

**Specifications for On-Board Video Cameras
for (9) Nine Transit Buses
RFQ #423**

The City of Rocky Mount is receiving bid prices from qualified companies capable of providing “On-Board Video Cameras for (9) Nine Transit Buses” per the attached specification requirements.

This project will be paid for with American Recovery and Reinvestment Act (ARRA) funds. Bidders shall sign the Special Conditions sheet included as part of these specifications agreeing to meet all requirements that apply.

All bid price responses are due to the City of Rocky Mount Purchasing Office **by 5:00 p. m. on Friday, August 13, 2010**. Bid responses are to be mailed to the City of Rocky Mount Purchasing Office, 331 South Franklin Street, Rocky Mount, N.C. 27802. Bid price responses may be hand delivered to the Purchasing Office located on the 4th Floor of the Administrative Complex, Monday - Friday, between the hours of 8:30 a.m. – 5:00 p. m.

Companies interested in submitting a bid or receiving additional information on this project may contact Delton L. Farmer, Purchasing Manager, at 252-972-1228 or by email at delton.farmer@rockymountnc.gov.

The City of Rocky Mount reserves the right to reject any and all bids. The City of Rocky Mount will not discriminate against any contractor submitting a bid because of race, creed, color, national origin or handicap.

CITY OF ROCKY MOUNT

Delton L. Farmer
Purchasing Manager

NAMEBRAND REFERENCE

Any references to name brands or manufacturers is not intended to restrict the bidding process but to better inform bidders of the level of quality and equipment performance expected by the City of Rocky Mount Tar River Transit. Any alternate bid must meet or exceed the quality and performance level of the referenced items and be preapproved and required in these specifications.

Bidders are to check the appropriate "YES", "NO" or "ALTERNATE" responses for each item as requested. Product brochures, drawings and any other product information for the equipment bid should be provided with each company's bid price proposal response for evaluation purposes.

**Specifications for On-Board Video Cameras
for (9) Nine Transit Buses**

Video Recorder

A Digital Video Recorder, (DVR) is required which should perform mobile monitoring and video surveillance of Transit Buses. It should utilize an end-to-end digital video, audio, and sensor recording approach. The system should generally activate through a vehicle ignition sensor. When the vehicle starts, the digital recorder shall acquire data from cameras and pre-selected sensor parameters. Data recorded from sensor devices depends on the appropriate interfaces and/or software protocols, as provided by the owner or sensor device manufacturer. The DVR shall be of a RoadRecorder 6000 or equivalent. The DVR shall be capable of recording ten (10) simultaneous or sequential continuous grayscale or color camera inputs, as well as up to eight (8) opto-isolated sensor channels, plus 10 channels of audio output.

YES _____ NO _____ ALTERNATE _____

Power

The DVR shall operate on at least 10.5-36 volt DC power, with a unit operational draw of 2.0 amperes @ 24 volts, not including cameras. All cables and connectors to and from the DVR shall conform to SAE standards.

YES _____ NO _____ ALTERNATE _____

Physical Dimensions

The DVR shall not exceed the physical dimensions of 4.5 inches high, 9.0 inches deep, and 7.0 inches wide, exclusive of enclosure and mounting brackets.

YES _____ NO _____ ALTERNATE _____

Unit Weight

The DVR shall not exceed 9.5 pounds, exclusive of removable hard drive.

YES _____ NO _____ ALTERNATE _____

Mounting: The DVR shall be capable of being mounted in any orientation without detriment to its operation.

YES _____ NO _____ ALTERNATE _____

Troubleshooting and Maintenance

The DVR shall have one (1) Ethernet port to allow external programming and system diagnostics. Built-in software shall perform full and continuous system diagnostics and is capable of reporting failures.

YES _____ NO _____ ALTERNATE _____

Clock

The DVR clock shall operate independently of the main power supply and shall have a minimum five (5) year operational lifetime before battery change is required. Clock drift shall be no more than one (1) minute per month. The DVR shall be capable of updating and synchronizing the entire fleet of on-board clocks through the GPS interface.

