

**MODIFICATION # 17
TO
CONTRACT NUMBER 2001-035
BETWEEN THE
COMMONWEALTH OF VIRGINIA
AND
MOTOROLA, INC.**

This MODIFICATION #17 is an agreement between the Commonwealth of Virginia through its Department of State Police, hereinafter referred to as "State" or "Commonwealth," and Motorola, Inc., hereinafter referred to as "Motorola," which modifies Contract Number 2001-035 (the "Contract") between the parties. This Modification #17 is hereby incorporated into and made an integral part of the Contract effective July 13, 2004. This Modification will be effective as of the last date signed below.

The purpose of this Modification #17 is to increase the Contract Price to extend STARS two-way radio coverage into the Chesapeake Bay Bridge Tunnel (CBBT).

Both parties agree to the following:

1. Description of this Modification.

The Chesapeake Bay Bridge Tunnel will be joining the STARS IV&D Network as set forth in Modification #16, effective September 29, 2006. Modification #16 included additional STARS subscribers that will be installed throughout CBBT. The work to be performed, as described herein, allows the STARS subscribers to communicate within the CBBT by installing an in-tunnel antenna solution. The Statement of Work for the services to be performed is detailed in Attachment A, which is attached hereto and fully incorporated herein.

2. Modification of Contract Price.

For the additional labor and materials provided by Motorola, as detailed in Attachment B, which is attached hereto and fully incorporated herein, **\$1,026,865.82** is added to the Contract Price.

3. Contract Price Adjustments.

Original Contract Price:	\$329,673,699.00
Amount of Previous Modifications numbered 1 through 9, 12, 13, 14, 15 and 16	\$6,961,111.86
Amount of Modifications numbered 10 and 11:	Pending

This Modification #17:	\$1,026,865.82
New Contract Price:	\$337,661,676.68

4. Completion Date Adjustments.

None.

5. Milestone Payments.

In accordance with this Modification #17, the Contract Milestone Payments for the equipment and services described herein are as stated below:

MILESTONE NAME	TERMS	AMOUNT
Modification #17-A – Shipment of Materials	100% of equipment value upon shipment of materials for Modification #17	\$733,250.00
Modification #17-B – Completion of Installation	100% of installation services value upon completion of installation for Modification #17	\$263,235.00
Modification 17C - Optimization and Acceptance	100% of Optimization and Acceptance upon acceptance of CBBT tunnel systems coverage.	\$30,380.82

The foregoing is the complete and final expression of the parties' agreement to modify Contract 2001-035 and cannot be modified, except by a writing signed by duly authorized representatives of both parties. If there are any inconsistencies between the provisions of this Modification #17 and the provisions of the Contract, the provisions of this Modification #17 will prevail.

ALL OTHER TERMS AND CONDITIONS OF THE CONTRACT REMAIN UNCHANGED AND SHALL REMAIN IN FULL FORCE.

PERSONS SIGNING THIS CONTRACT MODIFICATION ARE AUTHORIZED REPRESENTATIVES OF EACH PARTY TO THIS CONTRACT AND ACKNOWLEDGE THAT EACH PARTY AGREES TO BE BOUND BY THE TERMS AND CONDITIONS OF THIS CONTRACT MODIFICATION.

MOTOROLA, INC.

COMMONWEALTH OF VIRGINIA

Department of State Police

BY: (Signature on File)
Marshall Wright
MSSI Vice President & Director, Sales

BY: (Signature on File)
Colonel W. Steven Flaherty
Superintendent

DATE: March 7, 2007

DATE: March 19, 2007

Reviewed by: (Signature on File)
Michael Archbold
Motorola Project Manager

BY: (Signature on File)
Patricia T. Trent, CPPB, VCO
Procurement and Contract Officer

DATE: March 13, 2007

DATE: March 16, 2007

Reviewed By:



Judith M. Alexander, Esq.
Commercial Counsel – Law Dept.

