The DMS shall allow remote management and control of the cross-connect equipment for the TBN at various sites throughout the State.

The DMS terminal shall be installed at the NCC.

The NCC, DACS Manager terminal will also store alternative cross connect configurations and can be used to load alternative cross connects into the DACS equipment. This will provide for path reroutes over the microwave system via the DACS locations.

7.7. Site Management

7.7.1. Prefabricated Building Management

Diagnostic capabilities shall be provided at all System sites. Sensors and alarms shall be provided to monitor environmental and security aspects. Site status and alarms shall be reported through the ACS.

7.7.2. Tower Management

Diagnostic capabilities shall be provided for tower management. Tower light status and alarms shall be reported through the ACS.

7.7.3. Power Systems Management

Diagnostic capabilities shall be provided for power systems management. Power variations and failures shall be included in this diagnostics capability. Power system status and alarms shall be reported through the ACS.

96) In Exhibit B, Section 1.3.1., Motorola Tasks, add the following:

15) Provide Subscriber upgrade kits for all Subscribers currently operating on the MPSCS ASTRO® 5.0 System which shall allow operation of these Subscribers on the ASTRO® 25 IP Platform. In addition to the current number of Subscribers, Motorola shall supply up to an additional 150 upgrade kits to the State. These kits and associated programming training on the use of them shall be provided at no charge to the State.

97) In Exhibit B, Section 1.4., State's Responsibilities, add the following:

16) The State will install all Subscribers for the Phase 4 ASTRO® 25 IP Platform.

17) The State will upgrade the existing Subscribers in Phase 1,2, and 3 to the ASTRO® 25 IP Platform prior to the upgrade of the Phase 1,2, and 3 ASTRO® 5.0 System Central and Fixed Equipment to the ASTRO® 25 IP Platform.

98) This Contract Change Notice increases the Contract amount by $20,239,783.00. The new Contract amount is $221,615,698.00. A REVISED High Level Summary of Exhibit K will be provided with the subsequent Phase 4 ASTRO® 25 IP Platform DDP. The "ASTRO® 25 IP Platform with the Voice Feature Price List " dated October 25, 2001 is attached to this Change Order and is hereby incorporated into the Contract.

99) All other terms and conditions shall remain unchanged.

THE STATE OF MICHIGAN	**MOTOROLA, INC.** d/b/a Motorola Communications & Electronics, Inc.
By: _____ (Signature)	By: _____ (Signature)
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

ASTRO 25 IP Platform with the Voice Feature Price List

Pricing Summary

Equipment and Services (Statewide)	$28,894,705
Delay Costs	$558,340
Subtotal	$29,453,045
Credits	
MPSCS Marketing	($850,000)
ASTRO 5.0 U.P. (61 Sites)	($8,363,262)
Total Contract Change Notice	$20,239,783

Astro 25 IP Platform with the Voice Feature Price List

MPSCS Subscriber Upgrade

	Voice only Flash Kits
Spectra mobile radio	N/C
Saber portable	N/C
XTS 3000 portable	N/C

State of Michigan IV&D Subscriber Prices

Item Description	Voice only	IV&D Equipped
MOBILE RADIOS		
SPECTRA PLUS W4 MOBILE RADIO -DASH MOUNT	$3,142	$3,142
SPECTRA PLUS W4 MOBILE RADIO -REMOTE MOUNT	$3,303	$3,303
SPECTRA PLUS PLUS W5 MOBILE RADIO -DASH MOUNT	$3,142	$3,142
SPECTRA PLUS PLUS W5 MOBILE RADIO - REMOTE MOUNT	$3,303	$3,303
SPECTRA PLUS PLUS W7 MOBILE RADIO - DASH MOUNT	$3,415	$3,415
SPECTRA PLUS W7 MOBILE RADIO - REMOTE MOUNT	$3,576	$3,576
SPECTRA PLUS W3 MOBILE RADIO	$3,951	$3,951
SPECTRA PLUS W7 CONTROL STATIONS	$3,736	$3,736
PORTABLE RADIOS		
NGP MODEL II	$2,723	$2,723
NGP MODEL III	$3,138	$3,138
XTS2500 MODEL III	$2,450	
XTS2500 MODEL II	$2,275	
XTS2500 MODEL I	$1,875	
ALPHA NUMERIC TEXT SERVICE OPTION (model II & III only)	$150	