YES _____ NO _____ ALTERNATE _____

Operator Interface

The DVR shall require no operator interface to effectuate operation, initiate shutdown, maintain the system, service or program the system, or prepare the system for operation.

YES _____ NO _____ ALTERNATE _____

Processor Control

The DVR shall be controlled using embedded processors in an industrial form factor to assure adequate shock and vibration resistance. PC motherboards are not acceptable without a documented mobile rating.

YES _____ NO _____ ALTERNATE _____

Operating System

The DVR operating system software shall be of an embedded type contained within a firmware chip. The operating system shall be written specifically for DVR operation and allow for the largest available drives to be used. Consumer-based operating systems residing on internal hard drives are not acceptable because they are subject to frequent failure.

YES _____ NO _____ ALTERNATE _____

Video Inputs

The DVR shall have ten (10) NTSC video inputs for composite 1V PP signals and shall be cable of black-and-white or color recording.

YES _____ NO _____ ALTERNATE _____

Recording Resolution

The DVR shall have a standard recording resolution of 720 x 480 pixels.

YES _____ NO _____ ALTERNATE _____

Audio

The DVR shall provide ten channels of digitized synchronous 16-bit audio with ADPCM compression at 16 KHz sampling rate. Input frequency is between 20 Hz and 8 KHz.

YES _____ NO _____ ALTERNATE _____

External Ports

The DVR shall be equipped with the following external ports:

- (2) RJ-45 type RS-232 Communications Ports
- (1) RS-232 Serial Communications Port
- (1) System Diagnostics Port
- (2) RJ-45 Ethernet Port
- (2) Universal Serial Bus (USB) version 2.0 Ports

YES _____ NO _____ ALTERNATE _____

Wave Engine

The DVR shall have a wave engine module that accepts up to ten (10) grayscale or color camera inputs. Every time the DVR boots, the cameras attached to the wave engine module are detected. This allows adjustable camera configurations. The wave engine module shall also have a separate input for an audio signal.

YES _____ NO _____ ALTERNATE _____

Data Acquisition and Processing

The DVR shall be capable of directly digitizing, combining, compressing, and storing NTSC video, audio sensors, and auxiliary sensor signals. Compressed data is stored to mobile rated removable disk storage media and is transmittable over a user's wired or wireless network. See Section 2.10, Wireless Connectivity, for more information on wireless capability.

YES _____ NO _____ ALTERNATE _____

Sensor Parameters

In addition to accurate time and date, the DVR shall be capable of acquiring, processing, and appending with image data, up to eight (8) programmable analog vehicle parameters, including, but not limited to:

ignition	vehicle speed
impact (G-force)	brake operation
headlights	left signal (directional)
event switch door actuation	right signal (directional) “analog” signals such as brake pressure or throttle position

YES _____ NO _____ ALTERNATE _____

Scripting

The DVR shall have the ability to dynamically change video and audio settings during operation. Changes to the frame rate or image quality of any camera input can be changed based on time, sensor input, or J-1939 input in real time. Frame rates range from one frame per day to 30 FPS per camera. Audio can also be turned on or off based on these input signals.

YES _____ NO _____ ALTERNATE _____

The DVR shall be capable of recording multiple differing frame rates and differing levels of image quality per camera at the same time.

Log File

The DVR shall maintain a log file of its actions, which are stored on the removable hard drive. This information includes the time and date of the action and includes: ignition on/off, events start and stop, camera failure, drive errors, and other diagnostics.

YES _____ NO _____ ALTERNATE _____

SAE Conformance

The DVR shall be capable of communicating utilizing the Society of Automotive Engineers (SAE) “Recommended Practice for a Serial Control and Communications Vehicle Network (SAE J1939). The DVR is optionally capable of acquiring data from

electronic vehicle systems, including engines, utilizing this data communication standard.

YES _____ NO _____ ALTERNATE _____

Buy America Compliance

The DVR shall comply with all the requirements of the "Buy America Act" (49 CFR Part 661), at the component level.

