BOARD OF COUNTY COMMISSIONERS

DATE: May 6, 2008
AGENDA ITEM NO. 24.

Consent Agenda ☐ **Regular Agenda** ☑ **Public Hearing** ☐

County Administrator's Signature:

Subject:

Approval of Change Order No. 3, No. 4, and No. 5, Fiscal Year 08 and FY 09 Expenditures, and Contract Term Extension- Radio System Migration to Project 25 Compliance and Data Expansion
Contract No. 990-0909-N (RM)

Department:

Emergency Communications / Purchasing

Staff Member Responsible:

Richard Williams / Joe Lauro

Recommended Action:

I RECOMMEND THE BOARD OF COUNTY COMMISSIONERS (BOARD) APPROVE CHANGE ORDER NO. 3, (MOTOROLA CHANGE ORDER NO. 08-001), NO. 4 (MOTOROLA CHANGE ORDER NO. 08-002), NO. 5 (MOTOROLA CHANGE ORDER NO 08-003), FISCAL YEAR (FY) 2008 AND FY 2009 EXPENDITURES, AND EXTEND THE CONTRACT TERM THROUGH SEPTEMBER 30, 2014 FOR THE CONTRACT FOR RADIO SYSTEM PROJECT 25 MIGRATION AND DATA EXPANSION WITH MOTOROLA, INC., SCHAUMBURG, ILLINOIS.

IT IS FURTHER RECOMMENDED THAT AFTER PROPER EXECUTION BY THE CONTRACTOR AND WRITTEN APPROVAL AS TO FORM BY THE OFFICE OF THE COUNTY ATTORNEY, THE CHAIRMAN BE AUTHORIZED TO SIGN AND THE CLERK BE AUTHORIZED TO ATTEST.

Summary Explanation/Background:

The technology migration to standards based Project 25 for interoperability of the intergovernmental 800 MHz Motorola Radio System is an on-going project. The Radio Systems Division is initiating three (3) new projects at this time as part of the upgrade for an estimated total cost of $10,419,625.90 for FY 08 and 09, and are submitting budgetary estimates for additional projected Radio System Capital Improvement Program (CIP) upgrades that will total approximately $22,250,000.00 over the next five (5) years.

Change Order No. 3 is for Motorola to provide equipment and services for the replacement of Pinellas County's 2 (2.1) Gigahertz (GHz) hospital microwave system and connections to the County's existing 6 GHz microwave system. This system provides critical connections to all hospitals, medical control and the Emergency Medical Services dispatch center. The original hospital microwave system was installed in 1986, the Federal Communications Commission reallocated the 2.1 GHz and auctioned it to commercial wireless carriers, and as part of the reallocation the commercial carriers are required to provide funding for the replacement equipment. The total cost of this project is $6,499,625.90 and is fully funded through a cash settlement contract with T-Mobile that was approved by the Board on April 22, 2008. Estimated completion date is October, 2008.

Change Order No. 4 is for Motorola to provide equipment and services that will give Pinellas County Utilities (PCU) an affordable, reliable, and high capacity Internet Protocol (IP)-based private data network leveraging the existing Pinellas County microwave system. The system will consist of 6/11 GHz licensed microwave loop network to serve as the "backbone" transport for PCU's Supervisory Control and Data Acquisition and video data.

New microwave radios will be installed within existing buildings, and where necessary, installation of new antenna and lines will occur on the existing towers. This system utilizes existing radio systems microwave infrastructure and eliminates the need for leased T-1 lines. The proposed PCU microwave system (Loop) is designed to meet the end-to-end channel requirements today and is expandable to meet the future needs of PCU. The contract price for equipment and services is $3,500,000.00 which is budgeted in the Utilities CIP.

Change Order No. 5 is for Motorola to provide a replacement UHF Fire Paging System includes Fire Encoders and Base Stations for 9-1-1 dispatch operations to replace the original Zetron encoders and base stations that were installed in 1992 which are no longer manufactured, and parts are no longer available to support their operation. It is a requirement for the 9-1-1 center to send this information over pagers and this equipment is needed to support the paging operations. The total cost for this project is $420,000.00 and is funded in FY08 and FY09 budgets.

These change orders will increase the contract total by $10,419,625.90 to an adjusted contract total of $15,148,625.90, and will extend the expenditures through March 31, 2009. Approval of expenditures requested will increase the overall Radio System upgrades contract total to $34,155,543.90.

The County's Intergovernmental 800 MHz Public Safety Radio System is exclusively a Motorola product operating on proprietary protocols. Motorola installed and maintains the Radio System and can provide the equipment and services required for these upgrades to the radio system without system interruption. The infrastructure being installed will allow radios from other vendors to operate on the Pinellas County System and provide interoperability with agencies throughout the State and specifically the Tampa Bay Region; therefore, Motorola is the only source.

Prior Approvals:

On May 3, 2005, the Board approved Change Order No, 2 for the Conversion of the North County Radio Sites into a North County Zone, and extended the expenditures through FY 2008 for the County's 800 MHz Radio System.

On September 9, 2003, the Board approved Change Order No. 1 to increase funds to add equipment, installation and services to the County's 800 MHz Radio System.

On December 3, 2002, the Board approved FY 2002 and FY 2003 Expenditures for the County's 800 MHz Radio System.

On November 20, 2001, the Board approved FY 2001 and FY 2002 Expenditures for the County's 800 MHz Radio System.

On March 13, 2001, the Board approved FY 2000 and FY 2001 Expenditures for the County's 800 MHz Radio System.

On June 27, 2000, the Board approved the contract for the purchase of system upgrades and additions to the County's 800 MHz Radio System.

Fiscal Impact/Cost/Revenue Summary:

The estimated expenditures for FY08 - FY09 are $10,419,625.90. There is currently $7,939,281.00 programmed in the CIP budget for FY 08/09.

The hospital microwave replacement is being paid for by a cash contract in the amount of $6,499,625.90 with T-Mobile, who purchased the radio frequencies; they are required to pay the County to move to new frequencies.

Funding is expected from the Utilities Department at $3,500,000.00 for their portion.
FY07/08 6613500 - $1,000,000
FY08/09 6613500 - $2,500,000

Fire Paging System -
FY08 2802000 - $100,000
FY09 2803000 CIP - $320,000

Budgetary estimates for FY09 through FY14 will be funded through revenues from the $12.50 moving violation surcharge, grant funds, and Penny for Pinellas funds. The projected revenues plus the current CIP fund meet all expenditure requirements for this project.

PREVIOUSLY APPROVED CONTRACT EXPENDITURES	$ 24,155,918.00
BREAKDOWN OF PROJECTED FY08 - FY09 EXPENDITURES	
CHANGE ORDER NO. 3 INCREASE	$6,499,625.90
CHANGE ORDER NO. 4 INCREASE WITH DISCOUNT ($150,000.00)	$3,500,000.00
CHANGE ORDER NO. 5 EXPENDITURE	$420,000.00
BUDGETARY ESTIMATES FY 09 THROUGH FY 14	$22,250,000.00
REVISED EXPENDITURE TOTAL WITH BUDGETARY ESTIMATES THROUGH FY 14	$56,825,543.90

Exhibits/Attachments Attached:

1. Contract Review
2. Change Order No. 3 (Motorola Change Order No. 08-001)
3. Change Order No. 4 (Motorola Change Order No. 08-002)
4. Change Order No. 5 (Motorola Change Order No. 08-003)
5. Existing CIP Project Update Form FY09 - FY14

Pinellas County PURCHASING

CATS NO.: 25866

PURCHASING DEPARTMENT CONTRACT REVIEW TRANSMITTAL

PROJECT: Approval of Change Order No. 3 and 4, FY 08/09 Contract Expenditure and Contract Term Extension
Replacement UHF Fire Paging

BID NUMBER: 990-0909-N(RM) REQ. NUMBER: n/a

TYPE: ☒ Purchase Contract	☐ Other:	☐ Construction-Less than $100,000	☐ One Time

In accordance with the policy guide for Contract Administration, the attached documents are submitted for review and comment.

Upon completion of review, complete Contract Review Transmittal and forward to next Review Authority listed. Please indicate suggested chan by revising, in RED, the appropriate section of the document reflecting the exact wording of the change.

RISK MANAGEMENT: Please enter required liability coverage , Section 10. Insurance, page 5 of Communications System Agreement This is an annual requirement contract. Estimated Expenditure: $10, 419, 625.90

REVIEW SEQUENCE	REVIEW AUTHORITY	REVIEW DATE	REVIEW SIGNATURE	COMMENTS (Attach Separate page if necessary)	COMMENTS INCORPORATED
1.	Purchasing Dept. Joe Lauro, Director Ruby McKenzie, PA	4/14/08		w/ need copy of 4/22 Motorola agmt. Please T's already answered	
2.	Radio Division Dick Williams, Director Pam Montanari, Manager	4/14/2008			
3.	Karen DeJordy, Utilities	4/14/2008	DIR OF ENG	4/14/08	
4.	Risk Management Attn: Loretta Hunter (Check applicable box at right)	4/14/08			HIGH RISK / X NOT HIGH RISK
5.	BCC Finance Attn: Cassandra Williams	4/15/08	CBW		
6.	Asst. County Administrator Attn: Tom Crandell, Interim Director of Utilities	4/14/08			
7.	Asst. County Administrator Attn: James Dates	4/15/08			
8.	Asst. County Administrator Attn: Mark Woodard	4/15/08		→ Has BTS reviewed the CO #4 technology? → Focus memo on requested action.	
9.	Legal Attn: Michelle Wallace	4/17/08	MW		

RETURN ALL DOCUMENTS TO PURCHASING

Make all inquiries to:	Ruby McKenzie	at Extension 4-3795

In order to meet the following schedule, please return your requirements to Purchasing by: 4/15/08

TENTATIVE DATES
Legal Ad-BID/RFP Mail Out: N/A
BID/RFP Opening: N/A
Board Approval: 5/6/08

MOTOROLA

Change Order No. 08-001

This Change Order No. 08-001 ("Change Order") to Motorola Contract Reference No. *04-19786/hhm*, Pinellas Contract Reference No. 990-0909-N, dated May 9, 2005 (the "Agreement") between Motorola, Inc. and Pinellas County, Florida, is made and entered into as the last date signed below ("Effective Date").

1. This Change Order is an integral part of the Agreement. If there are any inconsistencies between the provisions of this Change Order and the provisions of the Agreement, the provisions of this Change Order shall prevail.

2. This Change Order includes and is limited to the Equipment, Services, Maintenance and warranty to replace the Pinellas County Hospital Microwave System as described in the Exhibits below.

3. The Contract Price will be adjusted as follows:

Original Contract Price	$5,149,000.00
Previous Change Order Amounts Nos. 1 through	0
This Change Order No. 08-001	$6,499,625.90
Adjusted Contract Price	$11,648,625.90

4. The Contract Completion Date will be adjusted as follows:

Original Schedule Completion Date	
Previous Schedule Changes	March 31, 2008
This Schedule Change	Ten months
Adjusted Schedule Completion Date	January 31, 2009

5. Exhibits A through F in Section 1 of the Agreement shall remain in full force and effect for the work to be performed pursuant to the Agreement, and shall not affect parties' duties and obligations under this Change Order. For purposes of the work to be performed pursuant to this Change Order, the following Exhibits shall apply.

   Exhibit A-1 System Pricing, System Description, Statement of Work, Acceptance Test Plan, Warranty and Maintenance, and Equipment List

   ~~Exhibit B Motorola Software License Agreement~~ N/A _____ _____ Please initial

   Exhibit E Certificate of Insurance

   Exhibit F-1 Payment Terms for the Pinellas County Hospital Microwave Replacement System

6. Customer shall make payment to Motorola, per Exhibit F-1, within forty-five (45) days of receipt of Motorola's invoice.

7. For purposes of this Change Order, Sections 9 and 24 of the Agreement are stricken.

8. Except as specifically stated in this Change Order, the Agreement in all other respects is ratified, confirmed and continues in full force and effect.

MOTOROLA

In Witness Whereof, the parties have executed this Change Order as of the Effective Date set forth below.

MOTOROLA INC.	CUSTOMER:
By: _____ (Signature)	By: _____ (Signature)
Name: _____ (Print - Block Letters)	Name: _____ (Print - Block Letters)
Title: _____	Title: _____
Date: _____	Date: _____

APPROVED AS TO FORM
OFFICE OF COUNTY ATTORNEY
By Michelle Wallace
Attorney

PINELLAS COUNTY
HOSPITAL REPLACEMENT MICROWAVE
EXHIBIT A-1

1.0 Pricing

Motorola's has provided pricing to install the replacement microwave system as detailed within this proposal. The total system price including equipment, installation, system integration, one-year full warranty, and system purchase allowance is:

Description	Price
Equipment	$4,289,750
Services	$2,209,875
Total System	**$6,499,625**

2.0 System Description

2.1 Overview

Motorola proposes to replace Pinellas County's 2 GHz hospital microwave system. Our design for Pinellas County's microwave system consists of 9 hops of Proteus M 6GHz 4DS3 indoor radios protected for the backbone system and 13 hops of Proteus M 6/11GHz 16DS1 split mount radios protected for the hospital sites.

The new Proteus AMT M-Series is a Carrier Class medium to high capacity, software defined, point-to-point microwave radio. It has a transmission capacity of 3 Mbps to 190 Mbps and operates in the licensed frequency bands between 6 GHz and 38 GHz using North American channel bandwidths and transmitter to receiver frequency spacing. Capacity, channel bandwidth, and modulation are all software defined in the M-Series. Two (2) plug-in Line Interface Modules (LIM) provide physical connection for user input/output signals. LIMs are available for DS1, DS3, OC-3, STS-3, STM-1, and 100BaseT Ethernet user input. The ability to accept 2 different LIMs, along with a built-in 100BaseT Ethernet input, allows a mix of up to 3 different signal formats in a single radio.

The M-Series incorporates many features normally associated with digital cross-connect shelves, add/drop multiplexers, and routers. For DS1 rate carriers, the M-Series features drop and insert of individual DS1 signals from DS3 or SONET channels, DS1 cross connection capability, and individual

DS1 loop switching or Self Healing Alternate Route Protection (SHARP). For SONET configurations used in a ring protected application, the radio terminal features built-in switching for Unidirectional Path Switch Ring (UPSR) protection. For Ethernet carriers, the M-Series offers port-to-port VLAN, VLAN routing by externally applied VLAN tags, and packet prioritization based on 802.3p and 802.3Q standards.

Preliminary path calculations and profiles of Pinellas County's proposed microwave site locations have been conducted. Actual field path surveys must be conducted to verify the site elevations, path clearances, tower heights, antenna heights, antenna placements, and waveguide transmission line lengths. Motorola's offering includes the cost for these field surveys along with the necessary frequency search studies. The Proteus M radio platform is digitally modulated and will operate in both the lower and upper 6 GHz band for the radio capacities. All paths in this proposal have been designed in accordance with the end-to-end, two-way-outage objective of 99.999% availability per year at a BER of 10^{-6}.

2.2 Radio and Antenna Description – Indoor

The proposed Proteus M radios are housed indoors and the connection to the outdoor antenna is accomplished with elliptical waveguide. The antenna and waveguide chosen for this application are both manufactured by Andrew Corporation. Andrew's elliptical waveguide is the optimum choice for most microwave antenna feeder systems. The waveguide is precision-formed from corrugated high-conductivity copper with a corrugated wall. The corrugated wall gives the waveguide excellent crush strength, lightweight and good flexibility for ease of handling.

Andrew PAR Series standard parabolic antennas are unshielded antennas that provide economical and reliable service where FCC Category A performance is a requirement. Where PAR series antennas were not selected, UH Ultra High performance series antennas were specified. The Ultra High performance series provides high gain, low VSWR, and superior radiation pattern performance for easier frequency coordination. The antennas are manufactured with spun aluminum reflectors that provide long-term reliability and minimize environmental distortion to protect system investments. Radomes and additional antenna stiff arms are also proposed for the antennas to reduce wind loading and enhance the survivability of the system. The qualities of both transmission line and antenna systems are important considerations as transmission line losses and antenna gain both contribute to the overall system availability.

2.3 Radio and Antenna Description – Outdoor

In the 6 GHz and 11 GHz frequency bands, the Proteus AMT M-Series terminal is configured as a split-mount radio for the hospital sites with the Signal Processing Unit (SPU) rack mounted indoors and the outdoor mounted

RF Unit (ODU) either directly mounted to the antenna or rack mounted depending on the complexity of the site. Power to the ODU and Intermediate Frequency (IF) signals between the SPU and the ODU are carried by RG-8A/U coaxial cable. The HP series antennas were selected for the split mount applications. They feature high performance at low lifetime cost. The smallest diameter antenna allowed by the FCC was used for the hospital paths. This design provides a lower tower loading.

2.4 Service Channel Unit (SCU) and Orderwire

The Proteus M-Series radios feature a full complement of service channels and test/diagnostic capabilities. It provides 2 out-of-band 19.2 kbps RS-232 serial channels and an Engineering Orderwire channel which can be used as an audio EOW by plugging in a standard telephone set or, if EOW is not needed, as an asynchronous 64 kbps RS-422 channel. Diagnostics includes aggregate BER monitor, a selectable tributary BER Tester, aggregate and tributary loopback facilities, and a software chart recorder which can be configured to monitor and record any combination of radio features or alarms, including Received Signal Level (RSL) and transmitter output power.

2.5 Waveguide

Connection to the antennas is accomplished with Andrew elliptical waveguide. The EW52 and EW63 will be used for the 6 GHz applications. Andrew's pressurized, elliptical waveguide is the preferred choice for most microwave antenna feeder systems because it provides excellent electrical characteristics. The waveguide is precision-formed from high-conductivity copper with a corrugated wall for excellent crush strength. It is lightweight, and has good flexibility for ease of handling. Radomes have also been included in the design. Andrew's recommended three point grounding system will be used on all waveguide runs. Flexible CMR to CPR, 24-inch flex waveguide transitions will be used to connect the waveguide to the radio terminal. This provides for ease of transition, improved aesthetics, and vibration and grounding isolation.

2.6 Dehydrators

Andrew MT050 Series dehydrators were quoted for the antenna system pressurization. The MT050 Series dehydrator will provide positive air pressure within the waveguide and antenna feed-horn. Positive air pressure prevents water from leaking into the system and therefore prevents corrosion. This fully automatic membrane dehydrator is ideal for antenna and waveguide systems from 0.1 to 20 ft^3 in volume. The MT050 Series dehydrator requires only 4 rack units and has complete front access for installation and routine maintenance. The MT050 Series dehydrators are fixed pressure units and include a built in pressure storage tank, low pressure alarm, pressure gauge, lighted On/Off switch, high humidity and resettable circuit breaker. The

MT050 is designed for a rack mount or freestanding operation. Wall mounted shelves for the dehydrators have been included with this system.

2.7 Racks

Each rack quoted in the quotation is equipped with a Trimm fuse/terminal block panel. The intra-rack DC power wiring will be connected to the Trimm fuse/terminal block panel and the DC circuit for all rack mounted equipment and will be separately fused.

2.8 Cross Connects

Our quotation includes Telect cross-connect panels on every radio. The panels consist of a 14 4-port DSX module chassis equipped with RJ-48 wrap connections. The cross-connect panels provide monitor and circuit interrupting access points for the testing, monitoring, and patching of the DS1 circuits.

2.9 Power System

The Eltek rectifier will be factory racked, wired and a tested assembly. The assembly will contain individual DC circuit breaker distribution panel(s), voltage and current continuous metering capabilities, high/low DC voltage disconnect switching and all necessary maintenance and management alarm and control functions. The charger will be provided in redundant arrangement with units of identical capacity and type working on a load-sharing basis during normal operation. Solid state monitoring by the power board will be continuous and automatic switchover employed in the event of failure of either unit. Upon switchover the surviving rectifier will be able to carry the entire site load and provide 24-hour recharge in the event of any loss of AC power. Battery/charger configuration was determined for a minimum of 8 hours standby time. The charger was offered with redundant rectifier protection on a 1^{xn} basis.

PowerSafe batteries are designed using proven gas recombination technology which removes the need for regular water addition by controlling the evolution of hydrogen and oxygen during charging. The batteries will be rack mounted in EIA standard relay racks for floor space conservation. The DC distribution circuit breaker panels and the main -48 VDC ground (return) buss will be isolated in this rack as part of the Eltek power board assembly.