DATA DEVICES	Product codes (APC)	Discount %	Unit Price
Mobile Work Station MW520 includes Pentium 2 333Mhz, 350nit display w touchscreen, WIN98, 6G HD/heater 128m RAM, 4.5' display cable	736	NA	$4,984
MW520 Options and Accessories	736	15%	
LUND MW520 MOUNT	291	10%	
SDI MW520 MOUNT	170	10%	
PANASONIC CF27 RUGGEDIZED LAPTOP includes Pentium 2 333, 13.3 XGA touchscreen, W2000, 128M RAM, 12G HD,	170	NA	$4,990
PANASONIC CF27 ACCESSORIES	170	10%	
PANASONIC RUGGEDIZED LAPTOP	170	12%	
Kodiak mounting hardware	170	10%	
LEDCo. mounting hardware	170	10%	
Pentax Pocket Jet II Pricing	170	10%	
ScanTech MagStripe Reader	170	10%	
Mobile Computing Accessory Equipment	170	10%	

Local User IV&D Subscriber Prices

Item Description	Voice only	IV&D Equipped
MOBILE RADIOS		
SPECTRA PLUS W4 MOBILE RADIO -DASH MOUNT	$3,806	$3,806
SPECTRA PLUS W4 MOBILE RADIO -REMOTE MOUNT	$3,967	$3,967
SPECTRA PLUS W5 MOBILE RADIO -DASH MOUNT	$3,807	$3,807
SPECTRA PLUS W5 MOBILE RADIO - REMOTE MOUNT	$3,967	$3,967
SPECTRA PLUS W7 MOBILE RADIO - DASH MOUNT	$4,067	$4,067
SPECTRA PLUS W7 MOBILE RADIO - REMOTE MOUNT	$4,230	$4,230
SPECTRA PLUS W3 MOBILE RADIO	$4,454	$4,454
SPECTRA PLUS W7 CONTROL STATIONS	$4,603	$4,603
PORTABLE RADIOS		
NGP MODEL II	$3,490	$3,790
NGP MODEL III	$3,864	$4,164
XTS2500 MODEL III	$2,450	
XTS2500 MODEL II	$2,275	
XTS2500 MODEL I	$1,875	
ALPHA NUMERIC TEXT SERVICE OPTION (model II & III only)	$150	

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **November 6, 2001**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 20
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached modifications are hereby incorporated into this contract.

AUTHORITY/REASON:

Per agency's request from Tom Miller and vendor's approval by Chuck Cousino and in accordance with the modification clause.

INCREASE: $14,000,000.00

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

TOTAL REVISED ESTIMATED CONTRACT VALUE: $202,926,895.00

CONTRACT CHANGE NOTICE NO. 19
TO THE
STATE OF MICHIGAN
800 MHZ RADIO SYSTEM & TELECOMMUNICATIONS BACKBONE NETWORK
CONTRACT NO. 071B5000240
BETWEEN
THE STATE OF MICHIGAN
AND MOTOROLA, INC.
DATED DECEMBER 8, 1994

In the Terms and Conditions, pursuant to the terms of Section 1.41 General, subparagraph B, the following modifications are here made:

1) Bringing local users onto the MPSCS is critical to ensure interoperability between local police, fire, ambulance, and other public safety officials. This is outside the scope of the current Contract. Design enhancements to the following equipment have been required to accommodate the addition of local users.

- Microwave Equipment
- RF Equipment
- Dispatch Equipment
- Zone Controllers
- Microwave Alternate Routing
- APCO 25 Suite
- Incremental Buildings/Generators
- Incremental Tower
- Extended Link Monitoring
- Master Site Equipment

As these enhancements are approved by the state they are incorporated into the Detail Design Plans for each Phase.

2) This Contract Change Notice increases the Contract amount by $14,100,000. The new Contract amount is $201,375,915.

3.) All other terms and conditions shall remain unchanged.