DATE: March 9, 2007

**Attachment A to
Commonwealth of Virginia STARS - Modification #17**

**CHESAPEAKE BAY BRIDGE TUNNELS: STARS VHF MOBILE AND 800 MHZ
PORTABLE TUNNEL COVERAGE STATEMENT OF WORK**

1.0 Background

As part of the STARS Project, Motorola is providing and installing a STARS VHF headend rack to bring the eight (8) STARS VHF channels from the Hampton site onto newly installed radiating cable in the exhaust shaft above the two (2) Chesapeake Bay Bridge Tunnels. The headend will broadcast STARS VHF signals throughout the tunnel system roadways. The headend will also translate the STARS 800MHz portable radio signals onto the VHF STARS IV&D Network. The 800 MHz Bi-Directional Amplifiers (“BDA”) placed inside each tunnel will ensure communications between 800 MHz portables and the headend. The headend electronics, pick-up radios, and RF combining will be located in equipment rooms at one end of each of the tunnels.

2.0 Design

2.1 Overview:

This design includes the plan to extend the eight (8) VHF channels located at the STARS Hampton site, allowing for mobile VHF radio coverage into two (2) Chesapeake Bay Bridge Tunnels. The design calls for additional head-end equipment with 800 MHz DVRS and a pick-up antenna to the tunnels and installing radiating cable and 800 MHz BDAs in the exhaust shaft above each of the tunnel tubes.

2.2 Description:

There are two tubes that make up the Chesapeake Bay Bridge Tunnel. Both tubes accommodate bi-directional traffic. One tube is approximately 5400 feet and the other is approximately 5700 feet. Inside the exhaust shaft that runs on top of each tunnel, Motorola is installing 1-1/4 inch radiating cable and two (2) BDAs per tunnel. Each tube will have separate communications systems since the tunnels are at opposite ends of the Chesapeake Bay Bridge Tunnel.

Each Headend will consist of sixteen (16) channelized LinkNet™ Service Modules (LSM) (two [2] for downlink and two [2] for uplink) inside a cabinet rack. The VHF LSMs are channel-specific amplifiers with a gain range of 65-95 dB for VHF modules. The LSMs are both analog and APCO P25-compliant channelized amplifiers. The combining/filtering will be in a separate open frame rack installed adjacent to the cabinet rack. Batteries installed in the bottom of the cabinet rack will provide 30 minutes of standby time. A Gateway Module installed inside the cabinet rack permits remote and on-site diagnostics, control and configuration of the RF system. Where point-to-point wireless links are not feasible, the Commonwealth will be responsible for providing a DSL connection or a dedicated POTS line to each of the tunnel Headend systems for connection to the IMS server. This design

includes at least 0.5 W per STARS channel at the rack output and based on testing in the tunnel, will provide coverage within the tunnel.

One Vehicular Repeater located in a separate rack will feed the 800 MHz portion of the system. The Vehicular Repeater will translate the STARS VHF frequencies to 800 MHz on the downlink and convert the uplink the signals from 800 MHz to the STARS VHF frequencies. The 800 MHz frequencies will couple into the same 1-1/4 inch radiating cable with a crossband coupler located inside the equipment rack. Two BDAs per tube are required to amplify the 800 MHz downlink and uplink signals. The 800 MHz signals are amplified at two points in the tunnel with crossband couplers. A battery cabinet co-located with each BDA with two batteries provides at least four hours of standby time for the 800 MHz BDAs. At each portal, directional antennas are installed to provide 100 feet of coverage outside the tunnel entrances.

3.0 Equipment and Services

3.1 Equipment.

The equipment in support of this proposal includes the following:

- Pick-up antenna. (2 per Tunnel)
- ½-inch coax for pick-up antennas. (2 per Tunnel)
- LinkNet Headend Cabinet (1 per Tunnel)
- DVRS cabinet (1 per Tunnel)
- Open rack with combining system. (1 per Tunnel)
- All necessary assorted jumpers and connectors (per tunnel)
- 800 MHz BDAs (2 per Tunnel)

3.2 Services.

The services being offered in support of this proposal includes the following:

- Project Management, engineering and documentation.
- Implementation.
- Optimization.
- In-tunnel Coverage testing, per tunnel. (Lane closures and nighttime work required by CBBT Authority).

4.0 Design and Implementation Assumptions

- Pending authorization by the Chesapeake Bay Bridge authorized personnel, Motorola will be allowed to do core drilling if required to meet the design as presented.
- The coverage area is for the portion of the tunnel where the general public and their automobiles have access.