YES _____ NO _____ ALTERNATE _____

Diagnostic Software

The DVR shall have the capability to interface with diagnostic software operated from either a workstation or portable computer for system troubleshooting and configuration purposes

YES _____ NO _____ ALTERNATE _____

LCD Panel

The DVR shall have the ability to interface with an optional LCD status panel and provide system status, software version data, and Event/Incident save data. The LCD panel shall also have an Event/Incident save switch.

YES _____ NO _____ ALTERNATE _____

LED Panel

The DVR shall have the ability to interface with an optional LED panel. The Remote Status LED shall have the ability to either mimic the status LED on the front of the DVR, or provide the status of DVR start up, normal operation, not recording, events full, and camera failure. The LED shall be programmable to indicate green, red, yellow, flashing green, flashing red, or off for each status. The LED shall also have an Event switch.

YES _____ NO _____ ALTERNATE _____

Event Save Switch

The DVR shall have the capability to interface with an optional event switch that may be hardwired to the vehicle's panic button and/or impact sensor.

YES _____ NO _____ ALTERNATE _____

REMOVABLE DRIVE CANISTER

General

The removable disk media conforms to mobile requirements for reliability and durability and also conforms to SAE and MILSPEC vibration standards. The removable drive canister is installed in a rugged shock and vibration-resistant form factor. The canister protects the media and is capable of withstanding shock pulses of 200G-forces per 2 millisecond period operating, and 800G-forces per 1 millisecond period non-operating, without system failure. Independently derived test data is available to support this data. These specifications are necessary to assure long term maintenance-free reliability.

The hard drive is mounted within a non-conducting canister that measures 1.27" (32.0mm) in height, 4.08" (103.6mm) in width, and 7.38" (187.4mm) in length. The canister secures with security Torx screws. The combined unit weighs 11.2 ounces (320 g). The hard drive measures 0.37" (9.5mm) in height, is 2.75" (70.0mm) in width, 3.94" (100mm) in depth, and weighs 3.6oz/0.225lb (102g).

YES _____ NO _____ ALTERNATE _____

Key Lock

The removable drive shall be secured in place by a key lock mounted on the DVR.

YES _____ NO _____ ALTERNATE _____

Storage Capacity

Total storage capacity shall be at least 500 GB (gigabytes). The actual hard drive itself shall be a 2.5" mobile rated drive, at minimum rotating at 4200 RPM, 9.5mm height, ATA-6 interface.

YES _____ NO _____ ALTERNATE _____

Upgradeability

Disk capacity/storage time shall be field-upgradeable with nominal changes to software and/or hardware.

YES _____ NO _____ ALTERNATE _____

Survivability and Shock Resistance

The disk media shall be capable of withstanding continuous vibration (5Hz to 500Hz) and frequent shock pulses of moderate duration (up to 10ms). Recorded data must survive all typical traffic accidents as well as collisions up to 40G-forces.

YES _____ NO _____ ALTERNATE _____

Tamperproofing

All recorded data shall be created in a secure encrypted file format. The encryption restricts access, prevents alteration and tampering, and supports the detection or attempts to alter or tamper with video images or sensor information.

YES _____ NO _____ ALTERNATE _____

Playback and Long Term Storage

Recorded data shall be viewable in read-only format on a standard PC workstation or PC laptop. Software is supplied for on-site data playback and is compatible with standard PC-based operating systems such as Windows XP. Data can be easily downloaded for long-term storage to high capacity storage media (e.g., CD-ROM, DVD-ROM, Jaz or Zip-type cartridges, or DAT (digital audio tape) cassettes).

YES _____ NO _____ ALTERNATE _____

Wireless Connectivity

The DVR shall support wireless connectivity. Data from the hard drive canister shall be transferable via a compatible wireless Ethernet bridge or cellular modem and downloadable to a server via a wireless network. The system shall also be capable of delivering video data and system health status information automatically to the server for review.

YES _____ NO _____ ALTERNATE _____

VIDEO REVIEW STATION

General

Either a desktop view station or a portable view station is required.