THE STATE OF MICHIGAN	**MOTOROLA, INC.** d/b/a Motorola Communications & Electronics, Inc.
By: (Signature)	By: (Signature)
Name: THOMAS J. MILKA	Name: CHUCK CORSINO
Title: CAPTAIN	Title: PROJECT DIRECTOR
Date: 8/24/01	Date: 8/24/01

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **August 9, 2001**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 19
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached modifications are hereby incorporated into this contract. All other items, terms and conditions remain unchanged.

AUTHORITY/REASON:

Agency request, vendor letter

TOTAL ESTIMATED CONTRACT VALUE REMAINS: $188,926,895.29

7/16

RECEIVED
DMB OFFICE OF PURCHASING

2001 JUL 13 PM 1:11

071B500240
CN# 19

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF STATE POLICE

COL. MICHAEL D. ROBINSON, Director

COMMUNICATIONS DIVISION

4000 COLLINS ROAD
P.O. BOX 30631
LANSING, MI 48909-8131

July 11, 2001

Ms. Christine Michel
Office of Purchasing
Michigan Department of Management and Budget
Stevens T. Mason Building - Second Floor
530 W. Allegan
P.O. Box 30026
Lansing, Michigan 48933

Dear Ms. Michel:

Re: Contract Change Notice No. 18 to Contract #071B5000240

Attached you will find Contract Change Notice No. 18 as negotiated by the Michigan Department of State Police (for the State of Michigan) and Motorola, Inc. The State of Michigan accepts the Contract Change Notice as negotiated.

Contract Change Notice No. 18, which includes the notification of the chance of the Motorola Contract Administrator, and revision of the Exhibit E, part V. Pricing for Add-on Users, reflects the price increase that was effective per the provides for the following upgrades to Contract #071B5000240:

If you have any additional questions or concerns with regard to this Contract Change Notice, please feel free to contact me at (517) 336-6262.

Sincerely,

Thomas J. Miller, Captain
Commanding Officer
Communications Division

TJM:lg
Enclosure
pc: Mr. Greg DeCamp (w/enclosure)
Mr. Chuck Cousino, Motorola (w/enclosure)

CONTRACT CHANGE NOTICE NO. 18
TO THE
STATE OF MICHIGAN
800 MHZ RADIO SYSTEM & TELECOMMUNICATIONS BACKBONE NETWORK
CONTRACT NO. 071b5000240
BETWEEN
THE STATE OF MICHIGAN
AND MOTOROLA, INC.
DATED DECEMBER 8, 1994

1) In the terms and conditions, section 1.24, subparagraph B, the following modifications are hereby made:

1.24 State Project Director
(B) Replace Motorola Contract Administrator with:
Rich Brancale, Contract Manager
85 Harristown Rd.
Glen Rock, NJ 07452
Phone: 201-447-7564 Fax: 201-447-7800 Email: Rich.Brancale@motorola.com

2) In Exhibit E, replace section V. Pricing for Add on users with the attached.

THE STATE OF MICHIGAN	MOTOROLA, INC. d/b/a Motorola Communications & Electronics, Inc.
By: (Signature)	By: (Signature)
Name: THOMAS J. MILLER	Name: CHUCK COUSINO
Title: PROJECT DIRECTOR	Title: V.P. + PROJ. DIR.
Date: 6/26/01	Date: 6/21/01