- One tunnel measures approx. 5700 feet in length and the other tunnel measures approx. 5400 feet in length.
- Eight (8) STARS channels are included in this quote. The existing CBBT legacy frequency for tunnel personnel is not included and is on a separate Distributed Antenna System (DAS). The existing VSP legacy channel is also not included.
- If CBBT requirements change outside the scope of what is agreed to in this Contract Modification #17, a change order or modification may be necessary.
- Available facility documentation (i.e., AutoCAD floor plans) shall be available to finalize the design.
- Two (2) BDAs per tunnel will be placed above the road tunnel in the exhaust shaft.
- Sufficient 115 VAC power outlets are provided and available where Motorola active equipment is located (i.e., Telecom. Rooms / Electrical Rooms and above the tunnels where BDAs are to be located.) If sufficient power outlets are not available, the Commonwealth will have the responsibility of installing and paying for the appropriate outlets.
- Aluminum conduit will be provided by Motorola from the Headend room to the pickup antenna location. There are no other conduit requirements included in this Contract Modification.
- Equipment location, antenna placement and cable routing are based on floor plans and information provided at the time of contract modification signing. If, during the installation of the equipment, antennas or cable runs cannot be deployed as designed by Motorola and this effects the coverage guarantee, then a change order or Modification may be necessary based on a revised quotation.
- The Commonwealth will liaison between Motorola, and Motorola subcontractors, and the Chesapeake Bay Bridge Authority to facilitate access for installation crews and engineers.
- The Chesapeake Bay Bridge Tunnel District will provide traffic control for all lane closures associated with the STARS project, provided the work will be completed at night. Lane closures must be coordinated and approved by CBBT and Chief of Police's Office in advance.
- Installation will take place in an asbestos-free environment.
- The hazards of working in the upper (exhaust) shaft will be explained clearly to Motorola and it's subcontractors by the Chesapeake Bay Bridge Authority.
- The headend equipment and pick-up antennas will be grounded to nearby existing site grounding. If R-56 specified facility grounding is not available, the Commonwealth will have the responsibility of installing the appropriate grounding and ground bars.
- An Internet connection (ethernet or phone line) is available in the room where the Gateway Module is located. STARS will be responsible for providing the overall network connectivity from the tunnel to the Network Operations Center ("NOC") and the appropriate service and connections at the tunnel headend equipment and NOC Master Site.
- The phone line connection (if required) is a DID type to allow Motorola to dial in to the Gateway module as required.

5.0 Coverage Test

The Coverage Test will be conducted in accordance with Contract Section 12d.4.1.1 CATP Test Tiles for Tunnels and as confirmed by the Commonwealth.

**Attachment B to
Commonwealth of Virginia STARS - Modification #17**

Pricing

Chesapeake Bay Bridge In-Tunnel Solution	Pricing Breakout	
	Labor Cost	Materials Cost
Powerwave Documentation, Engineering, and Project Management	\$22,046.00	
Supply and Install 8-Channel Headend, combining equipment, racks and material and connect; and Gateway Alarming equipment and connect	\$34,399.00	\$388,382.00
Supply and Install VHF Pickup antenna Aluminum Conduit and CoringTunnel DAS	\$35,110.00	\$42,279.00
Supply and Install Tunnel DAS including BDAs	\$162,906.00	\$216,369.00
Field Services Optimize and Test LinkNet Headend new in-tunnel DAS. Coverage Testing	\$30,380.82	
VRS, Combiner, Cabinet, and Engineering		\$86,220.00
Program, Install and test VR Cabinet	\$3,741.00	
Project Management and Engineering	\$5,033.00	
TOTAL – LABOR AND MATERIALS	\$293,615.82	\$733,250.00
Grand Total Chesapeake Bay Bridge In-Tunnel Solution	\$1,026,865.82	

Options NOT included in this Contract Modification #17:

- Stainless Steel Conduit if required by CBBT Authority = \$70,985.00
- Add Locality tunnel coverage for Virginia Beach 800 MHz system = \$51,612.00
 - i. Must be implemented concurrently with the primary proposal as outlined in Contract Modification #17.
 - ii. Virginia Beach to supply two (2) radios.