YES _____ NO _____ ALTERNATE _____

Desktop View Station

The desktop view station shall be a personal computer (tower configuration) dedicated to playback and review of the DVR's recorded data. Minimum system requirements for the desktop view station are as follows: Microsoft Windows XP Professional Operating System

YES _____ NO _____ ALTERNATE _____

1.5-GHz Intel Pentium III processor

YES _____ NO _____ ALTERNATE _____

17-inch monitor with 32-bit color and a minimum resolution of 1,024 x 768 pixels

YES _____ NO _____ ALTERNATE _____

2GB of RAM minimum

YES _____ NO _____ ALTERNATE _____

40-GB hard drive

YES _____ NO _____ ALTERNATE _____

32-MB AGP video card or equivalent embedded video

YES _____ NO _____ ALTERNATE _____

3.5-inch diskette drive

YES _____ NO _____ ALTERNATE _____

CD-RW drive

YES _____ NO _____ ALTERNATE _____

Network interface card (NIC)

YES _____ NO _____ ALTERNATE _____

USB 2.0 port

YES _____ NO _____ ALTERNATE _____

Standard keyboard and mouse

YES _____ NO _____ ALTERNATE _____

Audio capability and speakers

YES _____ NO _____ ALTERNATE _____

Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server.

Removable drive adapter (QuickView or equivalent) that connects the DVR removable drive to the desktop computer via a USB 2.0 connection

YES _____ NO _____ ALTERNATE _____

Portable View Station

The portable view station shall be a notebook computer dedicated to playback and review of the DVR's recorded data. Minimum system requirements for the portable view station are as follows:

Microsoft Windows XP Professional Operating System

YES _____ NO _____ ALTERNATE _____

1.4-GHz Intel Pentium III processor

YES _____ NO _____ ALTERNATE _____

4-inch TFT color monitor with a minimum resolution of 1,024 x 768 pixels

YES _____ NO _____ ALTERNATE _____

2GB of RAM

YES _____ NO _____ ALTERNATE _____

40-GB hard drive

YES _____ NO _____ ALTERNATE _____

32-MB AGP video card or equivalent embedded video

YES _____ NO _____ ALTERNATE _____

3.5-inch diskette drive

YES _____ NO _____ ALTERNATE _____

CD-RW drive

YES _____ NO _____ ALTERNATE _____

Network interface card (NIC)

YES _____ NO _____ ALTERNATE _____

Serial port

YES _____ NO _____ ALTERNATE _____

USB 2.0 port

YES _____ NO _____ ALTERNATE _____

Audio capability and speakers

YES _____ NO _____ ALTERNATE _____

Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server:

Removable drive adapter (QuickView or equivalent) that connects the DVR removable drive to the notebook via a USB 2.0 connection

YES _____ NO _____ ALTERNATE _____

VIDEO REVIEW SOFTWARE

General

The system's viewing software shall allow review of the data from the DVR's removable drive canister.

YES _____ NO _____ ALTERNATE _____

Playback Windows

The playback view shall allow for up to ten simultaneous, synchronized playback windows as thumbnails, with one, two, four, eight, or ten larger windows displayed at one time in a tiled format.

YES _____ NO _____ ALTERNATE _____

Vehicle Information

The vehicle information screen shall display the Vehicle ID number, date of recorded video, display sensor information, and camera number. This option shall be capable of being turned on or off.

YES _____ NO _____ ALTERNATE _____

Image Enhancement

The video shall allow for image enhancement consisting of sharpening, brightness, contrast, saturation, and hue.

YES _____ NO _____ ALTERNATE _____

TRAINING

Three (3) day training shall be provided by the successful bidder to Transit Property personnel in maintenance, engineering, dispatch, and supervisory staff. Training shall include but not be limited to maintenance procedures, all requirements for operating the cameras, installation and de-installation procedures, disk retrieval, playback and data transfer.

YES _____ NO _____ ALTERNATE _____

INSTALLATION

Bidders are to provide a cost for Installation of the On-Board Video Cameras in the nine (9) Transit Buses as designated by the Transit Manager.

YES _____ NO _____ ALTERNATE _____

UPGRADING

The On-Board Video Camera system bid shall contain documented upgrade options and is field-upgradeable both in hardware and software with minimal time loss and expense.