2.10 Spares

The proposed system level of spares were provided and calculated at 5% for the microwave radios.

2.11 Transmission Engineering and Path Survey Services

The path will be engineered using industry standard digitized, terrain data and designed with specific transmit power and antenna systems to provide a calculated annual one-way availability of not less than 99.9995%. The calculations for path performance for all frequencies are based on MNI published 10^{E-6} receiver threshold levels as registered with the FCC. Bellcore Standard transmission engineering practices, formulas and topographic data are the foundation of these calculations.

A microwave path engineering survey will be conducted on the path. The objective of this survey is to confirm the information used for clearance and engineering performance objectives. This confirmation includes site location (latitude/longitude coordinates), elevation above mean sea level (AMSL), accurate measurement of path obstructions along the path (i.e. trees and buildings, electrical transmission lines, cellular towers, and the presence of reflective surfaces), and general compilation of local climate information. At locations with existing towers, pre-determined azimuths and centerlines will be checked for availability/adaptability in terms of proposed antenna mounting.

2.12 TeNSr Channel Banks

TeNSr channel banks will be used to replace the current Starplex/Starplus analog mux. The channel banks will be use to interface the onsite equipment back to the Pinellas County Master site.

2.13 MOSCAD Fault Monitoring

MOSCAD fault monitoring will be used to alarm and control all on site equipment. The alarms will be sent back over the microwave to the Pinellas County Master site for monitoring.

2.14 Conclusion

The proposed Pinellas County microwave system is designed to meet the end-to-end channel requirements today and well into the future. MNI, Microwave Networks Incorporated, is an experienced integrator and offers a detailed system design including radios, antenna systems, dehydrator and waveguide. The proposed microwave system is cost effective, meets 99.999% path reliability, includes fault monitoring capability, and is easily expandable to meet the future needs of Pinellas County.

3.0 Statement of Work

3.1 Contract Award (Milestone)

3.2 Contract Administration

Motorola Responsibilities

- Assign a Project Manager as the single point of contact with authority to make project decisions.
- Assign resources necessary for project implementation.
- Set up the project in the Motorola information system.
- Schedule the project kickoff meeting with the Customer.

Customer Responsibilities

- Assign a Project Manager as the single point of contact responsible for Customer signed approvals.
- Assign other resources necessary to ensure completion of project tasks for which the Customer is responsible.

Completion Criteria

- Motorola internal processes are set up for project management.
- Both Motorola and the Customer assign all required resources.
- Project kickoff meeting is scheduled.

3.3 Project Kickoff

Motorola Responsibilities

- Conduct a project kickoff meeting during the Contract Design Review (CDR) phase of the project.
- Ensure key project team participants attend the meeting.
- Introduce all project participants attending the meeting.
- Review the roles of the project participants to identify communication flows and decision-making authority between project participants.
- Review the overall project scope and objectives with the Customer.
- Review the resource and scheduling requirements with the Customer.
- Review the Project Schedule with the Customer to address upcoming milestones and/or events.
- Review the teams' interactions (Motorola and the Customer), meetings, reports, milestone acceptance, and the Customer's participation in particular phases.

Customer Responsibilities

- The Customer's key project team participants attend the meeting.
- Review Motorola and Customer responsibilities.

Completion Criteria

- Project kickoff meeting completed.
- Meeting notes identify the next action items.

3.4 Contract Design Review

Motorola Responsibilities

- Meet with the Customer project team.
- Review the operational requirements and the impact of those requirements on various equipment configurations.
- Establish a defined baseline for the system design and identify any special product requirements and their impact on system implementation.
- Review the System Design, Statement of Work, Project Schedule, and Acceptance Test Plans, and update the contract documents accordingly.
- Discuss the proposed Cutover Plan and methods to document a detailed procedure.
- Submit design documents to the Customer for approval. These documents form the basis of the system, which Motorola will manufacture, assemble, stage, and install.
- Prepare equipment layout plans for staging.
- Provide minimum acceptable performance specifications for microwave, fiber, or copper links for any customer supplied links.
- Establish demarcation point to define the connection point between the Motorola-supplied equipment and the Customer-supplied link(s) and external interfaces for any customer supplied links.
- Perform Frequency Coordination and file PCN.

Customer Responsibilities

- The Customer's key project team participants attend the meeting.
- Make timely decisions, according to the Project Schedule.

Completion Criteria

- Complete Design Documentation, which may include updated System Description, Equipment List, system drawings, or other documents applicable to the project.
- Incorporate any deviations from the proposed system into the contract documents accordingly.
- The system design is "frozen," in preparation for subsequent project phases such as Order Processing and Manufacturing.

- A Change Order is executed in accordance with all material changes resulting from the Design Review to the contract.

3.5 Design Approval (Milestone)

- The Customer executes a Design Approval milestone document.

3.6 Manufacturing and Staging

Motorola Responsibilities

- Manufacture the Fixed Network Equipment (FNE) necessary for the system based on equipment order.

Customer Responsibilities

- None.

Completion Criteria

- FNE shipped to the staging facility.

3.7 Manufacture Non-Motorola Equipment

Motorola Responsibilities

- Manufacture (third party equipment suppliers) non-Motorola equipment necessary for the system based on equipment order.

Customer Responsibilities

- None.

Completion Criteria

- Ship non-Motorola manufactured equipment to the staging facility.

3.8 Develop TeNSr/MOSCAD Templates

Motorola Responsibilities

- Motorola assists the Customer in defining each TeNSr/MOSCAD template.

Customer Responsibilities

- Approve templates.

Completion Criteria

- Templates completed and approved by the Customer.

3.9 Stage System

Motorola Responsibilities

- Set up and rack the system equipment on a site-by-site basis, as it will be configured in the field.
- Label the cables with information to specify interconnection for field installation and future servicing needs.
- Assemble required subsystems to assure system functionality.
- Power up, program, and test all staged equipment.
- Confirm system configuration and software compatibility to the existing system.
- Load application parameters on all equipment.
- Complete programming of the Fixed Network Equipment.
- Inventory the equipment with serial numbers and installation references.
- Complete system documentation.
- Third party subsystems may be staged at the manufacturer's facilities and integrated in the field.

Customer Responsibilities

- Provide information on existing system interfaces as may be required.
- Provide information on room layouts or other information necessary for the assembly to meet field conditions.
- Review and approve proposed Factory Acceptance Test Plan.

Completion Criteria

- System staging completed and ready for testing.

3.10 Perform Staging Acceptance Test Procedure

Motorola Responsibilities

- Test and validate system software and features.
- Functional testing of standard system features.
- Conduct site and system level testing.
- Power up site equipment and perform standardized functionality tests.

Customer Responsibilities

- Review and approve Factory Test Plan Results.

Completion Criteria

- Approve Factory Acceptance Testing.

3.11 Ship Equipment to Field

Motorola Responsibilities

- Pack system for shipment to final destination.
- Arrange for shipment to the field.

Customer Responsibilities

- None.

Completion Criteria

- Equipment ready for shipment to the field.

3.12 Ship Acceptance (Milestone)

- All equipment shipped to the field.

3.13 Civil Work for the Customer Provided Facilities

Motorola Responsibilities

- Provide Antenna Mounting Structure Analysis for each of the 22 identified sites: Ridgecrest, Tarpon Springs, EW, Safety Harbor, Highway Maintenance, Toy Town, St Petersburg, Largo Med, Suncaost, VA Bay Pines, Court House, Morton Plant, Mease Dunedin, Helen Ellis, Mease Countryside, Bayfront, Saint Anthony, Majestic Towers, Palms of Pasedena, Northside, St Pete General, and Ed White.

Customer Responsibilities

- Responsible for any modifications found during the analysis provided by Motorola.
- Secure site lease/ownership, zoning, permits, regulatory approvals, easements, power, and Telco connections.
- Provide clear and stable access to the sites for transporting electronics and other materials. Sufficient site access must be available for trucks to deliver materials under their own power and for personnel to move materials to the facility without assistance from special equipment.
- Design and construct facilities for housing communications equipment such as shelters, towers, generators, fuel tanks, fenced compounds, etc.

- Supply adequately sized electrical service, backup power (UPS, generator, batteries, etc.) including the installation of conduit, circuit breakers, outlets, etc., at each equipment location. Provide AC power (dedicated 20 Amp AC outlets - simplex with ground) for each major piece of equipment within 6 feet of the location of the Motorola-supplied equipment, including the associated electrical service and wiring (conduit, circuit breakers, etc.).
- Provide adequate HVAC, grounding, lighting, cable routing, and surge protection (also, among existing and Motorola-provided equipment) based upon Motorola's *Standards and Guidelines for Communication Sites* (R56). Ceiling (minimum 9 feet) and cable tray heights (minimum 8 feet) in the equipment rooms in order to accommodate 7-foot, 6-inch equipment racks.
- Provide floor space and desk space for the System equipment at the Customer-provided facilities. Each rack shall be provided a minimum of 24-inch x 24-inch footprint with 36 inches clearance in the front and back.
- Relocate existing equipment, if needed, to provide required space for the installation of Motorola-supplied equipment.
- Bring grounding system up to Motorola's *Standards and Guidelines for Communication Sites* (R56) and supply a single point system ground, of 5 ohms or less, to be used on all FNE supplied under the Contract. Supply grounding tie point within 10 feet from the Motorola-supplied equipment.
- Provide all necessary wall or roof penetrations on existing buildings for antenna coax and microwave waveguide (if applicable) for main transmitter antennas, microwave radios, and control station Yagi antennas.
- Provide obstruction-free area for the cable run between the demarcation point and the communications equipment.
- Resolve any environmental issues including, but not limited to, asbestos, structural integrity (rooftop, water tank, tower, etc.) of the site, and any other building risks. (Resolve environmental or hazardous material issues).
- Arrange for space on the tower for installation of new antennas at the proposed heights.
- Supply all permits as contractually required.
- Supply interior building cable trays, raceways, conduits, and wire supports.
- Supply engineering and drafting as required for modifications to existing building drawings for site construction.
- Pay for usage costs of power and generator fueling, both during the construction and installation effort, and on an ongoing basis.
- Complete all customer deliverables in accordance within the approved project schedule.

Completion Criteria

All sites are ready for equipment installations in compliance with Motorola's *Standards and Guidelines for Communication Sites* (R56).

3.14 System Installation

Motorola Responsibilities

- Receive and inventory all equipment at the Customer-provided facility.
- Should Pinellas County System Experience interference, Motorola can be contracted to investigate the source and recommend solutions to mitigate the issue.
- Install system equipment as specified by the Equipment List, System Description, and system drawings.
- Bond the supplied equipment to the site ground system in accordance with Motorola's *Standards and Guidelines for Communication Sites* (R56).

Customer Responsibilities

- Provide secure storage for the Motorola-provided equipment, at a location central to the sites. Motorola coordinates the receipt of the equipment with the Customer's designated contact, and inventory all equipment.
- Provide access to the sites, as necessary.
- Provide removal or disposal of unused equipment.

Completion Criteria

- Fixed Network Equipment installation completed and ready for optimization.

3.15 Fixed Network Equipment Installation Complete

- All fixed network equipment installed and accepted by the Customer.

3.16 System Optimization

Motorola Responsibilities

- Verify that all equipment is operating properly and that all electrical and signal levels are set accurately.
- Motorola and its subcontractors optimize each subsystem.
- Verify communication interfaces between devices for proper operation.

- Test features and functionality are in accordance with manufacturers' specifications and that they comply with the final configuration established during the CDR/system staging.
- Connect MOSCAD RTUs
- Verification of MOSCAD communications path between central and remote locations.
- Verification of MOSCAD remote alarm in puts and control outputs.

Customer Responsibilities

- Provide access/escort to the sites as required.

Completion Criteria

- System FNE optimization is complete.

3.17 Optimization Complete

- System optimization is completed. Motorola and the Customer agree that the equipment is ready for acceptance testing.

3.18 Training

Motorola Responsibilities

- Training is not included.

3.19 Audit and Acceptance Testing

Motorola Responsibilities

- Test individual components of the system to verify compliance to the equipment specifications.
- Repeat any failed test(s) once Motorola (or the Customer) has completed the corrective action(s).
- Prepare documentation of component tests to be delivered as part of the final documentation package as required.

Customer Responsibilities

- Witness tests if desired.

Completion Criteria

- Successful completion of equipment testing.

3.20 Perform Functional Testing

Motorola Responsibilities

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

Customer Responsibilities

- Witness the functional testing.

Completion Criteria

- Successful completion of the functional testing.
- Customer approval of the functional testing.

Note: Traffic activation of a hop, link or system prior to completion of final testing and system acceptance will constitute "Beneficial Use" and "Acceptance" of the affected portion.

3.21 System Acceptance Test Procedures (Milestone)

- Customer approves the completion of all the required tests.

Finalize

3.22 Cutover

Motorola Responsibilities

- Motorola and the Customer develop a mutually agreed upon cutover plan per discussions held during the CDR.
- During cutover, follow the written plan and implement the defined contingencies, as required.

Customer Responsibilities

- Attend cutover meetings and approve the cutover plan.
- Notify the user group(s) affected by the cutover (date and time).

- Conduct a roll call of all users working during the cutover, in an organized and methodical manner.

Completion Criteria

- Successful cutover.

3.23 Resolve Punchlist

Motorola Responsibilities

- Work with the Customer to resolve punchlist items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance.

Customer Responsibilities

- Assist Motorola with resolution of identified punchlist items by providing support, such as access to the sites, equipment and system, and approval of the resolved punchlist item(s).

Completion Criteria

- All punchlist items resolved and approved by the Customer.

3.24 Transition to Service/Project Transition Certificate

Motorola Responsibilities

- Review the items necessary for transitioning the project to warranty support and service.
- Provide a Customer Support Plan detailing the warranty and post warranty support, if applicable, associated with the Contract equipment.

Customer Responsibilities

- Participate in the Transition Service/Project Transition Certificate (PTC) process.

Completion Criteria

- All service information has been delivered and approved by the Customer.

3.25 Finalize Documentation

Motorola Responsibilities

- Provide the following documentation:

- Rack Profiles.
- Acceptance Test Plan test sheets and results.
- ATP Test Checklists.
- Block Diagrams.

Customer Responsibilities

- Receive and approve all documentation provided by Motorola.

Completion Criteria

- All required documentation is provided and approved by the Customer.

3.26 Final Acceptance (Milestone)

- All deliverables completed, as contractually required.
- Final System Acceptance received from the Customer.

Project Administration

3.27 Project Status Meetings

Motorola Responsibilities

- Motorola Project Manager, or designee, will attend all scheduled project status meetings with the Customer, as determined during the CDR.
- Record the meeting minutes and supply the report.
- The agenda will include the following:
  - Overall project status compared to the Project Schedule.
  - Product or service related issues that may affect the Project Schedule.
  - Status of the action items and the responsibilities associated with them, in accordance with the Project Schedule.
  - Any miscellaneous concerns of either the Customer or Motorola.

Customer Responsibilities

- Attend meetings.
- Respond to issues in a timely manner.

Completion Criteria

- Completion of the meetings and submission of meeting minutes.

3.28 Progress Milestone Submittal

Motorola Responsibilities

- Submit progress (non-payment) milestone completion certificate/documentation.

Customer Responsibilities

- Approve milestone, which will signify confirmation of completion of the work associated with the scheduled task.

Completion Criteria

- The Customer approval of the Milestone Completion document(s).

3.29 Change Order Process

Either Party may request changes within the general scope of this Agreement. If a requested change causes an increase or decrease in the cost or time required to perform this Agreement, the Parties will agree to an equitable adjustment of the Contract Price, Performance Schedule, or both, and will reflect the adjustment in a change order. Neither Party is obligated to perform requested changes unless both Parties execute a written change order.

4.0 Acceptance Test Plan

4.1 AMT Microwave Radio

The Acceptance Test Plan (ATP) is performed at the completion of the installation on a per hop basis. An ATP data sheet is provided for each radio terminal in a system. The Final System Acceptance includes a 24-hour BER test period that will commence at the conclusion of collecting the radio data for all terminals in a system. The ATP process is an "out of service" test. All traffic on the system will be interrupted for the duration of the test. This ATP outlines the standards and tests that Microwave Networks (MNI) or its authorized subcontractor will adhere to. Motorola suggests that an authorized representative be present during the testing period to witness each of the acceptance action items.

4.1.1 Antennas and Lines

The IDU to ODU cable is a single 50-ohm RG-8A/U coaxial cable with a double shield (Times Microwave LMR400 or equivalent) used with male N-connectors at each end of the cable. Limit cable length to 22 dB of loss at 270-

MHz (approximately 300 meters or 984 feet). When cutting the cable add extra lengths for drip and service loops. Seal and weather proof all external connections.

When applying elliptical waveguide, antenna lines will be swept and plotted in conformance with manufacturer specifications. This measurement is performed with the antenna/feed horn connected to the waveguide under test. The sweep will be over the entire operating bandwidth of the antenna. A marker will be placed at the TX and RX operating frequency and the Return Loss will be indicated. Acceptable Return Loss measurement is 15dB/1.43 VSWR or better. All swept waveguide graphs must be attached and submitted at the finalization of the ATP.

Note: Typical waveguide sweeps are included on installs that range from 6-11 GHz. Higher frequency bands are subject to evaluation and approval.

4.1.2 Purging and Pressurization (Per Application)

Prior to putting the transmission line system into service, purge each line to remove any moisture that may have been trapped inside the waveguide during installation. Leave a flange(s) open at the antenna end and operate the dehydrator until the volume has been changed at least three times. Secure the flange(s).

Once the system has been purged, run the dehydrator and verify proper pressurization. Cycle time of the dehydrator runs 2 minutes or less in a 100 minute period. Leak rate should not exceed 2% as confirmed by the cycle time. Record the line pressure for each gauge on the data sheet.

Note: Requirement: 5 lbs. +/- 1 lb. for 24 hours for a MT050 Dehydrator. Consult manufacture specification for alternate models.

4.2 DC Power (Per Application)

On installed chargers, the float voltage will be set to the battery manufacturer's specification. The charger system must be power cycled with system load before recording results. The Output Voltage, High Volt Alarm, Low Volt Alarm and Low Volt Disconnect settings and results will be recorded on the ATP power system data sheet and provide for each charger system.

On installed battery plants, the individual cell voltage will be measured along with the power plant voltage. All measurements will conform to manufacturer's specifications. Record the manufacture, type, number of cells

per plant and the voltage of each battery cell on the ATP power system data sheet and provide for each charger system.

4.3 System Grounding

All MNI equipment and racks will comply with Motorola's R56 installation standards.

4.4 Commissioning

Mount the IDU shelf in a grounded 19-inch EIA rack or equivalent cabinet. Ground the IDU to the facility grounding system by connecting pin 3 of the IDU power plug to chassis ground.

Note: IDUs will not work without proper ground.

Before connecting the coax cable, verify that no short exist between the center conductor and the shield of the RG8 coax cable with an ohmmeter. Before connecting power, check the polarity of your supply leads. Verify that no shorts exist between ground and DC pins of the power connector. With power still off, connect the cable assembly to the ODU connector of the IDU and I/O connector at the RFU. Allow 10 seconds for the IDU to boot.

In the case where Microwave Networks installs antennas and lines, antennas for each path will be aligned for a receive signal level as indicated by the Path Data sheet using a DMM voltmeter on the "A" side ODU (non-protected or HSB radio configuration) AGC test connection and record in DC volts.

Specifications not noted in this ATP procedure are noted on the Microwave Terminal Acceptance test sheet. In the event that equipment under test does not conform to ATP specifications, refer to Chapter 3 "Commissioning" section of the AMT System's User Manual or consult a MNI representative for recommended adjustments. Test results may deviate slightly from what is originally documented on system data sheets. All results will be recorded on the ATP data sheets where applicable.

4.5 General Information

Connect a computer with Element Manager or craft terminal interface (CTI) to the local access port using a serial cable. The Element Manager (EM) is the Proteus AMT radio and link graphical supervisory system. The craft terminal interface (CTI) is a text-based system or command line interface (CLI) for accessing radio data. Refer to Appendix C of the system's user manual for Element Manager (EM) or the command line interface (CLI) directory.