State of Michigan

MOTOROLA

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM

SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.	Description		Unit Price
OPTIONAL SUBSCRIBER UNITS					
1		T99DX	Astro Spectra		2,253
1a		129W	800 MHz, 35 Watt, A3		705
1b		G51	Enhanced Smartnet Operation		
1c		G114	Trunked ID Display		
1d		W432	10 Watt Audio		11
1e		G358	Multi-Zone Operation		
				TOTAL	**2,968**
			(G51/G11/G358 Included in Subscriber Featuer License)		
2	1	T99DX	Astro Spectra		2,253
2a	1	130 W	800 MHz, 35 Watt, A4		82
2b	1	G51	Enhanced Smartnet Operation		
2c	1	G114	Trunked ID Display		
2d	1	W432	10 Watt Audio		11
2e	1	G358	Multi-Zone Operation		
				TOTAL	2,346
			(G51/G114/G358 Included in Subscriber Featuer License		
3	1	T99DX	Astro Spectra		2,253
3a	1	131W	800 MHz, 35 Watt, A5		82
3b	1	G51	Enhanced Smartnet Operation		
3c	1	G114	Trunked ID Display		
3d	1	W432	10 Watt Audio		11
3e	1	G358	Multi-Zone Operation		
				TOTAL	**2,346**
			(G51/G114/G358 Included in Subscriber Featuer License		
4	1	T99DX	Astro Spectra		2,253
4a	1	131W	800 MHz, 35 Watt, A5		306
4b	1	G51	Enhanced Smartnet Operation		
4c	1	G114	Trunked ID Display		
4d	1	W432	10 Watt Audio		11
4e	1	G358	Multi-Zone Operation		
				TOTAL	**2,570**
			(G51/G114/G358 Included in Subscriber Feature License		
5	1	T99DX	Astro Spectra		2,253
5a	1	131W	800 MHz, 35 Watt, A5		705
5b	1	G51	Enhanced Smartnet Operation		
5c	1	G114	Trunked ID Display		
5d	1	W432	10 Watt Audio		11
		G358	Multi-Zone Operation		
				TOTAL	**2,968**
			(G51/G114/G358 Included in Subscriber Feature License		

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM

SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.		Description		Unit Price
6	1			Astro Mobile, Low Tier (Available Phase 2		1,878
6a	1			800 MHz, 35 W		
6b	1	G51		Enhanced Smartnet Operation		
6c	1	G114		Trunked ID Display		
6d	1	W432		10 Watt Audio		11
					TOTAL	**1,889**
7	1	W269		Siren/PA Module		373
8	1	W496		Remote Mount for A4, A5, A7, Low Tier		155
9	1	W665		Control Station Operation		317
10	1	G51/G114/G358	n1	Mobile Software Features		208
11	1	H38/H14/G358	n1	Portable Software Features		208
12	1	G51/G114/G358	n2	Mobile Software Features - Standalone Units		
13	1	H38/H14/G358	n2	Portable Software Features - Standalone Units		
14	1	W795		DES-XL Operation		439
15	1	H99DX		Astro Digital Saber		1,920
15a	1	210H		800 MHz, 3 Watt, Model I		82
15b	1	H38		Enhanced Smartnet Operation		
15c	1	H14		Trunked ID Display		
15d	1	H301		Detachable Belt Clib		5
15e	1	G358		Multi-Zone Operation		
					TOTAL	**2,002**
				H38/H14/G358 Included in Subscriber Feature License		
16	1	H99DX		Astro Digital Saber		1,920
16a	1	212H		800 MHz, 3 Watt, Model II		306
16b	1	H38		Enhanced Smartnet Operation		
16c	1	H14		Trunked ID Display		
16d	1	H301		Detachable Belt Clip		6
16e	1	G358		Multi-Zone Operation		
					TOTAL	**2,222**
				(H38/H14/G358 Included in Subscrtiber Featuer License)		
17	1	H99DX		Astro Digital Saber		1,920
17a	1	212H		800 MHz, 3 Watt, Model III		705
17b	1	H38		Enhanced Smartnet Operation		
17c	1	H14		Trunked ID Display		
17d	1	H301		Detachable Belt Clip		6
17e	1	G358		Multi-Zone Operation		
					TOTAL	**2,631**
				(H38/H14/G358 Included in Subscriber Feature License		

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM

SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.	Description	Unit Price
18	1	NTN7632	Plastic Carry Holder - 1.5" Belt Clip	11
19	1	NTN7633	Plastic Carry Holder - 2.5" Belt Clip	11
20	1	TDN9657	Nylon Carry Case	23
21	1	TDN9658	Nylon Carry Case	23
22	1	TDN9659	Leather Carry Case	23
23	1	TDN9660	Leather Carry Case	23
24	1	H795	DES-XL Operation	439
25	1	Subscriber Feature License (Includes 5,000 Units)		1,000,000
25a		G51	Enhanced Smartnet Operation	
25b		G114	MOT/Trunked ID Display	
25c		G358	Multi-Zone Operation	
26	1	Low Tier Subscriber Feature License (Includes 5,000 Units		500,000
26a		G51	Enhanced Smartnet Operation	
26b		G114	MOT/Trunked ID Display	
27	1	n3	Administrative Charges (per subscriber)	95
28	1	n3	Training (per subscriber)	50
29	1	n3	Shipping (portable)	9
30	1	n3	Shipping (mobile)	15
31	1	n4	APCO 25 Trunking upgrade	195