YES _____ NO _____ ALTERNATE _____

WARRANTY

The On-Board Video Camera system bid shall carry a one (1) year parts and labor warranty that is to start upon installation and acceptance by the Transit Manager. If an optional extended warranty is available the company may provide a cost for the extended warranty. Repair and/or replacement shall be provided at no charge, during the warranty period, for parts with manufacturing defects.

YES _____ NO _____ ALTERNATE _____

SIGNAGE

General: Typically, four (4) signs are required per vehicle in approved locations	Size: 3" x 8" (76.2 mm x 203.2 mm)
Material: Vinyl or plastic with permanent adhesive backing	Coloring: White background, red lettering
Lettering Size: 7/16"	Wording: "For Your Safety and Security: Continuous Audio/Video Monitoring May Be Occurring on This Vehicle"

YES _____ NO _____ ALTERNATE _____

DELIVERY

Delivery of the on-board video cameras is to be made as one shipment. Delivery of the cameras is to be made to the City of Rocky Mount Fleet Maintenance Division, 106 East Grand Avenue, Rocky Mount, N. C. 27801.

Seven (7) Camera Positions

The On-Board Video Cameras bid shall be capable of providing the seven (7) camera positions as stated below:

Camera Position 1 – Forward Facing thru Windshield – This camera view allows transit system to view vehicles that are in front of the transit bus and provides good

recording view of vehicles cutting in front of the bus, illegal intersection traffic and illegally parked vehicles. This angle also allows operations to see the condition of the bus stops, passenger density, and passenger activity directly in front of the bus.

YES _____ NO _____ ALTERNATE _____

Camera Position 2 - Front Stairwell - This provides for good monitoring of “slip and falls” on the stairwell and the condition of sidewalks. This angle allows for viewing the fare box and of interactions between driver and boarding or disembarking passengers. Typically it is the position that is audio monitored with a microphone installed with camera or in the nearby vicinity.

YES _____ NO _____ ALTERNATE _____

Camera Position 3 - Side View - Placement provides good external side vehicle view of activity outside the bus for both the front and rear stairwell activity. This is a good secondary view for slip and falls, passenger density, passenger loading and unloading and provides a good perspective for vehicle damage on the side all the way to the rear corner of the bus. For coach operators this camera provides good monitoring of ‘over the road’ storage areas.

YES _____ NO _____ ALTERNATE _____

Camera Position 4 - Rear Facing Front Cabin - Location provides good camera viewing coverage of main forward seating area allowing for good facial view of all passengers seating or standing. This camera can also provide long view of whole bus cabin area. However, nearest objects and people are the most identifiable.

YES _____ NO _____ ALTERNATE _____

Camera Position 5 - Rear Facing Rear Cabin - Another good camera viewing angle for the main passenger rear cabin area. The “back of the bus” area gets a lot of attention from many agencies because of the vehicle vandalism and passenger behavior.

YES _____ NO _____ ALTERNATE _____

Camera Position 6 - Rear Stairwell - Allows for monitoring slip and fall, illegal boarding or vandalism incidents.

YES _____ NO _____ ALTERNATE _____

Camera Position 7- Forward Facing Rear Cabin - This provides good perspective for viewing rear-of-seat vandalism and graffiti. There are a few instances where this camera is installed covertly and acts as a security backup to any cameras that may be damaged by criminal activity.

YES _____ NO _____ ALTERNATE _____

Price Proposal for On-Board Video Cameras for (9) Nine Transit Buses

I have reviewed the specification requirements for the (9) Nine On-Board Video Cameras. My total cost to provide the on-board video cameras as requested to include delivery, installation and training is:

	<u>EACH PRICE</u>	<u>TOTAL COST</u>
Nine (9) On-Board Video Cameras	\$ _____	\$ _____
Installation		\$ _____
Training		\$ _____
	TOTAL COST	\$ _____

Namebrand: _____ Model: _____

Warranty: _____ Delivery: _____

Installation Days: _____

Bidders are to supply brochures, pamphlets and other available information for the Namebrand and Model of on-board video camera bid, for evaluation purposes.

SIGNATURE: _____

COMPANY: _____

ADDRESS: _____

TELEPHONE: _____

EMAIL: _____

FAX: _____