Login: admin

Password: mni

The radio information display opens to identify the radio and its operating specifics. Record radio configuration, antenna system, part number and serial number information as indicated in the General Information section of the ATP. Access firmware versions under inventory for each ODU and IDU with the "Radio Info" drop down menu and record the results on the ATP. Set time and date, radio name, location and contact name using the "Configuration" drop down menu of the Element Manager.

Note: Normally, each radio ships fully configured. Indoor units are set and tested at the capacities dictated by the customer sales order. If a link requires changes to the line type, use the element manager and refer to Appendix C of the system's user manual to make the appropriate changes.

4.6 TX Measurements

Record the labeled TX frequency. Labeled TX frequency refers to the label on the ODU. With EM or CLI, access ODU information located under the "Configuration" menu. The "ODU" menu allows you to view specific RF unit information and current settings. Admin access allows you to adjust the transmit frequency and output power as well as set ATPC set points. The "Radio Info" display opens to identify the radio and its operating specifics. Record all TX specifics as indicated on the terminal acceptance form. Repeat test for redundant applications.

Note: Transmitter power reported by the IDU = actual power +/- 2 dB. Minimum step size for transmitter mute = 50 dB.

4.7 RX Measurements

Record the labeled RX frequency. Labeled RX frequency refers to the label on the ODU.

The "Radio Info" display opens to identify the radio and its operating specifics. With EM or CLI, access ODU information located under the "Configuration" menu. The "ODU" menu allows you to view specific RF unit information and current settings. Admin access lets you to adjust the receive frequency as well as set RSL trip points. Record all RX specifics as indicated on the terminal acceptance form.

The following tests assume that the path and antenna alignment has been validated as shown by an acceptable receive signal level at the AGC output of the ODU (s). Record the calculated RSL from the path data work sheet on the

ATP. Record the AGC voltage using a DMM voltmeter on the "A" side ODU (non-protected or HSB radio config) AGC test connection and record in DC volts. Repeat test for redundant applications.

Note: The AGC voltage range is from 0.1 VDC minimum to 4.5 VDC maximum. The RSL displayed is within +/- 2 dB of actual RSL.

4.8 Radio Switching (Hot Standby Config Only)

Manual protective switching capabilities will be performed via the Redundancy Switch Unit (RSU). With transmission data applied, toggle the AUTO switch on the RSU between A and B sides. Verify that the radio switches to the correct side and passes data.

Automatic protective switching will be accomplished by removing the external power supply to the on-line IDU or by selecting the ONLINE REQUEST of the hot standby CONFIGURATION menu. Verify that the RSU switches to the off-line IDU. The transmission signal is recovered and error-free after each switch is complete.

Note: Protection switching is non-reverting. The system does not switch back to the main side after alarms clear.

4.9 Radio Alarm Status

An individual alarm check will be performed to verify module fault reporting via the Alarm menu. Verify appropriate radio alarm and front panel LED response for simulated faults. Clear all alarms and verify alarm status LED's are extinguished and mark off results on performance data sheet.

4.10 Orderwire (Functionality)

The Orderwire Channel will be configured per customer requirements. A 3-digit DTMF address or Station Code will be assigned to each site. DTMF signaling will be confirmed by dialing into a corresponding site. An all call (star key of handset) tone will be generated and all IDUs should beep. Orderwire communication will be tested by utilizing standard voice conversation. Record the DTMF address on the data sheet.

4.11 Circuit Testing

All DS3 and DS1 circuits in the system are to be wired and routed in accordance with the system channel plan. Each circuit will be routed to a demarcation point that provides access for testing. The typical demarcation point is a DSX RJ48C or bantam jack panel. Insert the data rate signal at the access point at each end for the circuit under test. A loop back plug may be

used on remote ends. Multiple channels may be daisy chained. Inject a bit error to confirm that the circuit is valid.

Note: Duration of test on individual circuits will be 5 to 10 seconds to verify error free operation and proper circuit routing/termination.

4.12 Circuit Routing

Briefly describe DS3 and DS1 equipment routing on the terminal acceptance data sheet.

Example: AMT18, DS3 radio routed to an Adtran Mux and cross-connected via DSX to a co-located Adtran Mux and AMT18, DS3 radio. DS1 #1-5 or Timeslot #1-5 drop out.

4.13 24-Hour System BER

Before commencing a 24-hour BER, the AMT's Time and Date will need to be set. Both the Alarm and Event Logs will also need to be cleared or reset for near and far end terminals.

A BER test will be performed on a 24-hour per hop or system basis where applicable. This test will be performed on the system's "A" side for 12 hours with the remaining 12 hours on the system's "B" side. This test will be a DS1 end-to-end circuit test, and will be conducted over the "A" and "B" side of a MHSB radio. DS1 circuits will be set to ESF, B8ZS, and tested with a QRSS test pattern.

A minimum of 12-hour BER is required for Non-Redundant radio applications unless otherwise specified. On a 12-hour test, the BER equates to better than 10-11 (per hop). On multiple hop applications, DS1 BER will meet or exceed 1 x 10-9 or better.

Note: If the BER results are not zero or negligibly small, then the 12-hour BER test may be repeated. If the second BER test results in bit errors, then MNI will meet with customer engineering representatives to further discuss re-testing and a specific pass/fail criteria on a case-by-case basis.

4.14 Remedies

If there is a failure to meet system specifications on any of the items in the ATP and the fault cannot be immediately remedied, the exception will be noted and the test continued. Upon remedy of the fault, a re-test of the item for the purpose of clearing the exception will be witnessed by the customer

representative within a minimal 24-hour period. List all remedies and the date of completion on the ATP.

4.15 Final Hop Acceptance

All test equipment real time results will have been witnessed by a customer representative and recorded onto the signature page of the ATP. Final System Acceptance must be signed and dated by the appropriate representative. Printed BER results and copies of all recorded field data will be provided.

The subcontractor representative will attach and submit all swept waveguide graphs for all antennas and lines. The signed ATP will be returned to the MNI PM or project representative. Copies will be distributed upon request.

5.0 Warranty Service Program Review

During the first year after system acceptance, Motorola will provide a warranty and maintenance program that will deliver state-of-the-art system service focused on achieving responsive service, maximum system operation, and optimum reliability. The program will commence upon system acceptance and consist of a full one-year parts and labor warranty, and preventive and emergency maintenance services.

The Service program combines the services of our local system service team, our local subcontractor team, and the national service team for technical, engineering, and administrative support. This approach allows for maximum utilization of resources.

5.1 Local Dispatch Service

Local dispatch and call support will be provided by Suncoast Communications and Electronics, Inc. in the same manner as utilized in the current maintenance support plan. When a trouble call is received by Suncoast Communications, a technician is dispatched to the site in question.

5.2 Premier On-Site Infrastructure Response

On-Site Infrastructure Response provides for on-site support as determined by pre-defined severity levels and response times. Severity 1 issues are dispatched 24 hours a day, 365 days a year, including holidays.

5.3 Infrastructure Board Repair

In the event that Suncoast Communications finds a malfunctioning board/unit at the site location, they will contact the System Support Center (SSC) for a

Return Authorization (RA) number. The malfunctioning board/unit is then shipped to the SSC for repair.

Upon receipt of malfunctioning equipment, the SSC will conduct a full system test and repair to the malfunctioning boards/units. The repairs are done down to the component level utilizing automated test equipment. A system test is performed to ensure that all software and hardware is set to current customer configuration. If Motorola does not manufacture the unit, it may be returned to the Original Equipment Manufacturer (OEM) for repair. All microwave system equipment will be returned to the microwave equipment manufacturer for repair.

Once the equipment is received from the SSC, or the OEM, Suncoast Communications will either re-install the equipment or return the equipment to the spares inventory.

5.4 Technical Support

Technical Support is available 24 hours a day, 7 days a week. The Motorola SSC staff will work with Suncoast Communications to handle questions related to your Motorola two-way communications system. Technical support will also be delivered by the microwave system supplier.

6.0 Equipment List

6.1 ED White Hospital

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount,
	Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 60 amp Output (Redundant)
1	Powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
100	Elliptical Waveguide, EW63 (per ft.)
100	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.2 Helen Ellis Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
800	3/8" Heliax Baseband Coaxial Cable (per foot)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.3 Largo Medical Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
600	3/8" Heliax Baseband Coaxial Cable (per foot)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.4 Meese Countryside Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
50	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.5 Meese Dunedin Hospital

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
50	Elliptical Waveguide, EW63 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)

QTY	Description
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.6 Morton Plant Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
100	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.7 Northside Hospital

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 60 amp Output (Redundant)
1	Powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
290	Elliptical Waveguide, EW63 (per ft.)
1	Andrew Valuline HP Antenna, 3'
140	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.8 Palms of Pasadena Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
50	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)

QTY	Description
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft³ (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.9 St Petersburg General Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
50	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft³ (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.10 St. Anthony's Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 60 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
154	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft³ (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.11 Suncoast Hospital

QTY	Description
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Andrew Valuline HP Antenna, 3'
600	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.12 VA Hospital

QTY	Description

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
100	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.13 Bayfront Hospital

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	Charger system,-48VDC, 60 amp Output (Redundant)
1	Powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
202	Elliptical Waveguide, EW63 (per ft.)
1	Andrew Valuline HP Antenna, 3'
198	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)
1	TeNSr Channel Bank
1	MOSCAD SDM3000

6.14 Ridgecrest Master Site

QTY	Description
2	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
2	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with 32CHNL & 2DS3 LIMs Installed--with On-board Ethernet
1	SHARP on 8 tributaries
3	SHARP on 28 tributaries
1	Charger system,-48VDC, 90 amp Output (Redundant)
1	Charger system,-48VDC, 150 amp Output (Redundant)
1	Powersafe, -48VDC, 480 AH Battery with rack
1	Powersafe, -48VDC, 1200 AH Battery with rack
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
1	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
1	Ultra High Performance Antenna, 8 ', Dual Polarized, FCC Cat. A (UHX8-59)
465	Elliptical Waveguide, EW63 (per ft.)

QTY	Description
235	Elliptical Waveguide, EW52 (per ft.)
2	Andrew Valuline HP Antenna, 3'
616	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
5	TeNSr Channel Bank
1	MOSCAD SDM3000

6.15 Court House Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Prot Space Diversity, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	SHARP on 24 tributaries
1	Charger system,-48VDC, 90 amp Output (Redundant)
1	Powersafe, -48VDC, 850 AH Battery with rack
1	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
1	Standard Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (PARX6-59)
1	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-59)
1	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
190	Elliptical Waveguide, EW63 (per ft.)
50	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	MOSCAD SDM3000

6.16 EW Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	SHARP on 12 tributaries
1	Charger system,-48VDC, 90 amp Output (Redundant)
1	Powersafe, -48VDC, 480 AH Battery with rack
1	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-59)
1	Ultra High Performance Antenna, 8 ', Dual Polarized, FCC Cat. A (UHX8-59)
230	Elliptical Waveguide, EW63 (per ft.)
215	Elliptical Waveguide, EW52 (per ft.)
1	MOSCAD SDM3000

6.17 Highway Maintenance Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Prot Space Diversity, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	SHARP on 12 tributaries
1	Charger system,-48VDC, 60 amp Output (Redundant)
1	Powersafe, -48VDC, 390 AH Battery with rack
1	Standard Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (PARX6-65)
2	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
560	Elliptical Waveguide, EW63 (per ft.)
1	MOSCAD SDM3000

6.18 Majestic Towers Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	SHARP on 12 tributaries
1	Charger system,-48VDC, 90 amp Output (Redundant)
1	Powersafe, -48VDC, 595 AH Battery with rack
1	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
1	Ultra High Performance Antenna, 8 ', Dual Polarized, FCC Cat. A (UHX8-59)
50	Elliptical Waveguide, EW63 (per ft.)
50	Elliptical Waveguide, EW52 (per ft.)
1	Andrew Valuline HP Antenna, 3'
50	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	MOSCAD SDM3000

6.19 Safety Harbor Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	SHARP on 12 tributaries
1	Charger system,-48VDC, 90 amp Output (Redundant)
1	Powersafe, -48VDC, 480 AH Battery with rack
1	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
1	Ultra High Performance Antenna, 8 ', Dual Polarized, FCC Cat. A (UHX8-59)
300	Elliptical Waveguide, EW63 (per ft.)
220	Elliptical Waveguide, EW52 (per ft.)
1	Andrew Valuline HP Antenna, 3'
150	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	MOSCAD SDM3000

6.20 St. Petersburg Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, Std Pwr, Split Mount, Licensed for 12 Mbps in 3.75MHz, 32TCM, with BLANK & 16DS1 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	SHARP on 24 tributaries
1	Charger system,-48VDC, 150 amp Output (Redundant)
1	Powersafe, -48VDC, 1200 AH Battery with rack
	Standard Performance Antenna, 6 ', FCC Cat. A (PAR6-65) with Radome
2	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
775	Elliptical Waveguide, EW63 (per ft.)
1	Andrew Valuline HP Antenna, 3'
225	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	MOSCAD SDM3000

6.21 Tarpon Springs Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Prot Space Diversity, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 11 GHz, Protected, Std Pwr, Split Mount, Licensed for 101 Mbps in 30MHz, 32TCM, with BLANK & 16DS1 LIMs Installed--with On-board Ethernet
1	SHARP on 12 tributaries
1	Charger system,-48VDC, 90 amp Output (Redundant)
1	Powersafe, -48VDC, 595 AH Battery with rack
1	Standard Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (PARX6-59)
2	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-59)
700	Elliptical Waveguide, EW63 (per ft.)
1	Andrew Valuline HP Antenna, 3'
270	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
1	MOSCAD SDM3000

6.22 Toytown Site

QTY	Description
1	Proteus AMT M-Series, 06 GHz, Prot Space Diversity, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with 32CHNL & 4DS3 LIMs Installed
1	Proteus AMT M-Series, 06 GHz, Protected, High Pwr, All Indoor, Licensed for 178 Mbps in 30MHz, 256TCM, with BLANK & 4DS3 LIMs Installed
1	SHARP on 12 tributaries
1	Charger system,-48VDC, 120 amp Output (Redundant)
1	Powersafe, -48VDC, 850 AH Battery with rack
1	Standard Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (PARX6-65)
2	Ultra High Performance Antenna, 6 ', Dual Polarized, FCC Cat. A (UHX6-65)
490	Elliptical Waveguide, EW63 (per ft.)
1	MOSCAD SDM3000

PINELLAS COUNTY HOSPITAL MICROWAVE REPLACEMENT SYSTEM EXHIBIT E

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 12/27/2007

PRODUCER Serial #: 3400

AON RISK SERVICES CENTRAL, INC.
FKA AON RISK SERVICES, INC. OF ILLINOIS
1000 NORTH MILWAUKEE AVENUE
GLENVIEW, ILLINOIS 60025
ATTN: INSURANCE VERIFICATION CENTER
PH: 1-800-4-VERIFY/ FAX: 1-847-953-5341

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	LIBERTY MUTUAL Fire INSURANCE COMPANY
COMPANY B	LIBERTY INSURANCE CORPORATION
COMPANY C	
COMPANY D	

INSURED

MOTOROLA INC. AND ITS SUBSIDIARIES
1303 EAST ALGONQUIN ROAD
SCHAUMBURG, IL 60196

COVERAGES

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

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
a	GENERAL LIABILITY	TB2641005169077	7/01/2007	7/01/2008	GENERAL AGGREGATE	$ 1,000,000
	[X] COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	$ Included
	[ ] CLAIMS MADE [X] OCCUR				PERSONAL & ADV INJURY	$ 1,000,000
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$ 1,000,000
					FIRE DAMAGE (Any one fire)	$ 250,000
					MED EXP (Any one person)	$ 10,000
A	AUTOMOBILE LIABILITY	AS2-641-005169-017	7/01/2007	7/01/2008	COMBINED SINGLE LIMIT	$ 1,000,000
	[X] ANY AUTO					
	ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	SCHEDULED AUTOS					
	HIRED AUTOS				BODILY INJURY (Per accident)	$
	NON-OWNED AUTOS					
	[X] Garagekeepers Liability				PROPERTY DAMAGE	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	ANY AUTO				OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	UMBRELLA FORM				AGGREGATE	$
	OTHER THAN UMBRELLA FORM					$
B	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY	AOS WA764D005169087 WI & OR WC7641005169097 DBA WA764D005169247	7/01/2007	7/01/2008	[X] WC STATUTORY LIMITS [ ] OTHER	
B	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [ ] INCL [ ] EXCL				EL EACH ACCIDENT	$ 1,000,000
					EL DISEASE - POLICY LIMIT	$ 1,000,000
					EL DISEASE - EA EMPLOYEE	$ 1,000,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

PINELLAS COUNTY IS included as additional insured with respects to the general liability policy.

CERTIFICATE HOLDER

PINELLAS COUNTY
PURCHASING DEPARTMENT - ATTN: RUBY MCKENZIE
ANNEX BUILDING
400 S. FT. HARRISON AVE 6TH FL
CLEARWATER, FL 33756

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

COPY

PINELLAS COUNTY
HOSPITAL REPLACEMENT MICROWAVE
EXHIBIT F-1

Customer will make payments to Motorola within forty-five (45) days after the date of each invoice, in accordance with Florida state law. Customer will make payments when due in the form of a check, cashier's check, or wire transfer drawn on a U.S. financial institution and in accordance with the following milestones.

1. **25% of the Contract Price for mobilization due upon completion of Detailed Design Review (Effective Date);**

2. **50% of the Contract Price upon shipment of equipment;**

3. **25% of the Contract Price upon final acceptance.**

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

MOTOROLA

Change Order No. 08-002

This Change Order No. 08-002 ("Change Order") to Motorola Contract Reference No. *04-19786/hhm*, Pinellas Contract Reference No. 990-0909-N, dated May 9, 2005 (the "Agreement") between Motorola, Inc. and Pinellas County, Florida, is made and entered into as the last date signed below ("Effective Date").

1. This Change Order is an integral part of the Agreement. If there are any inconsistencies between the provisions of this Change Order and the provisions of the Agreement, the provisions of this Change Order shall prevail.

2. This Change Order includes and is limited to the Equipment, Services, Maintenance and warranty for the Pinellas County Utilities Microwave and Broadband Radio System as described in the Exhibits below.

3. The Contract Price will be adjusted as follows:

Original Contract Price	$5,149,000.00
Previous Change Order Amounts 08-001	$6,499,625.90
This Change Order No. 08-002	$3,500,000.00
Adjusted Contract Price	$15,148,625.90

4. The Contract Completion Date will be adjusted as follows:

Original Schedule Completion Date	
Previous Schedule Changes	March 31, 2008
This Schedule Change	Twelve months
Adjusted Schedule Completion Date	March 31, 2009

5. Exhibits A through F in Section 1 of the Agreement shall remain in full force and effect for the work to be performed pursuant to the Agreement, and shall not affect parties' duties and obligations under this Change Order. For purposes of the work to be performed pursuant to this Change Order, the following Exhibits shall apply.

   Exhibit A-2 System Pricing, System Description, Statement of Work, Acceptance Test Plan, Warranty and Maintenance, and Equipment List

   ~~Exhibit B Motorola Software License Agreement~~ N/A Please initial

   Exhibit E Certificate of Insurance

   Exhibit F-2 Payment Terms for the Pinellas County Utilities Microwave and Broadband Radio System

6. Customer shall make payment to Motorola, per Exhibit F-2, within forty-five (45) days of receipt of Motorola's invoice.

7. For purposes of this Change Order, Sections 9 and 24 of the Agreement are stricken.

MOTOROLA

8. Except as specifically stated in this Change Order, the Agreement in all other respects is ratified, confirmed and continues in full force and effect.

In Witness Whereof, the parties have executed this Change Order as of the Effective Date set forth below.

MOTOROLA INC.	**CUSTOMER:**
By: _____ (Signature)	By: _____ (Signature)
Name: _____ (Print - Block Letters)	Name: _____ (Print - Block Letters)
Title: _____	Title: _____
Date: _____	Date: _____

APPROVED AS TO FORM
OFFICE OF THE COUNTY ATTORNEY
By Michelle Wallace

Section 1. PRICING

Motorola's has provided pricing to install the replacement microwave system as detailed within this proposal. The total system price including equipment, installation, system integration, one-year full warranty, and system purchase allowance is:

Description	Price
Equipment	$2,409,000
Services	$1,241,000
Total System, Before Discounts	**$3,650,000**
Less: System Discount[1]	- $ 150,000
Grand Total for System	**$3,500,000**

Pricing is valid thru and including June 15, 2008, and assumes that the Pinellas County Hospital Microwave Replacement System project also occurs.