n1 Predicted on purchase of APCO 25 trunking option

n2 Subscriber unit pricing if APCO 25 trunking option and Item 25 are not purchased shall be identical to local units of government

n3 For subscriber units in excess of the BAFO quantities as show below -
3006 Mobiles
150 800 MHz Portables
1581 Vehicular Repeaters
94 Control Stations

n4 For subscriber units in excess of Phase I quantities as shown below -
1674 Mobiles
150 800 MHz Portables
887 Vehicular Repeaters
43 Control Stations

Note: Prices above are valid for 63 months from contract signing, and are subject to an annual adjustment based on the Detroit CPI thereafter

Local Units of Government

MOTOROLA

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM

SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.		Description		Unit Price
OPTIONAL SUBSCRIBER UNITS						
1	1	T99DX		Astro Spectra		3,072
1a	1	129W		800 MHz, 35 Watt, A3		714
1b	1	G51		Enhanced Smartnet Operation		
1c	1	G114		Trunked ID Display		
1d	1	W432		10 Watt Audio		12
1e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**3,798**
2	1	T99DX		Astro Spectra		3,072
2a	1	130 W		800 MHz, 35 Watt, A4		92
2b	1	G51		Enhanced Smartnet Operation		
2c	1	G114		Trunked ID Display		
2d	1	W432		10 Watt Audio		12
2e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**3,176**
3	1	T99DX		Astro Spectra		3,072
3a	1	131W		800 MHz, 35 Watt, A5		92
3b	1	G51		Enhanced Smartnet Operation		
3c	1	G114		Trunked ID Display		
3d	1	W432		10 Watt Audio		12
3e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**3,176**
4	1	T99DX		Astro Spectra		3,072
4a	1	131W		800 MHz, 35 Watt, A5		355
4b	1	G51		Enhanced Smartnet Operation		
4c	1	G114		Trunked ID Display		
4d	1	W432		10 Watt Audio		12
4e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**3,439**
5	1	T99DX		Astro Spectra		3,072
5a	1	131W		800 MHz, 35 Watt, A5		714
5b	1	G51		Enhanced Smartnet Operation		
5c	1	G114		Trunked ID Display		
5d	1	W432		10 Watt Audio		12
		G358	n1	Multi-Zone Operation		
					TOTAL	**3,798**

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM

SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.		Description		Unit Price
6	1			Astro Mobile, Low Tier (Available Phase 2)		2,598
6a	1			800 MHz, 35 W		
6b	1	G51		Enhanced Smartnet Operation		
6c	1	G114		Trunked ID Display		
6d	1	W432		10 Watt Audio		12
					TOTAL	**2,610**
7	1	W269		Siren/PA Module		373
8	1	W496		Remote Mount for A4, A5, A7, Low Tier		155
9	1	W665		Control Station Operation		514
10	1	G51/G114/G358		Mobile Software Features - Standalone Units		1,037
11	1	H38/H14/G358		Portable Software Features - Standalone Units		1,037
12	1	G51/G114/G358		DES-XL Operation		439
13	1	H99DX		Astro Digital Saber		2,804
13a	1	210H		800 MHz, 3 Watt, Model I		92
13b	1	H38		Enhanced Smartnet Operation		
13c	1	H14		Trunked ID Display		
13d	1	H301		Detachable Belt Clib		6
13e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**2,896**
14	1	H99DX		Astro Digital Saber		2,804
14a	1	212H		800 MHz, 3 Watt, Model II		355
14b	1	H38		Enhanced Smartnet Operation		
14c	1	H14		Trunked ID Display		
14d	1	H301		Detachable Belt Clip		6
14e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**3,165**
15	1	H99DX		Astro Digital Saber		2,804
15a	1	212H		800 MHz, 3 Watt, Model III		714
15b	1	H38		Enhanced Smartnet Operation		
15c	1	H14		Trunked ID Display		
15d	1	H301		Detachable Belt Clip		6
15e	1	G358	n1	Multi-Zone Operation		
					TOTAL	**3,524**