[1] Discount applies for an order by May 15, 2008, and for equipment shipment by September 15, 2008.

Section 2. System Description

- **System Overview**

  Motorola is proposing two (2) complimentary technologies that, when integrated, provide Pinellas County Utilities an affordable, reliable, and high capacity IP-based private data network.

Leveraging the Pinellas County Microwave System for the Backbone

Motorola's plan includes leveraging the existing Pinellas County microwave system by constructing a separate, 6/11 GHZ licensed microwave loop network to serve as the "backbone" transport for Pinellas County Utilities (PCU) SCADA and video data.

Our proposal is to install new microwave radios within existing buildings, and where necessary to install new antenna and line on the existing towers. The system would be installed in a loop configuration for redundancy purposes.

There are significant advantages to this plan:

- A licensed microwave system provides very high reliability (5 - Nines).
- The proposed microwave system uses much of the same type of equipment as currently installed, assuring consistency of equipment, better trained field technicians, and a more timely response.
- PCU can reuse much (but not all) of the existing Pinellas County microwave antenna infrastructure, saving significant cost.
- PCU can leverage existing RF towers, power systems, and buildings, again saving significant costs.
- Since the existing microwave system is public safety grade and we are sharing much of the existing network assets, PCU can expect high-priority response to related network issues (such as downed antennas).
- The system bandwidth is scaleable, offering the ability to increase capacity through a software upgrade (avoids stranding equipment).

- **Microwave System (Main Loop)**

2.1.1 6/11 GHz Licensed Microwave System

The proposed microwave system consists of eight (8) links of 6 GHz and two (2) links of 11 GHz of IP licensed microwave radios. These radios have a guaranteed throughput capacity of 180 Mbps. There will be one (1) link of 6 GHz Microwave (Between Majestic Towers and FT Desoto that will be shared with the existing Pinellas County Radio system. These radios have a guaranteed throughput capacity of 44 Mbps. All microwave paths are engineered to meet or exceed a two-way availability of 99.999% at a BER of 10E-6.

As demonstrated in system map, microwave links will share existing paths with the current Pinellas County microwave system, and will include the following sites / locations (in redundant configuration, with the exception of Fort Desoto):

- Ridgecrest to Majestic
- Majestic to St. Petersburg
- St. Petersburg to Toy Town
- Toy Town to Highway Maintenance
- Highway Maintenance to Safety Harbor
- Safety Harbor to EW
- EW to Tarpon Springs
- Tarpon Springs to Courthouse
- Courthouse to Logan
- Logan to Ridgecrest

The new Proteus AMT M-Series is a Carrier Class medium to high capacity, software defined, point-to-point microwave radio. It has a transmission capacity of 3 Mbps to 190 Mbps and operates in the licensed frequency bands between 6 GHz and 38 GHz using North American channel bandwidths and transmitter to receiver frequency spacing. Capacity, channel bandwidth, and modulation are all software defined in the M-Series. Two plug-in Line Interface Modules (LIM) provide physical connection for

user input/output signals. LIMs are available for DS1, DS3, OC-3, STS-3, STM-1, 100BaseT Ethernet and Gigabit Ethernet user input. The ability to accept two different LIMs, along with a built-in 100BaseT Ethernet input, allows a mix of up to three different signal formats in a single radio.

The M-Series incorporates many features normally associated with digital cross-connect shelves, add/drop multiplexers and routers. For DS1 rate carriers the M-Series features drop and insert of individual DS1 signals from DS3 or SONET channels, DS1 cross connection capability, and individual DS1 loop switching or Self Healing Alternate Route Protection (SHARP). For SONET configurations used in a ring protected application, the radio terminal features built-in switching for Uni-directional Path Switch Ring (UPSR) protection. For Ethernet carriers the M-Series offers port-to-port VLAN, VLAN routing by externally applied VLAN tags, and packet prioritization based on 802.3p and 802.3Q standards.

Motorola designed for the PCU a microwave system that consists of ten links of Proteus M-Series 6/11GHz 180Mbps IP indoor mounted radios for the backbone system and one link of Proteus M-Series 6GHz 16DS1+IP indoor mounted radios for the Ft. Desoto spur.

Motorola conducted preliminary path calculations and profiles of PCU's proposed microwave site locations. Actual field path surveys must be conducted to verify the site elevations, path clearances, tower heights, antenna heights, antenna placements, and waveguide transmission line lengths. Motorola's offering includes the cost for these field surveys along with the

necessary frequency search studies. The Proteus M radio platform is digitally modulated and will operate in both the lower and upper 6 GHz band for the radio capacities. All paths in this proposal have been designed in accordance with the end-to-end, two-way-outage objective of 99.999% availability per year at a BER of 10-6.

2.1.2 Radio and Antenna Description -Indoor

The proposed Proteus M radios are housed indoors and the connection to the outdoor antenna is accomplished with elliptical waveguide. The antenna and waveguide chosen for this application are both manufactured by Andrew Corporation. Andrew's elliptical waveguide is the optimum choice for most microwave antenna feeder systems. The waveguide is precision-formed from corrugated high-conductivity copper with a corrugated wall. The corrugated wall gives the waveguide excellent crush strength, lightweight and good flexibility for ease of handling.

Andrew PARX Series standard parabolic antennas are unshielded, dual-polarity antennas that provide economical and reliable service where FCC Category A performance is a requirement. Where PARX series antennas were not selected, UHX – Ultra High performance dual-polarity series antennas were specified. The Ultra High performance series provides high gain, low VSWR and superior radiation pattern performance for easier frequency coordination. The antennas are manufactured with spun aluminum reflectors that provide long-term reliability and minimize environmental distortion to protect system investments. Radomes and additional antenna stiff-arms are also proposed for the antennas to reduce wind loading and enhance the survivability of the system. The qualities of both transmission line and antenna systems are important considerations as transmission line losses and antenna gain both contribute to the overall system availability. Our preliminary feasibility study indicates that 10 of the existing backbone antennas can be re-utilized. The antennas and waveguide for the Majestic to Ft. Desoto link will also be re-utilized.

2.1.3 Service Channel Unit (SCU) and Orderwire

The Proteus M-Series radios feature a full complement of service channels and test/diagnostic capabilities. It provides two out-of-band 19.2 kbps RS-232 serial channels and an Engineering Orderwire channel which can be used as an audio EOW by plugging in a standard telephone set or, if EOW is not needed, as an asynchronous 64 kbit/s RS-422 channel. Diagnostics includes aggregate Bit Error Rate monitor, a selectable tributary Bit Error Rate Tester, aggregate and tributary loopback facilities, and a software chart recorder which can be configured to monitor and record any combination of radio features or alarms, including Received Signal Level (RSL) and transmitter output power.

2.1.4 SNMP Network Management System

The Proteus M-Series radios feature two RJ45 connectors for the terminal's network management agent. The M-Series offers standard SNMP (1, 2c and 3) and is carried across the radio links via an out of band 64Kbit/s overhead channel. The attached document describes MNI's SNMP network management software that is provided in this proposal. The SNMP network manager will constantly poll the radios and any other SNMP monitorable device and report status to the master computer. The NMS can be accessed from Logan or any remote location using a laptop computer and the SNMP software.

2.1.5 Waveguide

Connection to the antennas is accomplished with Andrew elliptical waveguide. The EW52 & EW63 will be used for the 6 GHz applications. Andrew's pressurized, elliptical waveguide is the preferred choice for most microwave antenna feeder systems because it provides excellent electrical characteristics. The waveguide is precision-formed from high-conductivity copper with a corrugated wall for excellent crush strength. It is lightweight, and has good flexibility for ease of handling. Radomes have also been included in the design. Andrew's recommended three (3) point grounding system will be used on all waveguide runs. Flexible CMR to CPR, 24 inch, flex waveguide transitions will be used to connect the waveguide to the radio terminal. This provides for ease of transition, improved aesthetics, and vibration and grounding isolation.

2.1.6 Dehydrators

Andrew MT050 Series dehydrators were quoted for the antenna system pressurization. The MT050 Series dehydrator will provide positive air pressure within the waveguide and antenna feedhorn. Positive air pressure prevents water from leaking into the system and therefore prevents corrosion. This fully automatic membrane dehydrator is ideal for antenna and waveguide systems from 0.1 to 20 ft3 in volume. The MT050 Series dehydrator requires only four rack units and has complete front access for installation and routine maintenance. The MT050 Series dehydrators are fixed pressure units and include a built in pressure storage tank, low pressure alarm, pressure gauge, lighted On/Off switch, high humidity and resettable circuit breaker. The MT050 is designed for a rack mount or freestanding operation. Wall mounted shelves for the dehydrators have been included with this system.

2.1.7 Racks

Each rack quoted in the quotation is equipped with a Trimm fuse/terminal block panel. The intra-rack DC power wiring will be connected to the Trimm

fuse/terminal block panel and the DC circuit for all rack mounted equipment and will be separately fused.

2.1.8 Power System

The Eltek rectifier will be factory racked, wired and a tested assembly. The assembly will contain individual DC circuit breaker distribution panel(s), voltage and current continuous metering capabilities, high/low DC voltage disconnect switching and all necessary maintenance and management alarm and control functions. The charger will be provided in redundant arrangement with units of identical capacity and type working on a load-sharing basis during normal operation. Solid state monitoring by the power board will be continuous and automatic switchover employed in the event of failure of either unit. Upon switchover the surviving rectifier will be able to carry the entire site load and provide 24 hour recharge in the event of any loss of AC power. Battery/charger configuration was determined for a minimum of 8 hours standby time. The charger was offered with redundant rectifier protection on a 1xn basis.

PowerSafe batteries are designed using proven gas recombination technology which removes the need for regular water addition by controlling the evolution of hydrogen and oxygen during charging. The batteries will be rack mounted in EIA standard relay racks for floor space conservation. The DC distribution circuit breaker panels and the main -48 VDC ground (return) buss will be isolated in this rack as part of the Eltek power board assembly.

2.1.9 Spares

The proposed system level of spares were provided and calculated at 5% for the microwave radios.

2.1.10 Transmission Engineering and Path Survey Services

The path will be engineered using industry standard digitized, terrain data and designed with specific transmit power and antenna systems to provide a calculated annual one-way availability of not less than 99.9995%. The calculations for path performance for all frequencies are based on MNI published 10E-6 receiver threshold levels as registered with the FCC. Bellcore Standard transmission engineering practices, formulas and topographic data are the foundation of these calculations.

A microwave path engineering survey will be conducted on the path. The objective of this survey is to confirm the information used for clearance and engineering performance objectives. This confirmation includes site location (latitude/longitude coordinates), elevation above mean sea level (AMSL), accurate measurement of path obstructions along the path (i.e. trees and

buildings, electrical transmission lines, cellular towers and the presence of reflective surfaces) and general compilation of local climate information. At locations with existing towers, pre-determined azimuths and centerlines will be checked for availability/adaptability in terms of proposed antenna mounting.

- **Broadband System (Spurs)**

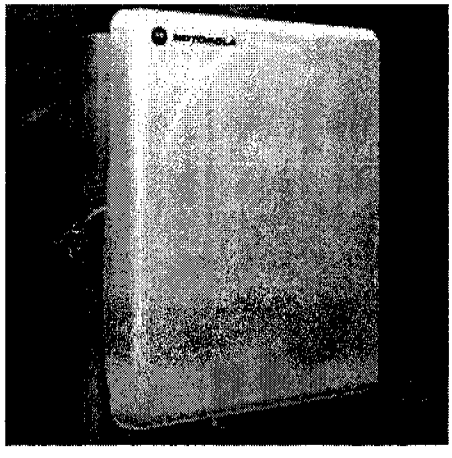
2.1.11 Wireless Broadband

Motorola recommends an unlicensed wireless broadband solution for the backhaul system (the wireless link between the 6/11 GHz loop microwave system and the PCU assets. Although this system will operate in the unlicensed band, which could possibly be subject to outside interference, care has been taken in our design to assure significant reliability. This is accomplished by conducting a paper path analysis on each link to support our design, and by utilizing radios engineered specifically for high RF noise environments.

The unlicensed broadband radio system design offers the following benefits:

- Much lower equipment costs.
- Simplified installation.
- Easier repair / replacement process.
- Flexibility to operate in multiple unlicensed bands, providing greater options in design and system configurations.
- Scaleable system bandwidth, offering the ability to increase capacity through a software upgrade (avoids stranding equipment).

2.1.12 About the Motorola PTP 400 Engineered for Reliability



Operating in the 5.8 GHz spectrum, the Motorola "Fixed Point-to-Point PTP 400 Series" wireless Ethernet bridge provides Pinellas County Utility with both the high bandwidth and quality of service required for its SCADA and video surveillance operations. Offering Lite models with data rates up to 21 Mbps, the bridges can deliver the throughput and reliability Pinellas County Utilities requires for their closed-circuit television (CCTV) camera system. The PTP 400 also efficiently handles backhaul for wireless networks, and is a cost-effective solution for T1/E1

replacements.

All PTP 400 Series products include Motorola's unique combination of technologies designed to protect against fading and radically increase performance, including:

- Multiple-Input Multiple-Output (MIMO)
- Intelligent Orthogonal Frequency Division Multiplexing
- Advanced Spectrum Management with *Intelligent* Dynamic Frequency Selection
- Adaptive Modulation
- Spatial Diversity
- Best-in-Class Radios

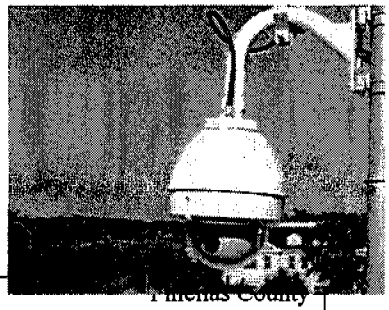
PTP 400 Series solutions are an ideal solution to provide connectivity in challenging situations, including both near line-of-sight and non-line-of-sight (NLoS) environments. Whether over water, in an obstructed area, or where high-interference exist, the PTP 400 Series solutions succeed more than 99% of the time.

2.1.13 Built-in Security and Optional AES Encryption

The PTP 400 Series addresses network security using a myriad of different, yet complimentary techniques. Each PTP 400 radio is pre-programmed with the MAC address of its matched partner, enabling only the two ends of a link to communicate with each other, thus eliminating "man in the middle" attacks. Each matched pair also employs a complex scrambling mechanism that offers a high degree of security for over-the-air transmissions. Further, PCU can choose to augment these security capabilities with FIPS 197 compliant, 128-bit AES encryption. While the matched radios and scrambling mechanism are included with each system at no additional charge, there is a one-time licensing fee to implement AES encryption on any PTP 400 Series radio (not included in this pricing).

2.1.14 Technical Features of the PTP 400 Series

Regardless of the application, the Motorola Fixed PTP 400 system creates a wireless Ethernet link between two points. Each end of a Motorola wi4 Fixed PTP 400 Series point-to-point link consists of an outdoor unit (ODU), a powered indoor unit, called the PIDU Plus - PTP 400 Series, and the required mounting equipment.



The two endpoints communicate via radio waves over channels with a 12 MHz bandwidth. The

channel raster is designed to ensure maximum flexibility in deciding channel occupancy. This greatly increases the probability that customers can find at least one usable channel in an already crowded hub-site.

Each outdoor unit utilizes two transceivers coupled to a baseband converter. The two pairs of transceivers connect with one another, enabling four different transmitter/receiver combinations – and so four distinct transmission beams. This greatly reduces the effects of fading and increases the probability that data will get through.

The Motorola PTP 400 radios use a unique combination of innovative technologies to deliver unsurpassed range, capacity, reliability and performance – especially in nLoS or NLoS conditions, and in areas where there is significant RF interference, such as a city. The nLoS and NLoS capabilities provide a higher tolerance for obstructions and enable network operators to establish network connections over hills, around buildings, through trees and over water.

2.1.15 Performance Features of the PTP 400 Series

- **Advanced Spectrum Management with *Intelligent* Dynamic Frequency Selection (*i*-DFS)** automatically changes channels to avoid interference and combat link fading without user intervention. At power-up and throughout operation, the radio scans the band – 500 times a second – and automatically switches to the clearest channel. The 25-hour, time-stamped database alerts the network operator to any interference that does exist and provides statistics to help analyze these patterns. This Advanced Spectrum Management capability creates *"licensed-band-like interference-free performance in an unlicensed band!"*
- **Adaptive Modulation** ensures maximum throughput optimized for the radio path, even as path characteristics change. The transmitter and receiver negotiate the highest mutually sustainable data rate – then dynamically "upshift" and "downshift" the rate as RF conditions change.
- Built-in Security Protection via a complex proprietary signal with scrambling applied. An added layer of security is provided with 128-bit and 256-bit AES encryption (optional).
- **Dual Polarized Antennas** – two transmitters and two receivers are used to establish a link, enabling four different transmitter/receiver combinations. By creating four distinct transmission beams, the chances that data will get through increase significantly.
- **Multiple-Input Multiple**-Output (MIMO) transmits two redundant signals, spaced in time, to bring multi-path signals into phase, resulting in better performance and link availability. The radio radiates multiple beams from the antenna – the effect of which significantly protects against fading

and increases the probability of making a connection and reading the transmitted data. Alternatively, this feature may be turned off enabling the radio to operate in a "Dual Payload" mode. In this mode, different data can be transmitted in parallel on each signal, effectively doubling the bandwidth at the higher modulation rates.

- **Intelligent Orthogonal Frequency Division Multiplexing (i-OFDM) –** in addition to MIMO transmitting the data twice, *i*-OFDM sends transmissions over multiple frequencies, or sub-carriers. The multiple sub-carriers allow higher channel bandwidth and higher resistance to:
  a. Multi-path interference which occurs when objects in the air gap split a beam into parts that travel different paths and interfere with each other at the receiver.
  b. Frequency selective fading which occurs when amplitudes of arriving signals cancel each other out at the receiver.In typical radios this would be a problem, but with the PTP 400 radios, *i*-OFDM actually helps the radios re-correlate the interfering signals, improving the chance of receiving the signal through reflective behavior.
- **Built-in Security** – to ensure a secure connection, each pair of outdoor units comes preset with its own built-in IP address as well as the MAC address of the other outdoor unit to which it will connect. The preset addresses enable the system security features and allow the two units to communicate only with each other.
- **Physical Form Factor** – The PTP 400 components are offered in Integrated or Connectorized (external antennas) versions and the Powered Indoor Unit (PIDU *Plus)* supports -48V DC and AC.

2.1.16 The Backhaul Links

Motorola is proposing a 5.8 GHZ wireless broadband solution for the PCU backhaul system (the wireless link from the licensed microwave system to the PCU assets).

This system will use Motorola – Canopy PTP 400 "point-to-point" radios, offering an aggregate throughput capacity of 7.5 – 14 Mbps, depending upon the bandwidth requirements of the respective link.

The seventeen (17) backhaul links will consist of the following:

- Logan (Monopole) to Fleet Operations (Concrete Pole)
- Fleet Operations (Concrete Pole) to GMD (Concrete Pole)
- Majestic(Building) to South Cross(tower)
- South Cross(tower) to 016 SW PS(Building)
- Majestic(Building) to Capri Isle(Water Tower)

- Capri Isle (Water Tower) to Madeira Beach (Concrete Pole)
- Majestic (Building) to Gulf Beach CV(Concrete Pole)
- Toy Town (tower) to Waste-Energy(Concrete Pole)
- Highway Maintenance (tower) to 60 Connector(Building)
- Highway Maintenance (tower) to North County PS(Concrete Pole)
- EW (tower) to Keller WTP(Building)
- Tarpon Springs (tower) to Dunn WRF(Building)
- Courthouse(Building) to MIS Engineering(Building)
- Courthouse(Building) to Bellaire(Concrete Pole)
- Ridgecrest (tower) to McKay Creek(Concrete Pole)
- Ridgecrest (tower) to Oakhurst ST(Water Tower)
- Fort Desoto (tower) to Fort Desoto station

Motorola has designed the backhaul system for high reliability. This requires "line of sight paths" for each of the proposed links. Motorola's path analysis indicates a requirement for the installation of a total of nine (9) Concrete poles, and One(1) Monopole ranging in height from seventy (70) to one-hundred (100) feet, installed. Motorola will use existing structures and facilities where possible to save costs (see Broad Band System Detail).

The proposed Canopy radios, Motorola PTP400 Connectorized models, have been designed to operate in very high RF noise floor environments, and are available in a multitude of different unlicensed bands. The Connectorized versions offer the high-gain advantage of flat or parabolic external antennas. In extremely adverse environments, the Connectorized solutions enable connections over greater distances, with a higher level of reliability and speed than many competitive solutions. The Connectorized model minimizes tower loading, an important consideration in Pinellas County, and all installations will adhere to Motorola's stringent R56 grounding standards.

- **Conclusion**

The proposed Pinellas County Utilities (PCU) microwave system (Loop) is designed to meet the end-to-end channel requirements today and well into the future. Motorola is an experienced integrator and offers a detailed system design including radios, antenna systems, dehydrators and waveguides. The proposed microwave system is cost effective, meets 99.999% path reliability, includes fault monitoring capability and is easily expandable to meet the future needs of Pinellas County Utilities. Motorola, along with our vendor partner Dcr Engineering, have worked diligently to design a reliable and robust wireless broadband radio network (Spurs) to service PCU's aspirations for SCADA and surveillance video applications. Together, we have invested

significant time understanding your requirements, leading us to a solution that PCU can be confident will service your needs for many years to come.

Section 3. Statement of Work

3.1.1 Contract Award (Milestone)

Pinellas County and Motorola execute the contract and both parties receive all the necessary documentation.

3.1.2 Contract Administration

Motorola Responsibilities:

- Assign a Project Manager, as the single point of contact with authority to make project decisions.
- Assign resources necessary for project implementation.
- Set up the project in the Motorola information system.
- Schedule the project kick-off meeting with Pinellas County.

Customer Responsibilities:

- Assign a Project Manager, as the single point of contact responsible for Customer signed approvals.
- Assign other resources necessary to ensure completion of project tasks for which Pinellas County is responsible.

Completion Criteria:

- Motorola internal processes are set up for project management.
- Both Motorola and Pinellas County assign all required resources.
- Project kickoff meeting is scheduled.

3.1.3 Project Kickoff

Motorola Responsibilities:

- Conduct a project kickoff meeting during the Contract Design Review (CDR) phase of the project.
- Ensure key project team participants attend the meeting.
- Introduce all project participants attending the meeting.

- Review the roles of the project participants to identify communication flows and decision-making authority between project participants.
- Review the overall project scope and objectives with Pinellas County.
- Review the resource and scheduling requirements with Pinellas County.
- Review the Project Schedule with Pinellas County to address upcoming milestones and/or events.
- Review the teams' interactions (Motorola and Pinellas County), meetings, reports, milestone acceptance, and Pinellas County's participation in particular phases.

Customer Responsibilities:

- Pinellas County's key project team participants attend the meeting.
- Review Motorola and Pinellas County responsibilities.

Completion Criteria:

- Project kick-off meeting completed.
- Meeting notes identify the next action items.

- **Contract Design Review (CDR)**

3.1.4 Review Contract Design

Motorola Responsibilities:

- Meet with Pinellas County project team.
- Review the operational requirements and the impact of those requirements on various equipment configurations.
- Establish a defined baseline for the system design and identify any special product requirements and their impact on system implementation.
- Review the System Design, Statement of Work, Project Schedule, and Acceptance Test Plans, and update the contract documents accordingly.
- Discuss the proposed Cutover Plan and methods to document a detailed procedure.
- Submit design documents to Pinellas County for approval. These documents form the basis of the system, which Motorola will manufacture, assemble, stage, and install.
- Prepare equipment layout plans for staging.
- Will provide a customer demarcation point at the RJ45 Ethernet Port connection on the canopy radio.
- Finalize site acquisition and development plan.

- Conduct (updated) site evaluations to capture site details of the system design and to determine site readiness (when necessary).
- Determine each site's ability to accommodate proposed equipment based upon physical capacity.
- If applicable, test existing equipment with which Motorola equipment will interface.

- Prepare Site Evaluation Report that summarizes findings of above-described site evaluations.
- Assist Pinellas County with frequency planning services, frequency search services, interference analysis, public notifications, coordination, and frequency recommendations for the microwave /broadband system. NOTE: If the necessary number of channels for the microwave/broadband channel plan cannot be licensed by Pinellas County, Motorola will work with Pinellas County to redesign the system. Should system redesign be required, the contract documents will be updated accordingly.
- Work with Pinellas County to identify radio interference between the new microwave/broadband system and other existing systems.

Restrictions:

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

Customer Responsibilities:

- Pinellas County's key project team participants attend the meeting.
- Make timely decisions, according to the Project Schedule.
- Frequency Licensing and Interference:
  - As mandated by FCC, Pinellas County, as the licensee, has the ultimate responsibility for providing all required radio licensing or

licensing modifications for the system prior to system staging. This responsibility includes paying for FCC licensing and frequency coordination fees.

- Provide the FCC "call sign" station identifier for each site prior to system staging.

Completion Criteria:

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

3.1.5 Design Approval (Milestone)

- Pinellas County executes a Design Approval milestone document.

- **Order Processing**

3.1.6 Process Equipment list

Motorola Responsibilities:

- Validate Equipment List by checking for valid model numbers, versions, compatible options to main equipment, and delivery data.
- Enter order into Motorola's Customer Order Fulfillment (COF) system.
- Create Ship Views, to confirm with Pinellas County the secure storage location(s) to which the equipment will ship. Ship Views are the mailing labels that carry complete equipment shipping information, which direct the timing, method of shipment, and ship path for ultimate destination receipt.
- Create equipment orders.
- Reconcile the equipment list(s) to the Contract.
- Procure third-party equipment if applicable.

Customer Responsibilities:

- Approve shipping location(s).

- Complete and provide Tax Certificate information verifying tax status of shipping location.

Completion Criteria:

- Verify that the Equipment List contains the correct model numbers, version, options, and delivery data.
- Trial validation completed.
- Bridge the equipment order to the manufacturing facility.

- **Microwave (Loop)**

3.1.7 General Requirements

This Scope of Work (SOW) details the responsibilities and tasks of Motorola and Microwave Networks Incorporated (MNI) for the installation of the following equipment (see attached equipment list for more details)

- Backbone-
  - Eight hops of Proteus M 6GHz 180Mbips IP indoor radios, non-protected,
  - Two hops of Proteus M 11 GHz 180Mbps IP indoor radios, non-protected for the Courthouse-Logan-Ridgecrest paths.
  - Based on the preliminary path engineering, ten of the existing antennas will be re-utilized.
  - Sixteen new antennas will be provided
  - New waveguide will be installed on the second port of the dual-polarity antennas.
  - Existing dehydrators will be re-utilized.
  - New racks and fuse panels will be provided
  - Recommended spares
- Network Management
- A master computer with the SNMP Network Management system will be provided for monitoring of MNI and DCR radios
- All superstructure, Main Station Grounding, and required cable racks are assumed to be existing or to be installed by others.
- Inspection of the site and verification of the installation design will be performed on initial entry to the site by Motorola or MNI's authorized subcontractor for engineering compliance.
- General site clean up of the site will be performed, by Motorola or MNI installers, on a daily basis with the trash neatly stacked for removal by the customer or placed in a customer provided receptacle.

- Traffic activation of a hop, link or system prior to completion of final testing and system acceptance will constitute **BENEFICIAL USE and ACCEPTANCE** of the affected portion.

3.1.8 General Assumptions

- Vendor equipment such as DSX panels will be integrated at the MNI factory. All intra rack wiring will be installed at that time.
- The customer will be responsible for all required licensing and permits unless otherwise directed by the terms and conditions of the contract.
- All sites are accessible by 2-wheel drive vehicles.
- Sites will have adequate space for the new equipment and suitable temperature control and lighting where work is to be performed or materials stored.
- Existing towers have been analyzed by McCarthy Engineering and are suitable for all tower antenna and line as currently designed. In the unlikely event, that a frequency licensing issue significantly changes the size and weight of an antenna at a specific tower location a new tower analysis might be required that is not covered by this proposal.

3.1.9 Specific Requirements

Motorola/MNI Responsibilities:

- Perform Path Survey. If MNI responsibility, quoted price is based on one surveyor. If time critical, project may require additional surveyors. In this case the mobilization for the additional surveyor(s) will be invoiced.
- Perform Frequency Coordination and file PCN.
- Perform Transmission and System Engineering.
- Furnish one complete set of installation specifications and drawings for the proposed equipment. Specific drawings and specifications are: Rack Profiles, Wiring List or drawings to interconnect equipment, including drop cabling. Furnish installation instructions required to install and align proposed equipment, Block diagrams, ATP.
- Provide transportation for equipment and materials from the place of manufacture to the buyer's storage facility - freight charges per terms of quotation.
- Deliver all proposed equipment to the site locations and inventory for discrepancies.
- Remove existing antenna and line.
- Install all antennas and transmission line including wave guide jumpers at radio end, terminated at radio antenna port.

- Install waveguide boots for wave guide Transmission lines.
- Connect wave guide pressurization equipment to new wave guide and test.
- Sweep transmission lines and record results for all installed antenna systems.
- Furnish and install DC Power and Ground wiring to MNI provided racks per specifications.
- Label DC breakers / fuses and newly installed wiring.
- Install, cable and test all radio and auxiliary equipment proposed.
- De-install and remove any existing radio racks.
- Coordinate system test and alignment with the Customer. Such testing will only include acceptability of MNI installed equipment.
- Optimize and test system to MNI Acceptance Test Procedure (ATP).
- Record test data for inclusion in the "as built" Documentation.
- Furnish one complete set of MNI Operation and Maintenance manuals with drawings
- for each rack.
- Provide one complete set of vendor provided Operation and Maintenance literature
- with drawings for each location.
- Prepare and submit a complete documentation package of equipment as installed and accepted (As Built's), to the Program Mgr. three (3) weeks after system acceptance.
- Provide T1 channel assignments and dropping requirements at each location.
- Provide Ground Bar.
- Install Ground Bar.
- Furnish and install CAT 5 cable between routers/switches and radios.

- **Broad Band Links(Spurs)**

3.1.10 Scope

The scope of services to be provided by Motorola and it's Subcontractor DCR :

1. Provide a secure location at DCR headquarters for the purpose of receiving and staging the equipment. This includes an inventory process as well as staging all equipment.
2. Provide program management services to insure a smooth coordination for the tracking and installation of the 34 PTP wireless devices to be installed

at (26) Locations within Pinellas County as described in the Pinellas County paths spreadsheet.

3. Installation of the following items:

    a. Qty (6) PTP 400 wireless Ethernet radios
    b. Qty (28) PTP 400 Lite wireless Ethernet radios
    c. Qty (9) Concrete poles with Grounding triad.

To assure a satisfactory installation, as part of our cost: tower installation services, Pinellas County authorized Tower climbing services, and installation equipment will be provided to complete the installation as quoted. This includes mounting of all hardware, antennas, connection to electric power as necessary and any other cat 5 or data cable necessary to complete the full functionality of the broadband spurs. All equipment will be properly installed, grounded, and protected based on Motorola installation guidelines.

4. Provide Site Survey and Design Support as needed. This includes:
    a. -Perform all line of sight surveys needed for device placement
    b. -Antenna support drawings
    c. -Site Drawings
    d. -Equipment structure location
    e. -Equipment Drawings
    f. -Engineered Stamped Drawings if required
5. Provide the program management services necessary to insure a smooth coordination installation of all wireless equipment.
6. Provide as-built drawings for each Site including physical address or intersection, GPS coordinates, installation drawings, IP & MAC network addresses, antenna types and configurations, labeled cables and any special access requirements (physical and logical).
7. Label equipment with owner & contact information.
8. Assist in the Configuration and programming of all equipment as required during staging.

3.1.11 DCR Engineering Tasks

1. Perform spectrum analyzer 5.7 - 5.8 MHZ sweeps at each of the 26 sites. Spectrum sweeps should be performed at an elevation height of no less then 100 feet. Submit spectrum graphs to Motorola for review.
2. Install PTP radios, antennas, surge protection and grounding at each of the 26 locations.
3. Stage and inventory all wireless equipment and antenna hardware prior to deploying. To confirm proper functionality.
4. Coordinate installations of all included wireless equipment.

5. Install wireless Equipment at locations designated by Motorola's Design Team.
6. Configure Wireless equipment for SNMP trap forwarding to Microwave NMS for network oversight.

3.1.12 Disclaimer

The wireless system design in Pinellas County is utilizing the unlicensed 5.8MHZ Frequency. Although the track record for the orthogonal modulation (OFDM) used by the PTP equipment is very good, there is the possibility of unforeseen interference. As a result, negative interference could effect maximum throughput, and change design constraints. There is also the possibility intermittent downtime because of unforeseen interference in the line of site path.

- **Manufacturing and Staging**

3.1.13 Manufacture Motorola Fixed Network Equipment

Motorola Responsibilities:

- Manufacture the Fixed Network Equipment (FNE) necessary for the system based on equipment order.

Customer Responsibilities:

- None.

Completion Criteria:

- FNE shipped to either the field or the staging facility.

3.1.14 Manufacture Non-Motorola Equipment

Motorola Responsibilities:

- Manufacture (third party equipment suppliers) non-Motorola equipment necessary for the system based on equipment order.

Customer Responsibilities:

- None.

Completion Criteria:

- Ship non-Motorola manufactured equipment to the field and/or the staging facility.

3.1.15 Ship to Staging (Milestone)

- Ship all equipment needed for staging to Motorola's factory staging facility (CCSi).

3.1.16 Stage System

Motorola Responsibilities:

- Set up and rack the system equipment on a site-by-site basis, as it will be configured in the field at each of the transmitter/receiver sites.
- Cut and label cables according to the approved CDR documentation.
- Label the cables with to/from information to specify interconnection for field installation and future servicing needs.
- Complete the cabling/connecting of the subsystems to each other ("connectorization" of the subsystems.)
- Assemble required subsystems to assure system functionality.
- Power up, program, and test all staged equipment.
- Confirm system configuration and software compatibility to the existing system.
- Load application parameters on all equipment according to input from Systems Engineering.
- Complete programming of the Fixed Network Equipment.
- Inventory the equipment with serial numbers and installation references.
- Complete system documentation.
- Third party subsystems may be staged at the manufacturer's facilities and integrated in the field.
- Provide a Factory Acceptance Test Plan.

Customer Responsibilities:

- Provide information on existing system interfaces as may be required.
- Provide information on room layouts or other information necessary for the assembly to meet field conditions.
- Review and approve proposed Factory Acceptance Test Plan.

Completion Criteria:

- System staging completed and ready for testing.

3.1.17 Perform Staging Acceptance Test Procedure

Motorola Responsibilities:

- Test and validate system software and features.
- Functional testing of standard system features.
- Conduct site and system level testing.
- Power-up site equipment and perform standardized functionality tests.
- Perform system burn-in 24 hours a day during staging to isolate and capture any defects.

Customer Responsibilities:

- None.

Completion Criteria:

- Approve Factory Acceptance Testing.

3.1.18 Ship Equipment to Field

Motorola Responsibilities:

- Pack system for shipment to final destination.
- Arrange for shipment to the field.

Customer Responsibilities:

- None.

Completion Criteria:

- Equipment ready for shipment to the field.

3.1.19 CCSI Ship Acceptance (Milestone)

- All equipment shipped to the field.

- **Civil Work - LOGAN SITE**

Motorola will update to facilitate installation of new MW. Motorola's scope of work related to site development at this site is limited to the following:

3.1.20 Site Engineering

- Prepare site construction drawings, showing the layout of various new and existing site components.
- Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities etc.).
- Perform a boundary and topographic survey for the property on which the communication site is located or will be located.
- Prepare a lease exhibit sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- Prepare record drawings of the site showing the as-built information
- Perform construction staking around the site to establish reference points for proposed construction

- Perform National Environmental Policy Act (NEPA) Threshold Screening including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility "may have a significant environmental impact" and thus require additional documentation, submittals or work. Regional Environmental Review (RER) report submittals if required by FEMA have not been included.
- Perform a cultural resource study, as needed to identify sensitive historical and archaeological monuments that might be impacted by propose construction.
- Conduct up to 40' deep soil boring test at tower location and prepare geotechnical report of soil conditions at the location of monopole tower foundation.
- Conduct construction inspection of foundation steel prior to pour, materials testing of concrete and field density tests of backfill to ensure quality construction.
- Check tower erection for plumbness, linearity and alignment after installation.
- Perform inspection of the site and the work performed by the Contractor to document that the site is built in accordance with the "Site Plans" and document any deviations or violations.
- Research permit requirements (building, utility, construction and FAA permits) for the construction of the proposed site, and determine if the permits are required. If a permit is required, the Motorola shall obtain the necessary permit forms and complete the necessary information on behalf of the customer.
- Submit the completed application forms, to the local jurisdiction and apply for applicable permits.

3.1.21 Site Preparation

- Obtain the permits such as electrical, building and construction permits, and any inspections that may need to be coordinated with the local authorities to complete site development work.
- One time mobilization costs for the construction crews. Any remobilization due to interruptions/delays caused by Pinellas County Utilities will result in additional costs.

3.1.22 Site Components Installation

- Supply and install one free standing 24 inches wide cable/ice bridge from tower to the shelter (up to 15 linear feet).

3.1.23 Tower Work

- Construct tower foundations for the base of a monopole tower including excavation, rebar and concrete (not to exceed 9.1 cubic yards). Tower foundation size is based on TIA/EIA-222-F normal soil conditions. Rock coring, extensive dewatering of foundations or hazardous material removal have not been included and will be considered extra.
- Erect new 100' monopole tower.
- Supply and install grounding system around the self-supported tower to meet Motorola's R-56 standards. The existing ground system and soil resistivity at the site is assumed to be sufficient to achieve resistance of 5 ohms or less using standard R56 ground.

3.1.24 Antenna and Transmission Line Installation

- Install (2) 4' microwave dishes.
- Install (1) 2 ' broadband dish

3.1.25 Existing Facility Improvement Work

- Supply and install (1) 200A breaker panel with capacity for 30 circuits.
- Supply and install (1) 20A breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Supply and install (4) 30A breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Install (1) primary Type 1 surge protector on the room electrical feed to protect the equipment from surges.
- Supply and install (3) cable entry port.
- Supply and install (3) copper ground buss bars.

3.1.26 GROUNDING ENHANCEMENT

- Supply and install (1) radial ground runs from the tower and connect them to tower ring.

Should the site location or scope change from what is noted above, the Motorola shall review the changes and make proper pricing and scope adjustments, if required.

3.1.27 Responsibilities of Pinellas County Utilities

Motorola's scope and pricing for this site is based on the understanding that the tasks listed below will be performed by Pinellas County Utilities

- Secure site lease/ownership, zoning, permits, easements, power and telco connections.
- Provide backup power (generator, UPS) for new equipment and distribution panels.
- Provide space, HVAC, backup power (UPS, generator), outlets, grounding, surge suppression, lighting, fire suppression and cabling facilities for the equipment room per Motorola's R56 specs (unless noted in this SOW). Ceiling and cable tray heights in the equipment rooms should be such as to accommodate 7 1/2-foot equipment racks, and ceiling to be 9' or greater.
- Review and approve site designs within 7 calendar days of submission by Motorola
- Assist Motorola with permitting for sites, as owner/lessee.
- If required, remove or relocate any existing facilities, equipment and utilities to create space for new site facilities and equipment.
- If required, provide any physical improvements (walls, roofing, flooring, painting etc.) necessary to house the equipment in the existing room.
- Provide clear and stable access road to the site for heavy-duty construction vehicles, cement trucks and cranes. Sufficient space must be available at the site for these vehicles to maneuver under their own power, without assistance from other equipment.