MICHIGAN STATEWIDE 800 MHz TRUNKING SYSTEM

SUPPLEMENTAL PRICE SHEET - State of Michigan

Item	Qty	Model/Part No.		Description	Unit Price
16	1	NTN7632		Plastic Carry Holder - 1.5" Belt Clip	11
17	1	NTN7633		Plastic Carry Holder - 2.5" Belt Clip	11
18	1	TDN9657		Nylon Carry Case	23
19	1	TDN9658		Nylon Carry Case	23
20	1	TDN9659		Leather Carry Case	23
21	1	TDN9660		Leather Carry Case	23
22	1	H795		DES-XL Operation	439
25	1		n2	APCO 25 Trunking Upgrade	203
	n1	Does not include automatic roaming; To add this feature, add $200.00			
	n2	Subscriber units purchased prior to Phase I Acceptance will require this upgrade			

Note: Prices above are valid for 63 months from contract signing, and are subject to an annual adjustment based on the Detroit CPI thereafter

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **December 1, 2000**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 18
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE (S):

Effective immediately, the attached modifications are hereby incorporated into this contract.

AUTHORITY/REASON:

Agency request, vendor concurrence.

INCREASE: $286,417.00

TOTAL REVISED ESTIMATED CONTRACT VALUE: $188,926,895.29

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **May 17, 2000**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 17
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE:

Effective immediately FIA is added as an authorized user to this contract and the contract value increased by $450,000.00 to allow for completion of the Family Independence Agency project only.

Total contract cost for State Police remains unchanged at $187,275,915.00.

AUTHORITY/REASON:

Agency request, vendor concurrence.

INCREASE: $450,000.00

TOTAL CONTRACT VALUE BECOMES: $188,640,478.29

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **February 1, 2000**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 16
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE:

Effective immediately, the attached modifications are hereby incorporated into this contract with no modifications in pricing or overall terms and conditions.

AUTHORITY/REASON:

Agency request, vendor letter.

TOTAL CONTRACT VALUE REMAINS: $188,190,478.29

Contract Revision 24 **August 5, 2003**
Attachment E
Exhibit E - State of Michigan APC Codes

Form No. DMB 234A (Rev. 1/96)
AUTHORITY: Act 431 of 1984
COMPLETION: Required
PENALTY: Failure to deliver in accordance withContract terms and conditions and this notice,may be considered in default of Contrac t

STATE OF MICHIGAN
DEPARTMENT OF MANAGEMENT AND BUDGET **August 3, 1999**
OFFICE OF PURCHASING
P.O. BOX 30026, LANSING, MI 48909
OR
530 W. ALLEGAN, LANSING, MI 48933

CHANGE NOTICE NO. 15
TO
CONTRACT NO. 071B5000240
between
THE STATE OF MICHIGAN
and

NAME & ADDRESS OF VENDOR **Motorola, Inc.** **DBA/Motorola Communications & Electronics, Inc.** **Attn: Martin J. Rogan** **1309 East Algonquin Road** **Schaumburg, IL 60196**	TELEPHONE Martin J. Rogan **(847) 538-6051** VENDOR NUMBER BUYER (517) 335-0462 **Christine Michel**
Contract Administrator Thomas J. Miller CS-138# Nonjuris **800 MHz Radio System - Dept. of State Police**	
CONTRACT PERIOD From: **December 8, 1994** To: **June 8, 2009**	
TERMS **Net 30 Days**	SHIPMENT **As Specified Herein**
F.O.B. **Delivered/Installed**	SHIPPED FROM **Various Locations**
MINIMUM DELIVERY REQUIREMENTS **N/A**	

NATURE OF CHANGE:

Effective immediately, the contract value for this project has been increased by $385,425.00 to allow for purchases of Motorola equipment utilized by the Department of Natural Resources to interface with this system.

This increase has no impact on the dollars budgeted for the State Police Project.

AUTHORITY/REASON:

Agency request, Ad Brd approval, vendor notes.

INCREASE: $385,425.00

TOTAL REVISED CONTRACT VALUE: $188,190,478.29