- **Civil Work - MAJESTIC SITE**

Motorola will update to facilitate installation of new MW. Motorola's scope of work related to site development at this site is limited to the following:

3.1.28 Site Engineering

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

- Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed the proposed equipment loads.
- Research permit requirements (building, utility and construction permits) for the construction of the proposed site, and determine if the permits are required. If a permit is required, the Motorola shall obtain the necessary permit forms and complete the necessary information on behalf of the customer.
- Submit the completed application forms, to the local jurisdiction and apply for applicable permits.

3.1.29 Site Preparation

- Obtain the permits such as electrical, building and construction permits, and any inspections that may need to be coordinated with the local authorities to complete site development work.
- One time mobilization costs for the construction crews. Any remobilization due to interruptions/delays caused by Pinellas County Utilities will result in additional costs.

3.1.30 Antenna and Transmission Line Installation

- Install (3) 2' broadband dishes.

3.1.31 Existing Facility Improvement Work

- Supply and install (1) 200A breaker panel with capacity for 30 circuits.
- Supply and install (1) 20A breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Supply and install (4) 30A breakers in the distribution panel and wire to outlets located on an average within 35 cable feet.
- Supply and install (3) cable entry port.
- Supply and install (2) copper ground buss bars.
- Install one internal wall
- Install one internal door
- Install one air conditioner (not to exceed 4 ton)

3.1.32 Grounding Enhancement

- Supply and install (1) radial ground runs from the tower and connect them to tower ring.

Should the site location or scope change from what is noted above, the Motorola shall review the changes and make proper pricing and scope adjustments, if required.

3.1.33 Responsibilities of Pinellas County Utilities

Motorola's scope and pricing for this site is based on the understanding that the tasks listed below will be performed by Pinellas County Utilities

- Secure site lease/ownership, zoning, permits, easements, power and telco connections.
- Provide backup power (generator, UPS) for new equipment and distribution panels.
- Provide space, HVAC, backup power (UPS, generator), outlets, grounding, surge suppression, lighting, fire suppression and cabling facilities for the equipment room per Motorola's R56 specs(unless noted in this SOW). Ceiling and cable tray heights in the equipment rooms should be such as to accommodate 7 1/2-foot equipment racks, and ceiling to be 9' or greater.
- Review and approve site designs within 7 calendar days of submission by Motorola
- Assist Motorola with permitting for sites, as owner/lessee.
- If required, remove or relocate any existing facilities, equipment and utilities to create space for new site facilities and equipment.
- If required, provide any physical improvements (walls, roofing, flooring, painting etc.) necessary to house the equipment in the existing room.
- Provide clear and stable access road to the site for heavy-duty construction vehicles, cement trucks and cranes. Sufficient space must be available at the site for these vehicles to maneuver under their own power, without assistance from other equipment.

3.1.34 Site Development Acceptance (Milestone)

- All site developments completed and accepted by Pinellas County.

- **System Installation**

3.1.35 Install Fixed Network Equipment

Motorola Responsibilities:

- Receive and inventory all equipment.
- Install system equipment as specified by the Equipment List, System Description, and system drawings
- Interference -Motorola is not responsible for interference caused or received by the Motorola provided equipment except for interference that is directly caused by the Motorola provided transmitter(s) to the Motorola provided receiver(s). Should the Pinellas County system experience interference, Motorola can be contracted to investigate the source and recommend solutions to mitigate the issue.
- Bond the supplied equipment to the site ground system in accordance with the Motorola R56 Standards and Guidelines for Communication Sites.
- Will remove existing equipment.
- Will not relocate existing equipment to a location designated by Pinellas County.
- Will not dispose of existing equipment.

Customer Responsibilities:

- Provide secure storage for the Motorola-provided equipment, at a location central to the sites. Motorola coordinates the receipt of the equipment with Pinellas County's designated contact, and inventory all equipment.
- Provide access to the sites, as necessary.

Completion Criteria:

- Fixed Network Equipment installation completed and ready for optimization.

3.1.36 Fixed Network Equipment Installation Complete

- All fixed network equipment installed and accepted by Pinellas County.

3.1.37 System Installation Acceptance (Milestone)

- All equipment installations are completed and accepted by Pinellas County.

- **System Optimization**

3.1.38 Optimize System FNE

Motorola Responsibilities:

- Verify that all equipment is operating properly and that all electrical and signal levels are set accurately.
- Verify that all audio and data levels are at factory settings.
- Check forward and reflected power for all radio equipment, after connection to the antenna systems, to verify that power is within tolerances.
- Motorola and its subcontractors optimize each subsystem.
- Check audio and data levels to verify factory settings.
- Verify communication interfaces between devices for proper operation.
- Test features and functionality are in accordance with manufacturers' specifications and that they comply with the final configuration established during the CDR/system staging.

Customer Responsibilities:

- Provide access/escort to the sites.

Completion Criteria:

- System optimization is complete.

3.1.39 Optimization Complete

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

- **Training**

3.1.40 Perform Training

Motorola Responsibilities:

- Training is not included.

Customer Responsibilities:

Completion Criteria:

3.1.41 Training Complete

- Training Not Included

- **Audit and Acceptance Testing**

3.1.42 Perform Equipment Testing

Motorola Responsibilities:

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

Customer Responsibilities:

- Witness tests if desired.

Completion Criteria:

- Successful completion of equipment testing.

3.1.43 Perform Functional Testing

Motorola Responsibilities:

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

Customer Responsibilities:

- Witness the functional testing.

Completion Criteria:

- Successful completion of the functional testing.
- Customer approval of the functional testing.

3.1.44 System Acceptance Test Procedures (Milestone)

- Customer approves the completion of all the required tests.

- **Finalize**

3.1.45 Cutover

Motorola Responsibilities:

- Conduct cutover meeting(s) with user group representatives to address both how to mitigate technical and communication problem impact to the users during cutover and during the general operation of the system.

Customer Responsibilities:

- Attend cutover meetings and approve the cutover plan.
- Notify the user group(s) affected by the cutover (date and time).

Completion Criteria:

- Successful migration from the old system to the new system.

3.1.46 Resolve Punchlist

Motorola Responsibilities:

- Work with Pinellas County to resolve punchlist items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance.

Customer Responsibilities:

- Assist Motorola with resolution of identified punchlist items by providing support, such as access to the sites, equipment and system, and approval of the resolved punchlist item(s).

Completion Criteria:

- All punchlist items resolved and approved by Pinellas County.

3.1.47 Transition to Service/Project Transition Certificate

Motorola Responsibilities:

- Review the items necessary for transitioning the project to warranty support and service

Customer Responsibilities:

- Participate in the Transition Service/Project Transition Certificate (PTC) process.

Completion Criteria:

- All service information has been delivered and approved by Pinellas County.

3.1.48 Finalize Documentation

Motorola Responsibilities:

- Provide as-built site manuals, 1 as-built for each remote site and 1 system manual.
- The documentation will be limited to the following:
  - Maintenance manuals for all site equipment
  - Functional Acceptance Test Plan test sheets and results
  - Equipment Inventory List (paper or disk)
  - System Block Diagram
  - RF Site Floor Plan (where applicable)
  - RF Site Rack Face (where applicable)
  - Antenna Network Drawings for RF Sites (where applicable)
  - Site Block Diagrams (where applicable)
  - Technical Service Manuals

Customer Responsibilities:

- Receive and approve all documentation provided by Motorola.

Completion Criteria:

- All required documentation is provided and approved by Pinellas County.

3.1.49 Final Acceptance (Milestone)

- All deliverables completed, as contractually required.
- Final System Acceptance received from Pinellas County.

- **Project Administration**

3.1.50 Project Status Meetings

Motorola Responsibilities:

- Motorola Project Manager, or designee, will attend all project status meetings with Pinellas County, as determined during the CDR
- Record the meeting minutes and supply the report.
- The agenda will include the following:
  - Overall project status compared to the Project Schedule.
  - Product or service related issues that may affect the Project Schedule.
  - Status of the action items and the responsibilities associated with them, in accordance with the Project Schedule.
  - Any miscellaneous concerns of either Pinellas County or Motorola.

Customer Responsibilities:

- Attend meetings.
- Respond to issues in a timely manner.

Completion Criteria:

- Completion of the meetings and submission of meeting minutes.

3.1.51 Progress Milestone Submittal

Motorola Responsibilities:

- Submit progress (non-payment) milestone completion certificate/documentation.

Customer Responsibilities:

- Approve milestone, which will signify confirmation of completion of the work associated with the scheduled task.

Completion Criteria:

- Pinellas County approval of the Milestone Completion document(s).

3.1.52 Change Order Process

CHANGE ORDERS. Either Party may request changes within the general scope of this Agreement. If a requested change causes an increase or decrease in the cost or time required to perform this Agreement, the Parties will agree to an equitable adjustment of the Contract Price, Performance Schedule, or both, and will reflect the adjustment in a change order. Neither Party is obligated to perform requested changes unless both Parties execute a written change order.

Section 4. Acceptance Test Plan

- **AMT Microwave Radio**

The Acceptance Test Plan (ATP) is performed at the completion of the installation on a per hop basis. An ATP data sheet is provided for each radio terminal in a system. The Final System Acceptance includes a 24-hour BER test period that will commence at the conclusion of collecting the radio data for all terminals in a system. The ATP process is an "out of service" test. All traffic on the system will be interrupted for the duration of the test. This ATP outlines the standards and tests that Microwave Networks (MNI) or its authorized subcontractor will adhere to. Motorola suggests that an authorized representative be present during the testing period to witness each of the acceptance action items.

4.1.1 Antennas and Lines

The IDU to ODU cable is a single 50-ohm RG-8A/U coaxial cable with a double shield (Times Microwave LMR400 or equivalent) used with male N-connectors at each end of the cable. Limit cable length to 22 dB of loss at 270-MHz (approximately 300 meters or 984 feet). When cutting the cable add extra lengths for drip and service loops. Seal and weather proof all external connections.

When applying elliptical waveguide, antenna lines will be swept and plotted in conformance with manufacturer specifications. This measurement is performed with the antenna/feed horn connected to the waveguide under test. The sweep will be over the entire operating bandwidth of the antenna. A marker will be placed at the TX and RX operating frequency and the Return Loss will be indicated. Acceptable Return Loss measurement is 15dB/1.43

VSWR or better. All swept waveguide graphs must be attached and submitted at the finalization of the ATP.

Note: Typical waveguide sweeps are included on installs that range from 6-11 GHz. Higher frequency bands are subject to evaluation and approval.

4.1.2 Purging and Pressurization (Per Application)

Prior to putting the transmission line system into service, purge each line to remove any moisture that may have been trapped inside the waveguide during installation. Leave a flange(s) open at the antenna end and operate the dehydrator until the volume has been changed at least three times. Secure the flange(s).

Once the system has been purged, run the dehydrator and verify proper pressurization. Cycle time of the dehydrator runs 2 minutes or less in a 100 minute period. Leak rate should not exceed 2% as confirmed by the cycle time. Record the line pressure for each gauge on the data sheet.

Note: Requirement: 5 lbs. +/- 1 lb. for 24 hours for a MT050 Dehydrator. Consult manufacture specification for alternate models.

4.1.3 DC Power (Per Application)

On installed chargers, the float voltage will be set to the battery manufacturer's specification. The charger system must be power cycled with system load before recording results. The Output Voltage, High Volt Alarm, Low Volt Alarm and Low Volt Disconnect settings and results will be recorded on the ATP power system data sheet and provide for each charger system.

On installed battery plants, the individual cell voltage will be measured along with the power plant voltage. All measurements will conform to manufacturer's specifications. Record the manufacture, type, number of cells per plant and the voltage of each battery cell on the ATP power system data sheet and provide for each charger system.

4.1.4 System Grounding

All MNI equipment and racks will comply with Motorola's R56 installation standards.

4.1.5 Commissioning

Mount the IDU shelf in a grounded 19-inch EIA rack or equivalent cabinet. Ground the IDU to the facility grounding system by connecting pin 3 of the IDU power plug to chassis ground.

Note: IDUs will not work without proper ground.

Before connecting the coax cable, verify that no short exist between the center conductor and the shield of the RG8 coax cable with an ohmmeter. Before connecting power, check the polarity of your supply leads. Verify that no shorts exist between ground and DC pins of the power connector. With power still off, connect the cable assembly to the ODU connector of the IDU and I/O connector at the RFU. Allow 10 seconds for the IDU to boot.

In the case where Microwave Networks installs antennas and lines, antennas for each path will be aligned for a receive signal level as indicated by the Path Data sheet using a DMM voltmeter on the "A" side ODU (non-protected or HSB radio configuration) AGC test connection and record in DC volts.

Specifications not noted in this ATP procedure are noted on the Microwave Terminal Acceptance test sheet. In the event that equipment under test does not conform to ATP specifications, refer to Chapter 3 "Commissioning" section of the AMT System's User Manual or consult a MNI representative for recommended adjustments. Test results may deviate slightly from what is originally documented on system data sheets. All results will be recorded on the ATP data sheets where applicable.

- **General Information**

Connect a computer with Element Manager or craft terminal interface (CTI) to the local access port using a serial cable. The Element Manager (EM) is the Proteus AMT radio and link graphical supervisory system. The craft terminal interface (CTI) is a text-based system or command line interface (CLI) for accessing radio data. Refer to Appendix C of the system's user manual for Element Manager (EM) or the command line interface (CLI) directory.

Login: admin

Password: mni

The radio information display opens to identify the radio and its operating specifics. Record radio configuration, antenna system, part number and serial number information as indicated in the General Information section of the ATP. Access firmware versions under inventory for each ODU and IDU with the "Radio Info" drop down menu and record the results on the ATP. Set time

and date, radio name, location and contact name using the "Configuration" drop down menu of the Element Manager.

Note: Normally, each radio ships fully configured. Indoor units are set and tested at the capacities dictated by the customer sales order. If a link requires changes to the line type, use the element manager and refer to Appendix C of the system's user manual to make the appropriate changes.

4.1.6 TX Measurements

Record the labeled TX frequency. Labeled TX frequency refers to the label on the ODU. With EM or CLI, access ODU information located under the "Configuration" menu. The "ODU" menu allows you to view specific RF unit information and current settings. Admin access allows you to adjust the transmit frequency and output power as well as set ATPC set points. The "Radio Info" display opens to identify the radio and its operating specifics. Record all TX specifics as indicated on the terminal acceptance form. Repeat test for redundant applications.

Note: Transmitter power reported by the IDU = actual power +/- 2 dB. Minimum step size for transmitter mute = 50 dB.

4.1.7 RX Measurements

Record the labeled RX frequency. Labeled RX frequency refers to the label on the ODU.

The "Radio Info" display opens to identify the radio and its operating specifics. With EM or CLI, access ODU information located under the "Configuration" menu. The "ODU" menu allows you to view specific RF unit information and current settings. Admin access lets you to adjust the receive frequency as well as set RSL trip points. Record all RX specifics as indicated on the terminal acceptance form.

The following tests assume that the path and antenna alignment has been validated as shown by an acceptable receive signal level at the AGC output of the ODU (s). Record the calculated RSL from the path data work sheet on the ATP. Record the AGC voltage using a DMM voltmeter on the "A" side ODU (non-protected or HSB radio config) AGC test connection and record in DC volts. Repeat test for redundant applications.

Note: The AGC voltage range is from 0.1 VDC minimum to 4.5 VDC maximum. The RSL displayed is within +/- 2 dB of actual RSL.

4.1.8 Radio Switching (Hot Standby Config Only)

Manual protective switching capabilities will be performed via the Redundancy Switch Unit (RSU). With transmission data applied, toggle the AUTO switch on the RSU between A and B sides. Verify that the radio switches to the correct side and passes data.

Automatic protective switching will be accomplished by removing the external power supply to the on-line IDU or by selecting the ONLINE REQUEST of the hot standby CONFIGURATION menu. Verify that the RSU switches to the off-line IDU. The transmission signal is recovered and error-free after each switch is complete.

Note: Protection switching is non-reverting. The system does not switch back to the main side after alarms clear.

4.1.9 Radio Alarm Status

An individual alarm check will be performed to verify module fault reporting via the Alarm menu. Verify appropriate radio alarm and front panel LED response for simulated faults. Clear all alarms and verify alarm status LED's are extinguished and mark off results on performance data sheet.

4.1.10 Orderwire (Functionality)

The Orderwire Channel will be configured per customer requirements. A 3-digit DTMF address or Station Code will be assigned to each site. DTMF signaling will be confirmed by dialing into a corresponding site. An all call (star key of handset) tone will be generated and all IDUs should beep. Orderwire communication will be tested by utilizing standard voice conversation. Record the DTMF address on the data sheet.

4.1.11 Circuit Testing

All DS3 and DS1 circuits in the system are to be wired and routed in accordance with the system channel plan. Each circuit will be routed to a demarcation point that provides access for testing. The typical demarcation point is a DSX RJ48C or bantam jack panel. Insert the data rate signal at the access point at each end for the circuit under test. A loop back plug may be used on remote ends. Multiple channels may be daisy chained. Inject a bit error to confirm that the circuit is valid.

Note: Duration of test on individual circuits will be 5 to 10 seconds to verify error free operation and proper circuit routing/termination.

4.1.12 Circuit Routing

Briefly describe DS3 and DS1 equipment routing on the terminal acceptance data sheet.

Example: AMT18, DS3 radio routed to an Adtran Mux and cross-connected via DSX to a co-located Adtran Mux and AMT18, DS3 radio. DS1 #1-5 or Timeslot #1-5 drop out.

4.1.13 24-Hour System BER

Before commencing a 24-hour BER, the AMT's Time and Date will need to be set. Both the Alarm and Event Logs will also need to be cleared or reset for near and far end terminals.

A BER test will be performed on a 24-hour per hop or system basis where applicable. This test will be performed on the system's "A" side for 12 hours with the remaining 12 hours on the system's "B" side. This test will be a DS1 end-to-end circuit test, and will be conducted over the "A" and "B" side of a MHSB radio. DS1 circuits will be set to ESF, B8ZS, and tested with a QRSS test pattern.

A minimum of 12-hour BER is required for Non-Redundant radio applications unless otherwise specified. On a 12-hour test, the BER equates to better than 10-11 (per hop). On multiple hop applications, DS1 BER will meet or exceed 1 x 10-9 or better.

Note: If the BER results are not zero or negligibly small, then the 12-hour BER test may be repeated. If the second BER test results in bit errors, then MNI will meet with customer engineering representatives to further discuss re-testing and a specific pass/fail criteria on a case-by-case basis.

4.1.14 Remedies

If there is a failure to meet system specifications on any of the items in the ATP and the fault cannot be immediately remedied, the exception will be noted and the test continued. Upon remedy of the fault, a re-test of the item for the purpose of clearing the exception will be witnessed by the customer representative within a minimal 24-hour period. List all remedies and the date of completion on the ATP.

4.1.15 Final Hop Acceptance

All test equipment real time results will have been witnessed by a customer representative and recorded onto the signature page of the ATP. Final System Acceptance must be signed and dated by the appropriate representative. Printed BER results and copies of all recorded field data will be provided.

The subcontractor representative will attach and submit all swept waveguide graphs for all antennas and lines. The signed ATP will be returned to the MNI PM or project representative. Copies will be distributed upon request.

Section 5. Warranty and Maintenance

- **Overview**

Motorola has the most comprehensive service organization in the Land Mobile Industry. Since 1947, Motorola has been building a unique service team: national in scope, but local in its ability to respond to our customers' diverse needs. As product and systems complexity evolve, the Motorola Radio Products and Service Division responds with new service products and programs. This approach ensures Pinellas County Utilities that Motorola will remain at the cutting edge of service delivery and maintainability.

- **Warranty Service Program Review**

During the first year after system acceptance, Motorola will provide a warranty and maintenance program that will deliver state-of-the-art system service focused on achieving responsive service, maximum system operation, and optimum reliability. The program will commence upon system acceptance and consist of a full one-year parts and labor warranty, and preventive and emergency maintenance services.

The Service program combines the services of our Local System Service Team, our Local Subcontractor Team, and the National Service Team for technical, engineering, and administrative support. This approach allows for maximum utilization of resources.

5.1.1 Local Dispatch Service

Local dispatch and call support will be provided by Suncoast Communications and Electronics Inc. in the same manner utilized in the current maintenance support plan. When a trouble call is received by Suncoast Communications a technician is dispatched to the site in question.

5.1.2 On-Site Infrastructure Response

Normal on-site response for the Utilities microwave under build, including the 17 Canopy Links, will be provided Monday through Friday 8x5 PM. Severity 1 issues are dispatched twenty-four (24) hours a day, three hundred sixty five (365) days a year, including holidays. .

5.1.3 Infrastructure Board Repair

In the event that Suncoast Communications finds a malfunctioning board/unit at the site location, they will contact the System Support Center (SSC) for a Return Authorization (RA) number. The malfunctioning board/unit is then shipped to the SSC for repair.

Upon receipt of malfunctioning equipment, the SSC will conduct a full system test and repair to the malfunctioning boards/units. The repairs are done down to the component level utilizing automated test equipment. A system test is performed to ensure that all software and hardware is set to current customer configuration. If Motorola does not manufacture the unit, it may be returned to the Original Equipment Manufacturer (OEM) for repair. All microwave system equipment will be returned to the microwave equipment manufacturer for repair.

Once the equipment is received from the SSC, or the OEM, Suncoast Communications will either re-install the equipment or return to the spares inventory.

5.1.4 Technical Support

Technical Support is available seven (7) days a week, twenty-four (24) hours a day. The Motorola SSC staff will work with Suncoast Communications to handle questions related to your Motorola two-way communications system. Technical support will also be delivered by the microwave system supplier.

Section 6. Equipment List

Logan PS Site (1)

QTY	Description
2	Proteus AMT-M, 11GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	Canopy PTP400
1	Canopy PTP 400 Lite
1	Charger system,-48VDC, 60 amp Output (Redundant)
1	Powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays

1	Automatic Dehydrator, 115 VAC, 60 Hz, 0-10 ft^3 (MT050-81015)
1	VHLP800-11 Andrew Valuline HP Antenna, 3'
1	VHLP4-107 High Perf., Low Profile Antenna, 4 '
1	HQFD2-52-N GAB Antenna 2'
280	Elliptical Waveguide, EW90 (per ft.)
95	LMR600
1	Monopole
1	MNI – EMSE+R Enterprise Edition SNMPc Software plus Remote Access Extension
1	Desk top with monitor, key board, printer and Windows OS

Fleet Operation Site (2)

QTY	Description
1	Canopy PTP400
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
130	LMR600
1	Concrete Pole 85'

GMD Site (3)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
85	LMR900
1	Concrete Pole 105'

Ridgecrest Site (4)

QTY	Description
1	Proteus AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	Proteus AMT-M, 11GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
2	Canopy PTP 400 Lite
1	Upgrade charger system,-48VDC, 60 amp Output (Redundant)
1	Upgrade powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays
1	VHLP800-11 Andrew Valuline HP Antenna, 3'
2	HQFD2-52-N GAB Antenna 2'
235	Elliptical Waveguide, EW52 (per ft.)
200	LMR900

McKay Creek Site (5)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
75	LMR900
1	Concrete Pole 100'

Oakhurst Site (6)

QTY	Description

1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
140	LMR900

Majestic Towers Site (7)

QTY	Description
2	Proteus AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	Proteus Upgrade AMT-M, 6GHz,Space Diversity, Std Pwr, All Indoor, 44Mb/s,10MHz , 64TCM, 16DS1 LIMs+ o/b Ethernet
2	Canopy PTP400
1	Canopy PTP 400 Lite
1	Upgrade Charger system,-48VDC, 60 amp Output (Redundant)
1	Upgrade powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays
3	HQFD2-52-N GAB Antenna 2'
50	Elliptical Waveguide, EW63 (per ft.)
50	Elliptical Waveguide, EW52 (per ft.)
150	LMR600

South Cross WRFv Site (8)

QTY	Description
1	Canopy PTP400
1	Canopy PTP 400 Lite
1	QFD2-5-52-N GAB Antenna 2.5'
1	HQFD2-52-N GAB Antenna 2'
70	LMR900
70	LMR600

O16 PS Site (9)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
65	LMR600

Capri Isle PS Site (10)

QTY	Description
1	Canopy PTP400
1	Canopy PTP 400 Lite
2	HQFD2-52-N GAB Antenna 2'
75	LMR900
75	LMR600

Madeira Beach CV Site (11)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
80	LMR600

1	Concrete Pole 100'

Gulf Beach Site (12)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
75	LMR600
1	Concrete Pole 85'

FT Desoto Site (13)

QTY	Description
1	Proteus Upgrade AMT-M, 6GHz,Space Diversity, Std Pwr, All Indoor, 44Mb/s,10MHz , 64TCM, 16DS1 LIMs+ o/b Ethernet
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Powersafe, -48VDC, 130 AH Battery
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
105	LMR600

FT Desoto Site (14)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
75	LMR600

ST Petersburg Site (15)

QTY	Description
2	AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
525	Elliptical Waveguide, EW63 (per ft.)
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Upgrade Powersafe, -48VDC, 130 AH Battery

Toytown Site (16)

QTY	Description
1	AMT-M, 6GHz , NP Space Diversity, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
490	Elliptical Waveguide, EW63 (per ft.)
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Upgrade Powersafe, -48VDC, 130 AH Battery
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
125	LMR600

Waste Energy Site (17)

QTY	Description

1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
70	LMR600
1	Concrete Pole 90'

Highway Maintenance Site (18)

QTY	Description
1	AMT-M, 6GHz , NP Space Diversity, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	AMT-M, 6GHz,Non-Protected, Std Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
560	Elliptical Waveguide, EW63 (per ft.)
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Upgrade Powersafe, -48VDC, 130 AH Battery
2	Canopy PTP 400 Lite
2	HQFD2-52-N GAB Antenna 2'
280	LMR900

60 Connector Site (19)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
100	LMR600
1	Concrete Pole 120'

North County PS Site (20)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
75	LMR900
1	Concrete Pole 100'

Safety Harbor Site (21)

QTY	Description
1	AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	AMT-M, 6GHz,Non-Protected, Std Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
300	Elliptical Waveguide, EW63 (per ft.)
220	Elliptical Waveguide, EW52 (per ft.)
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Upgrade Powersafe, -48VDC, 130 AH Battery

EW Site (22)

QTY	Description
2	AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	Canopy PTP 400 Lite
230	Elliptical Waveguide, EW63 (per ft.)

215	Elliptical Waveguide, EW52 (per ft.)
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Upgrade Powersafe, -48VDC, 130 AH Battery
1	HQFD2-52-N GAB Antenna 2'
160	LMR900

Keller WTP Site (23)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
65	LMR600

Tarpon Springs Site (24)

QTY	Description
1	AMT-M, 6GHz , NP Space Diversity, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	AMT-M, 6GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	Canopy PTP 400 Lite
700	Elliptical Waveguide, EW63 (per ft.)
1	Upgrade Charger system,-48VDC, 30 amp Output (Redundant)
1	Upgrade Powersafe, -48VDC, 130 AH Battery
1	HQFD2-52-N GAB Antenna 2'
180	LMR900

Keller WTP Site (25)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
30	LMR600

Court House Site (26)

QTY	Description
1	AMT-M, 6GHz , NP Space Diversity, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
1	AMT-M, 11GHz,Non-Protected, High Pwr, All Indoor, 180Mb/s,30MHz , 256TCM, GigE LIMs
2	Canopy PTP 400 Lite
1	Upgrade charger system,-48VDC, 60 amp Output (Redundant)
1	Upgrade powersafe, -48VDC, 260 AH Battery - Use two 9900710-00 battery trays
1	VHLP800-11 Andrew Valuline HP Antenna, 3'
2	HQFD2-52-N GAB Antenna 2'
170	Elliptical Waveguide, EW63 (per ft.)
90	Elliptical Waveguide, 10.5-11.7 GHz, EW90 (per ft.)
100	LMR600
100	LMR900

Engineering Site (27)

QTY	Description

1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
30	LMR600

Belleair Site (28)

QTY	Description
1	Canopy PTP 400 Lite
1	HQFD2-52-N GAB Antenna 2'
90	LMR900
1	Concrete Pole 120'

Spares

QTY	Description
4	RFU Transceiver Module, -00: LB 5.915-6.425GHz, -01 HB 6.425-7.125 GHz
2	RFU Transceiver Module, Wideband, 11GHz
1	Signal Processing Unit (SPU), Protected, 0.5RU
1	Signal Processing Unit (SPU), Non-Protected, 1RU
2	LIM, GigE - 4 x 1000BT
1	LIM, 16 DS1
1	LSM,16 DS1,AMT-M
1	Redundant Switch Unit (RSU)
1	30 amp rectifiers at 208 VAC
2	Canopy PTP 400
2	HQFD2-52-N GAB Antenna 2'

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 12/27/2007

PRODUCER Serial #: 3400

AON RISK SERVICES CENTRAL, INC.
FKA AON RISK SERVICES, INC. OF ILLINOIS
1000 NORTH MILWAUKEE AVENUE
GLENVIEW, ILLINOIS 60025
ATTN: INSURANCE VERIFICATION CENTER
PH: 1-800-4-VERIFY/ FAX: 1-847-953-5341

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	LIBERTY MUTUAL Fire INSURANCE COMPANY
COMPANY B	LIBERTY INSURANCE CORPORATION
COMPANY C	
COMPANY D	

INSURED

MOTOROLA INC. AND ITS SUBSIDIARIES
1303 EAST ALGONQUIN ROAD
SCHAUMBURG, IL 60196

COVERAGES

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

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
a	**GENERAL LIABILITY**	TB2641005169077	7/01/2007	7/01/2008	GENERAL AGGREGATE	$ 1,000,000
	[X] COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	$ included
	[ ] CLAIMS MADE [X] OCCUR				PERSONAL & ADV INJURY	$ 1,000,000
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$ 1,000,000
					FIRE DAMAGE (Any one fire)	$ 250,000
					MED EXP (Any one person)	$ 10,000
A	**AUTOMOBILE LIABILITY**	AS2-641-005169-017	7/01/2007	7/01/2008	COMBINED SINGLE LIMIT	$ 1,000,000
	[X] ANY AUTO				BODILY INJURY (Per person)	$
	ALL OWNED AUTOS					
	SCHEDULED AUTOS				BODILY INJURY (Per accident)	$
	HIRED AUTOS					
	NON-OWNED AUTOS				PROPERTY DAMAGE	$
	[X] Garagekeepers Liability					
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	ANY AUTO				OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	UMBRELLA FORM				AGGREGATE	$
	OTHER THAN UMBRELLA FORM					$
B	**WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY**	AOS WA764D005169087 WI & OR WC7641005169097 DBA WA764D005169247	7/01/2007	7/01/2008	[X] WC STATUTORY LIMITS [ ] OTHER	
B	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [ ] INCL [ ] EXCL				EL EACH ACCIDENT	$ 1,000,000
					EL DISEASE - POLICY LIMIT	$ 1,000,000
					EL DISEASE - EA EMPLOYEE	$ 1,000,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

PINELLAS COUNTY IS included as additional insured with respects to the general liability policy.

CERTIFICATE HOLDER

PINELLAS COUNTY
PURCHASING DEPARTMENT - ATTN: RUBY MCKENZIE
ANNEX BUILDING
400 S. FT. HARRISON AVE 6TH FL
CLEARWATER, FL 33756

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

COPY

PINELLAS COUNTY
UTILITIES MICROWAVE AND BROADBAND RADIO SYSTEM
EXHIBIT F-2

Customer will make payments to Motorola within forty-five (45) days after the date of each invoice, in accordance with Florida state law. Customer will make payments when due in the form of a check, cashier's check, or wire transfer drawn on a U.S. financial institution and in accordance with the following milestones.

1. **25% of the Contract Price Upon Detailed Design Review Completion;**
2. **40% of the Contract Price upon shipment of equipment;**
3. **20% of the Contract Price upon installation acceptance;**
4. **10% of the Contract Price upon ATP Completion; and**
5. **5% of the Contract Price upon Final System Acceptance**

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

MOTOROLA

Change Order No. 08-003

This Change Order No. 08-003 ("Change Order") to Motorola Contract Reference No. *04-19786/hhm*, Pinellas Contract Reference No. 990-0909-N, dated May 9, 2005 (the "Agreement") between Motorola, Inc. and Pinellas County, Florida, is made and entered into as the last date signed below ("Effective Date").

1. This Change Order is an integral part of the Agreement. If there are any inconsistencies between the provisions of this Change Order and the provisions of the Agreement, the provisions of this Change Order shall prevail.

2. This Change Order includes and is limited to the Equipment, Services, and Warranty to replace the Pinellas County Uhf Fire Paging System as described in the Exhibits below.

3. The Contract Price will be adjusted as follows:

Original Contract Price	$5,149,000.00
Previous Change Order Amounts 08-001, 08-002	$9,999,625.90
This Change Order No. 08-003	$420,000.00
Adjusted Contract Price	$15,568,625.90

4. The Contract Completion Date will be adjusted as follows:

Original Schedule Completion Date	
Previous Schedule Changes	March 31, 2009
This Schedule Change	No Impact
Adjusted Schedule Completion Date	March 31, 2009

5. Exhibits A through F in Section 1 of the Agreement shall remain in full force and effect for the work to be performed pursuant to the Agreement, and shall not affect parties' duties and obligations under this Change Order. For purposes of the work to be performed pursuant to this Change Order, the following Exhibits shall apply.

   Exhibit A-3 System Pricing, System Description, Statement of Work, Warranty and Equipment List

   ~~Exhibit B Motorola Software License Agreement.~~ N/A please initial

   Exhibit E Certificate of Insurance

   Exhibit F-3 Payment Terms for the Pinellas County Replacement UHF Paging System

6. Customer shall make payment to Motorola, per Exhibit F-3, within forty-five (45) days of receipt of Motorola's invoice.

7. For purposes of this Change Order, Sections 9 and 24 of the Agreement are stricken.

8. Except as specifically stated in this Change Order, the Agreement in all other respects is ratified, confirmed and continues in full force and effect.

MOTOROLA

In Witness Whereof, the parties have executed this Change Order as of the Effective Date set forth below.

MOTOROLA INC.

By: _____
(Signature)

Name: _____
(Print - Block Letters)

Title: _____

Date: _____

CUSTOMER:

By: _____
(Signature)

Name: _____
(Print - Block Letters)

Title: _____

Date: _____

APPROVED AS TO FORM
OFFICE OF COUNTY ATTORNEY
By Michelle Wallace
Attorney

1.0 Pricing

The system price for the Replacement Uhf Fire Paging System, including equipment, installation, system integration, and one-year warranty is $420,000.00.

2.0 System Description

This system description provides more detailed information for the installation of a replacement UHF Fire Paging System. The objective of the new system is to replace the existing UHF-based wireless network with modern equipment that offers the same level of system functionality as currently provided.

PAGING TERMINALS

Motorola will provide two (2) Zetron, Model 2200 Paging Terminals. These terminals support up to 2000 subscribers, and feature the following:

- High-performance CPU
- System RAID Hard Disk Drive
- 10 I/O Slots
- Dual Telephone Interface Card
- Dual Alphanumeric Messaging Input
- Radio Station Control Card with full Addressing PURC Emulation
- ITU Voice Controller with 14 Voice Channels
- System Voice Prompts
- MultiPort Serial Interface for TAP Applications
- TNPP Network Interface
- Outdial TAP Interface
- Dual Port Expansion for the TAP Input or TNPP Cards
- Extender Card for Board Maintenance

The Zetron Model 2200 Paging Terminals will be located at the Ridgecrest and Court House sites.

PAGING BASE STATIONS

Motorola will be installing three (3) ISC Technologies base stations, specifically, the ISC-T5540 UHF Paging Transmitter. The ISC-T5540 features the following:

- Output Power Range of 50-250 watts
- Transmission Frequency of 406-420, and 445-470 MHz
- Channel Bandwidth of 25 KHz & 12.5 KHz
- Frequency Stability is +0.5 Hz with GL-C2000
- GPS Synchronization
- 100% Duty Cycle
- Supports Multiple Paging Formats, Including POCSAG, 2 and 4 Level FLEX, Analog, 2 level and 4 level NRZ-FSK

The paging base stations and simulcast equipment will be installed at Ridgecrest, Tarpon Springs, and the Bayfront Hospital sites. Motorola will replace the antenna at each site, but will reuse the transmission line on the towers. Motorola will also be providing one (1) system spare base station and one (1) configured spare terminal kit.

3.0 Statement of Work

CONTRACT

Contract Award (Milestone) – Pinellas County and Motorola execute the contract and both parties receive all the necessary documentation.

Contract Administration

Motorola Responsibilities:

- Assign a Project Manager, as the single point of contact with authority to make project decisions.
- Assign resources necessary for project implementation.
- Set up the project in the Motorola information system.
- Schedule the project kick-off meeting with Pinellas County.

Customer Responsibilities:

- Assign a single point of contact responsible for Customer signed approvals.
- Assign other resources necessary to ensure completion of project tasks for which Pinellas County is responsible.

Completion Criteria:

- Motorola internal processes are set up for project management.
- Both Motorola and Pinellas County assign all required resources.
- Project kickoff meeting is scheduled.

Project Kickoff

Motorola Responsibilities:

- Conduct a project kickoff meeting and review the system design for the project.
- Ensure key project team participants attend the meeting.
- Introduce all project participants attending the meeting.
- Review the roles of the project participants to identify communication flows and decision-making authority between project participants.
- Review the overall project scope and objectives with Pinellas County.
- Review the resource and scheduling requirements with Pinellas County.
- Review the Project Schedule with Pinellas County to address upcoming milestones and/or events.
- Review the teams' interactions (Motorola and Pinellas County), meetings, reports, milestone acceptance, and Pinellas County's participation in particular phases.

Customer Responsibilities:

- Pinellas County's key project team participants attend the meeting.
- Review Motorola and Customer responsibilities.

Completion Criteria:

- Project kick-off meeting completed.
- Meeting notes identify the next action items.

ORDER PROCESSING

Process Equipment list

Motorola Responsibilities:

- Validate Equipment List by checking for valid model numbers, versions, compatible options to main equipment, and delivery data.
- Enter order into Motorola's Customer Order Fulfillment (COF) system.

- Create Ship Views, to confirm with Pinellas County the secure customer provided storage location(s) to which the equipment will ship. Ship Views are the mailing labels that carry complete equipment shipping information, which direct the timing, method of shipment, and ship path for ultimate destination receipt.
- Create equipment orders.
- Reconcile the equipment list(s) to the Contract.
- Procure third-party equipment if applicable.

Customer Responsibilities:

- Approve shipping location(s).
- Complete and provide Tax Certificate information verifying tax status of shipping location.

Completion Criteria:

- Verify that the Equipment List contains the correct model numbers, version, options, and delivery data.
- Trial validation completed.
- Bridge the equipment order to the manufacturing facility.

SYSTEM INSTALLATION

Install Fixed Network Equipment

Motorola Responsibilities:

- Will not provide storage location for the Motorola-provided equipment.
- Receive and inventory all equipment.

- Install system equipment as specified by the Equipment List, System Description, and system drawings

Interference

Motorola is not responsible for interference caused or received by the Motorola provided equipment except for interference that is directly caused by the Motorola provided transmitter(s) to the Motorola provided receiver(s). Should Pinellas County system experience interference, Motorola can be contracted to investigate the source and recommend solutions to mitigate the issue.

- Bond the supplied equipment to the site ground system in accordance with the Motorola R56 Standards and Guidelines for Communication Sites.
- Will not provide or write the CAD interface to the new 2200 Zetrom.
- Will not relocate existing equipment to a location designated by Pinellas County.
- We will change out the antenna system on the old system. Site by Site.
- Will install one 19" rack of equipment at each site. This will be close to the MSF5000. (We may need to share power if needed)
- We will use existing TenSr equipment. We will use a new time slot and 4 wire port at Tarpon and Bayfront.
- We will cable the new equipment up. We will run new RF lines for the transmitters, but will not connect until cutover.
- We will build the Zetron data base with assistance from customer.
- We will test the system off line as much as possible.
- We will schedule down time, cutover new system, and optimize.
- We will run new system for a couple of days to check stability.
- We will then remove all old equipment and cables.
- Provide secure storage for the Motorola-provided equipment, at a location central to the sites. Motorola coordinates the receipt of the equipment with Pinellas County's designated contact, and inventory all equipment.

Customer Responsibilities:

- Provide access to the sites, as necessary.
- Write the CAD interface to the new 2200 Zetron.
- Provide ports to new 2200 Zetron from CAD.
- Providing Phone lines to 2200 Zetron.

Completion Criteria:

- Fixed Network Equipment installation completed and ready for optimization.

Fixed Network Equipment Installation Complete

- All fixed network equipment installed and accepted by Pinellas County.

System Installation Acceptance (Milestone)

- All equipment installations are completed and accepted by Pinellas County.

SYSTEM OPTIMIZATION

Optimize System FNE

Motorola Responsibilities:

- Verify that all equipment is operating properly.
- Test basic features and functionality are in accordance with manufacturers' specifications.

Customer Responsibilities:

- Provide access/escort to the sites. (If needed)
- Provide required radio ID and alias information to enable alias database setup for interface to console. (Console – If applicable)
- Define the logging recorder tracks by talk group. (Logging Recorder – If Applicable)

Completion Criteria:

- System FNE optimization is complete.

Optimization Complete

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

AUDIT AND ACCEPTANCE TESTING

Perform R-56 Audit

Motorola Responsibilities:

- Perform R-56 site-installation quality-audits, verifying proper physical installation and operational configurations.

Customer Responsibilities:

- Provide access/escort to the sites.

Completion Criteria:

- All R-56 Standards and Guidelines for Communication Sites audits completed successfully.

Perform Equipment Testing

Motorola Responsibilities:

- Test individual components of the system to verify compliance to the equipment specifications.

Customer Responsibilities:

- Witness tests if desired.

Completion Criteria:

- Successful completion of equipment testing.

Perform Functional Testing

Motorola Responsibilities:

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

Customer Responsibilities:

- Witness the functional testing.

Completion Criteria:

- Successful completion of the functional testing.
- Customer approval of the functional testing.

System Acceptance Test Procedures (Milestone)

- Customer approves the completion of all the required tests.
- Not included in scope of work.

FINALIZE

Cutover

Motorola Responsibilities:

- Motorola and Pinellas County finalize a mutually agreed upon cutover plan based upon discussions held during the project kickoff meeting.
- During cutover, follow the written plan and implement the defined contingencies, as required.

Customer Responsibilities:

- Attend cutover meetings and approve the cutover plan.
- Notify the user group(s) affected by the cutover (date and time).

Completion Criteria:

- Successful migration from the old system to the new system.

Resolve Punchlist

Motorola Responsibilities:

- Work with Pinellas County to resolve punchlist items, documented during the Acceptance Testing phase, in order to meet all the criteria for final system acceptance.

Customer Responsibilities:

- Assist Motorola with resolution of identified punchlist items by providing support, such as access to the sites, equipment and system, and approval of the resolved punchlist item(s).

Completion Criteria:

- All punchlist items resolved and approved by Pinellas County.

Transition to Service/Project Transition Certificate

Motorola Responsibilities:

- Review the items necessary for transitioning the project to warranty support and service
- Provide a Customer Support Plan (Appendix X) detailing the warranty and post warranty support, if applicable, associated with the Contract equipment.

Customer Responsibilities:

- Participate in the Transition Service/Project Transition Certificate (PTC) process.

Completion Criteria:

- All service information has been delivered and approved by Pinellas County.

Finalize Documentation

Motorola Responsibilities:

- The documentation will be limited to the following:
  - Equipment Inventory List (paper or disk)
  - System Block Diagram
  - RF Site Floor Plan (where applicable)
  - RF Site Rack Face (where applicable)
  - Antenna Network Drawings for RF Sites (where applicable)
  - Technical Service Manuals

Customer Responsibilities:

- Receive and approve all documentation provided by Motorola.

Completion Criteria:

- All required documentation is provided and approved by Pinellas County.

Final Acceptance (Milestone)

- All deliverables completed, as contractually required.
- Final System Acceptance received from Pinellas County.
- Warranty

4.0 Warranty

WARRANTY SERVICE PROGRAM REVIEW

During the first year after system acceptance, Motorola will provide a warranty program that will deliver state-of-the-art system service focused on achieving responsive service, maximum system operation, and optimum reliability. The program will commence upon system acceptance and consist of a full one-year parts and labor warranty, and preventive and emergency maintenance services. Below is a list of services that will be delivered during the warranty support year.

Dispatch Service

Suncoast Communications Inc. will provide local dispatch and call support in the same manner as you utilize with your current maintenance support plan.

You will continue to call the same number for any service related issues that you call today.

On-Site Infrastructure Response

On-site Infrastructure Response provides for on-site Suncoast Communications response as determined by pre-defined severity levels and response times. Severity 1 issues are dispatched twenty-four (24) hours a day, three hundred sixty five (365) days a year, including holidays.

Infrastructure Repair

In the event Suncoast Communications finds a malfunctioning board/unit at the site location, they will contact Original Equipment Manufacturer (OEM) to request a Return Authorization (RA) number. The malfunctioning board/unit is then shipped to the (OEM) for repair.

Once the equipment is received from the OEM, Suncoast Communications will either re-install the equipment or return to your spare inventory.

5.0 Equipment List

Supplier	Site	Qty	Model No.	Description
Zetron	RC	1	18161	2200 Terminal
Zetron	CH	1	18160	2200 Terminal
Zetron	RC	1	18162	2200 spares
Zetron	RC	2	DS9500643	RS-232/TRIMBLE THUNDERBOLT GPS INTERFACE CABLE
Zetron	RC	2	DS7090001	PC INTERFACE CABLE FOR PROGRAMMING (DB9)
Zetron	RC	1	ds9500406	POWER SUPPLY, 100-240VAC INPUT, 12VDC OUTPUT
Zetron	RC	1	ds9019608	MODEL 600 WIRELESS DATA MANAGER
Zetron	RC	1	ds9300032	ENHANCED FLEX MGMT OPTION FACTORY INSTALL
DropShip	RC	1	DSISMR50LNZ6	MICROWAVE COAX PROTECTOR 6V
Zetron	RC	1	DS9500707	TRIMBLE THUNDERBOLT GPS
Zetron	RC	1	DS9500708	TRIMBLE THUNDERBOLT BULLETT III HE ANTENNA
Zetron	RC	1	DS9500709	TRIMBLE THUNDERBOLT POWER CABLE ASSEMBLY
Zetron	RC	1	DS9500432	TRIMBLE ACCUTIME INTERFAC CABLE 50 FT
DropShip	RC	100	I1700	1/4" SUPERFLEX POLY JKT PER FOOT
DropShip	RC	1	TDN9715	1/4" CONN BNC MALE S FLEX PLTD
DropShip	RC	1	TDN9714	1/4" CONN N MALE S FLEX PLTD
Zetron	RC	1	DS9500644	GPS CONNECTOR KIT OPTION

Zetron	RC	1	ds9500406	POWER SUPPLY, 100-240VAC INPUT, 12VDC OUTPUT
Zetron	RC	1	ds9019609	MODEL 620 WIRELESS DATA ENCORDER (MANUAL NOT INCLUDED)
Zetron	RC	1	DS9300033	ENHANCED FLEX ENCODING FOR MODEL 620
Dropship	RC	1	DSISMR50LNZ6	MICROWAVE COAX PROTECTOR 6V
Zetron	RC	1	DS9500707	TRIMBLE THUNDERBOLT GPS
Zetron	RC	1	DS9500708	TRIMBLE THUNDERBOLT BULLETT III HE ANTENNA
Zetron	RC	1	DS9500709	TRIMBLE THUNDERBOLT POWER CABLE ASSEMBLY
Zetron	RC	1	DS9500432	TRIMBLE ACCUTIME INTERFAC CABLE 50 FT
Dropship	RC	100	I1700	1/4" SUPERFLEX POLY JKT PER FOOT
Dropship	RC	1	TDN9715	1/4" CONN BNC MALE S FLEX PLTD
Dropship	RC	1	TDN9714	1/4" CONN N MALE S FLEX PLTD
Zetron	RC	1	DS9500644	GPS CONNECTOR KIT OPTION
Zetron	TS	1	ds9500406	POWER SUPPLY, 100-240VAC INPUT, 12VDC OUTPUT
Zetron	TS	1	ds9019609	MODEL 620 WIRELESS DATA ENCORDER (MANUAL NOT INCLUDED)
Zetron	TS	1	DS9300033	ENHANCED FLEX ENCODING FOR MODEL 620
Dropship	TS	1	DSISMR50LNZ6	MICROWAVE COAX PROTECTOR 6V
Zetron	TS	1	DS9500707	TRIMBLE THUNDERBOLT GPS
Zetron	TS	1	DS9500708	TRIMBLE THUNDERBOLT BULLETT III HE ANTENNA
Zetron	TS	1	DS9500709	TRIMBLE THUNDERBOLT POWER CABLE ASSEMBLY
Zetron	TS	1	DS9500432	TRIMBLE ACCUTIME INTERFAC CABLE 50 FT
Dropship	TS	100	I1700	1/4" SUPERFLEX POLY JKT PER FOOT
Dropship	TS	1	TDN9715	1/4" CONN BNC MALE S FLEX PLTD
Dropship	TS	1	TDN9714	1/4" CONN N MALE S FLEX PLTD
Zetron	TS	1	DS9500644	GPS CONNECTOR KIT OPTION
Zetron	BF	1	ds9500406	POWER SUPPLY, 100-240VAC INPUT, 12VDC OUTPUT
Zetron	BF	1	ds9019609	MODEL 620 WIRELESS DATA ENCORDER (MANUAL NOT INCLUDED)
Zetron	BF	1	DS9300033	ENHANCED FLEX ENCODING FOR MODEL 620
Dropship	BF	1	DSISMR50LNZ6	MICROWAVE COAX PROTECTOR 6V
Zetron	BF	1	DS9500707	TRIMBLE THUNDERBOLT GPS
Zetron	BF	1	DS9500708	TRIMBLE THUNDERBOLT BULLETT III HE ANTENNA
Zetron	BF	1	DS9500709	TRIMBLE THUNDERBOLT POWER CABLE ASSEMBLY
Zetron	BF	1	DS9500432	TRIMBLE ACCUTIME INTERFAC CABLE 50 FT
Dropship	BF	100	I1700	1/4" SUPERFLEX POLY JKT PER FOOT
Dropship	BF	1	TDN9715	1/4" CONN BNC MALE S FLEX PLTD
Dropship	BF	1	TDN9714	1/4" CONN N MALE S FLEX PLTD
Zetron	BF	1	DS9500644	GPS CONNECTOR KIT OPTION

ISC	RC	1	ISC-T5540	ISC-T5540, 50-250 watt UHF Analog/Digital Transmitter w/ DSP Exciter
ISC	RC	1	ISC-Rack Mount	rack mount hardware/setup
ISC	RC	1	ISC-OSC	10MHz Reference Osc (not discountable)
DropShip	RC	100	I1702	1/2" SUPERFLEX POLY JKT PER FOOT
DropShip	RC	2	CDN6579	1/2" N MALE PLATED CONNECTOR
DropShip	RC	1	DSUHF50HN	UHF COMB 450-512MHZ
DropShip	RC	1	DS4557N	ANTENNA 460-470MHZ OMNI 10DB, N CONNECTOR
ISC	TS	1	ISC-T5540	ISC-T5540, 50-250 watt UHF Analog/Digital Transmitter w/ DSP Exciter
ISC	TS	1	ISC-Rack Mount	rack mount hardware/setup
ISC	TS	1	ISC-OSC	10MHz Reference Osc (not discountable)
DropShip	TS	100	I1702	1/2" SUPERFLEX POLY JKT PER FOOT
DropShip	TS	2	CDN6579	1/2" N MALE PLATED CONNECTOR
DropShip	TS	1	DSUHF50HN	UHF COMB 450-512MHZ
DropShip	TS	1	DS4557N	ANTENNA 460-470MHZ OMNI 10DB, N CONNECTOR
ISC	BF	1	ISC-T5540	ISC-T5540, 50-250 watt UHF Analog/Digital Transmitter w/ DSP Exciter
ISC	BF	1	ISC-Rack Mount	rack mount hardware/setup
ISC	BF	1	ISC-OSC	10MHz Reference Osc (not discountable)
DropShip	BF	100	I1702	1/2" SUPERFLEX POLY JKT PER FOOT
DropShip	BF	2	CDN6579	1/2" N MALE PLATED CONNECTOR
DropShip	BF	1	DSUHF50HN	UHF COMB 450-512MHZ
DropShip	BF	1	DS4557N	ANTENNA 460-470MHZ OMNI 10DB, N CONNECTOR
ISC	SPARE	1	ISC-T5540	ISC-T5540, 50-250 watt UHF Analog/Digital Transmitter w/ DSP Exciter
ISC	SPARE	1	ISC-Rack Mount	rack mount hardware/setup
ISC	SPARE	1	ISC-OSC	10MHz Reference Osc (not discountable)
Zetron	SPARE	1	ds9500406	POWER SUPPLY, 100-240VAC INPUT, 12VDC OUTPUT
Zetron	SPARE	1	ds9019608	MODEL 600 WIRELESS DATA MANAGER
Zetron	SPARE	1	ds9300032	ENHANCED FLEX MGMT OPTION FACTORY INSTALL
DropShip	SPARE	1	DSISMR50LNZ6	MICROWAVE COAX PROTECTOR 6V

Zetron	SPARE	1	DS9500707	TRIMBLE THUNDERBOLT GPS
Zetron	SPARE	1	DS9500708	TRIMBLE THUNDERBOLT BULLETT III HE ANTENNA
Zetron	SPARE	1	DS9500709	TRIMBLE THUNDERBOLT POWER CABLE ASSEMBLY
Zetron	SPARE	1	DS9500432	TRIMBLE ACCUTIME INTERFAC CABLE 50 FT
Zetron	SPARE	1	ds9500406	POWER SUPPLY, 100-240VAC INPUT, 12VDC OUTPUT
Zetron	SPARE	1	ds9019609	MODEL 620 WIRELESS DATA ENCORDER (MANUAL NOT INCLUDED)
Zetron	SPARE	1	DS9300033	ENHANCED FLEX ENCODING FOR MODEL 620
Dropship	SPARE	1	DSISMR50LNZ6	MICROWAVE COAX PROTECTOR 6V
Zetron	SPARE	1	DS9500707	TRIMBLE THUNDERBOLT GPS
Zetron	SPARE	1	DS9500708	TRIMBLE THUNDERBOLT BULLETT III HE ANTENNA
Zetron	SPARE	1	DS9500709	TRIMBLE THUNDERBOLT POWER CABLE ASSEMBLY
Zetron	SPARE	1	DS9500432	TRIMBLE ACCUTIME INTERFAC CABLE 50 FT
DropShip	SPARE	1	DS4557N	ANTENNA 460-470MHZ OMNI 10DB, N CONNECTOR

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ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 12/27/2007

PRODUCER Serial #: 3400

AON RISK SERVICES CENTRAL, INC.
FKA AON RISK SERVICES, INC. OF ILLINOIS
1000 NORTH MILWAUKEE AVENUE
GLENVIEW, ILLINOIS 60025
ATTN: INSURANCE VERIFICATION CENTER
PH: 1-800-4-VERIFY/ FAX: 1-847-953-5341

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	LIBERTY MUTUAL Fire INSURANCE COMPANY
COMPANY B	LIBERTY INSURANCE CORPORATION
COMPANY C	
COMPANY D	

INSURED

MOTOROLA INC. AND ITS SUBSIDIARIES
1303 EAST ALGONQUIN ROAD
SCHAUMBURG, IL 60196

COVERAGES

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

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
a	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR OWNER'S & CONTRACTOR'S PROT	TB2641005169077	7/01/2007	7/01/2008	GENERAL AGGREGATE	$ 1,000,000
					PRODUCTS - COMP/OP AGG	$ Included
					PERSONAL & ADV INJURY	$ 1,000,000
					EACH OCCURRENCE	$ 1,000,000
					FIRE DAMAGE (Any one fire)	$ 250,000
					MED EXP (Any one person)	$ 10,000
A	AUTOMOBILE LIABILITY [X] ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS [X] Garagekeepers Liability	AS2-641-005169-017	7/01/2007	7/01/2008	COMBINED SINGLE LIMIT	$ 1,000,000
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE	$
	GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY UMBRELLA FORM OTHER THAN UMBRELLA FORM				EACH OCCURRENCE	$
					AGGREGATE	$
						$
B	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY	AOS WA764D005169087 WI & OR WC7641005169097 DBA WA764D005169247	7/01/2007	7/01/2008	[X] WC STATUTORY LIMITS [ ] OTHER	
B	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [ ] INCL [ ] EXCL				EL EACH ACCIDENT	$ 1,000,000
					EL DISEASE - POLICY LIMIT	$ 1,000,000
					EL DISEASE - EA EMPLOYEE	$ 1,000,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

PINELLAS COUNTY IS included as additional insured with respects to the general liability policy.

CERTIFICATE HOLDER

PINELLAS COUNTY
PURCHASING DEPARTMENT - ATTN: RUBY MCKENZIE
ANNEX BUILDING
400 S. FT. HARRISON AVE 6TH FL
CLEARWATER, FL 33756

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

COPY

PINELLAS COUNTY
REPLACEMENT UHF FIRE PAGING SYSTEM
EXHIBIT F-3

Customer will make payments to Motorola within forty-five (45) days after the date of each invoice, in accordance with Florida state law. Customer will make payments when due in the form of a check, cashier's check, or wire transfer drawn on a U.S. financial institution and in accordance with the following milestones.

1. **$100,000.00 upon completion of Detailed Design Review (Effective Date);**

2. **$300,000.00 upon equipment installation;**

3. **$20,000.00 upon Final System Acceptance**

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

EXISTING PROJECT UPDATE FORM
CAPITAL IMPROVEMENT PROGRAM FY09 - FY14
(All costs are in FY08 dollars)

Project No: 722
Budget Center 8250100
Exp. Sub-Ctr. 8250113

Department:Emergency Communications
Date: 3/25/08

Project Title: Public Safety Radio and Data System
Project Location:
Project Description Upgrade and enhancement of radio system and facilities. Continue 800 MHz System conversion to P25 Standards based technology for interoperability and co

EXPENDITURES	FY08 Projection	FY09	FY10	FY11	FY12	FY13	FY14	6-Year Total
.1 Plans (Design Prof.)								-
.2 Land Acquisition								-
.3 Construction (Total)	-	-	-	-	-	-		-
.01 Construction								-
.02 Construction Mgr. Fee								-
.03 Offsite Development								-
.04 Demolition								-
.05 Site Development								-
.4 Testing (Total)	-	-	-	-	-	-		-
.01 Inspections & Testing								-
.02 Surveys								-
.5 Other	-	-	-	-	-	-		-
.01 North Zone P25	1,689,280						1,400,000	1,400,000
.02 Sourh Zone P25	2,016,000		1,600,000	1,000,000	2,600,000			5,200,000
.03 Main Zone P25		4,300,000	2,000,000	2,000,000	6,500,000	5,000,000		19,800,000
700 MHz Voice System		80,000	448,400	400,000				928,400
.04 700 MHz Data		1,950,000	1,000,000	1,650,000	1,000,000			5,600,000
.05 Tower Upgrades						2,000,000		2,000,000
Paging System Replacement		320,000						320,000
.6 Artwork								-
Total	**3,705,280**	**6,650,000**	**5,048,400**	**5,050,000**	**10,100,000**	**7,000,000**	**1,400,000**	35,248,400

REVENUES	08 Projection	FY09	FY10	FY11	FY12	FY13	FY14	6-Year Total
Penny for Pinellas	375,330	350,000	1,600,000	1,650,000	7,100,000	4,500,000	400,000	15,600,000
Local Option Gas Tax								-
Trans. Impact Fees								-
Tourist Development Tax								-
Grant:Federal	2,016,000	4,300,000	2,448,400	2,400,000	2,000,000			13,164,400
Local Grant:								-
FY06 Xfer	213,950							-
Reimbursement:	500,000							-
Other:Moving Violation	600,000	2,000,000	1,000,000	1,000,000	1,000,000	2,500,000	1,000,000	8,500,000
Total	3,705,280	6,650,000	5,048,400	5,050,000	10,100,000	7,000,000	1,400,000	35,248,400