REQUEST FOR PROPOSALS

Computer Aided Dispatch
and
Automatic Vehicle Location System

ISSUED BY
Greater Lynchburg Transit Company
1301 Kemper St, PO Box 797
Lynchburg, VA 24505

November 23, 2009

REQUEST FOR PROPOSALS
Computer Aided Dispatch
and
Automatic Vehicle Location System
(CAD/AVL)

PART I

GENERAL INFORMATION

1.1 Purpose

The Greater Lynchburg Transit Company (GLTC) intends to purchase a Computer Aided Dispatching and Automatic Vehicle Location System (CAD/AVL).

1.2 Basis for Contract Negotiation

This Request for Proposal (RFP) and the resulting proposals shall be used as the basis for contract negotiation.

1.3 Interest in Submitting Proposal

If a vendor is interested in submitting a proposal, please complete and send the Interested Vendor Form (Part VII) to scott.willis@lynchburgva.gov or by fax to 434-847-8621. While this form is not required to submit a proposal it will ensure interested vendors get notified of additional information, addenda, etc. It will also insure vendors that are not interested do not receive unwanted notifications. All additional information, addenda, etc will be posted on our website at www.gltconline.com/business.htm.

1.4 Receipt of Bids

Three (3) copies of the completed bid, including all required attachments provided in Part VI of the Request for Proposal (RFP), will be marked "CAD/AVL System" and will be received at the office of the Greater Lynchburg Transit Company, 1301 Kemper Street, Lynchburg, VA 24501, until 5:00PM on Friday, January 8, 2010. Bids received after that date and time will not be considered.

1.5 Federal Regulations

The bidder must meet all provisions of the Commonwealth of Virginia and Federal requirements necessary for federal funding which must be met by GLTC. Such requirements and language are included in Part IV.

1.6 Proposed Project Timeline

These dates may change at GLTC's discretion. All bidders will be notified of changes. Changes will also be posted on our website (www.gltconline.com/business.htm).

DATE	EVENT
November 23, 2009	Issuance of RFP
January 8, 2010	**Bid Submission. Complete proposals are due by 5:00 PM as described above.**
January 11, 2010 – February 12, 2010	Evaluation/contract negotiation, interviews, product demonstrations.
March 20, 2009	Intent to award/notice to proceed.
June 18, 2010 or sooner	Installation complete. User training begins.
July 30, 2010 or sooner	Training and acceptance testing complete, internal CAD/AVL system fully operational
October 25, 2010	Customer-facing website, email, text messaging fully operational

1.7 **Rejection of Bids**

GLTC reserves the right to reject bids. Issuance of this RFP does not bind GLTC to award a contract, nor does GLTC in any way assume liability for expenses incurred in preparation of any bids.

1.8 **Correspondence**

All correspondence pertaining to this bid request shall be addressed in writing to the attention of Scott Willis, Greater Lynchburg Transit Company, PO Box 797, Lynchburg, Virginia 24505 or via email at scott.willis@lynchburgva.gov or facsimile at (434) 847-8621.

1.9 **Specifications to be Part of Contract**

Specifications, statements, and the requirements which accompany the bid, which are accepted therewith, and which do not conflict with the provisions herein contained, shall be part of any contract that is entered into for the purchase of any software or work, or both.

1.10 **Non-collusion Affidavit**

The Bidder shall submit an affidavit stating that neither the bidder, not its agents, nor any other party on its behalf, has paid or agreed to pay, directly or indirectly, any person, firm or corporation, any money or valuable consideration for assistance in procuring or attempting to procure the contract(s) that may result from the RFP and further agrees that no such money or consideration will be hereafter paid. This affidavit must be on the enclosed form provided, which is found in the Part VI of this RFP.

1.11 **Interviews**

GLTC reserves the right to schedule interviews and/or product demonstrations before awarding a contract. At GLTC's discretion interviews and product demonstrations may be conducted in person, via phone, and/or via the internet. GLTC will not reimburse proposers for any expenses incurred by participating in the interviews.

1.12 **Contract Award and Notice to Proceed**

GLTC reserves the right to postpone, accept or reject any and all bids; to waive any informalities in the bids received.

In awarding contract, GLTC reserves the right to consider all elements which help to determine the best bid. Any bid which is incomplete, conditional, obscure, contains additions not called for, or includes irregularities of any kind may be rejected.

GLTC has the right to make awards on the basis of each individual item, or any combination of items, or in the aggregate of all items, and the right to make no awards.

1.13 **Taxes**

GLTC is exempt for all sales taxes and taxes must not be included in the bid price. The necessary exemption certificates shall be provided to the successful bidder.

1.14 **Terms of Delivery**

All proposals for supplies shall include delivery to the Greater Lynchburg Transit Company, 1301 Kemper St, Lynchburg, Virginia, 24501 without any additional charge, unless accepted on the bid.

1.15 **Insurance**

All bids will include proof of contractor's existing public liability insurance and worker's compensation insurance.

1.16 **Bid Award Criteria**

It is GLTC's intent to accept the bid after a thorough analysis of the bid submitted proves it to be suitable for the purpose in all respects. GLTC reserves the right to reject any part of the which GLTC considers unsatisfactory and to waive specification requirements that in GLTC 's opinion will not impair the intent of the specifications. Any qualified or conditional bid may be rejected. GLTC will be the sole judge of compliance with these specifications.

1.17 **Evidence of Ability to do Work**

The bidder may be required, upon request, to prove to the satisfaction of GLTC that the bidder has the skills and experience and the necessary facilities and financial resources to perform the contract in a responsible and satisfactory manner.

1.18 **Waive of Minor Defects**

GLTC may waive minor defects in the bid when no prejudice will result to the rights of any proposer; or to the public.

1.19 **Expense of Submittal Preparation**

The bidder shall be solely responsible for any and all costs in the preparation and submittal of the bid. No portion of these costs shall in anyway be incurred by GLTC.

1.20 **Bid Binding for 180 Days**

The bid shall be signed by an individual authorized to bind the vendor and shall contain a statement to the effect that the bid is a firm offer for a one hundred and eighty (180) calendar day period from the date of the opening. GLTC reserves the right to negotiate price and services.

1.21 **Subcontracting**

The successful vendor shall be the prime contractor and shall be solely responsible for contractual performance. In the event of a subcontracting relationship, the successful vendor will assume all responsibility for the performance of the services that are supplied by the subcontractor.
All subcontractors and subcontractor team member roles must be listed in the project team and their products clearly defined throughout the bid.

1.22 **Protest Procedures**

Any potential bidder can submit a written protest to GLTC's General Manager located at the above address. An "Intent to Award" notice will be posted on GLTC's website (www.gltconline.com) and a protest period of 5 (five) days will begin. If a written protest is received during the protest period no award will be made until a written determination has been issued by GLTC. The bidder also has the right to file a protest with the Federal Transit Administration as outlined in FTA Circular 4220.1F within five days of receipt of GLTC's determination and all administrative remedies have been exhausted. A copy of GLTC's protest procedure may be obtained by request.

1.23 **Other Virginia Municipalities**

Any municipal corporation within the Commonwealth of Virginia, authorized by Greater Lynchburg Transit Company may purchase from this RFP under similar terms and conditions defined herein, not including pricing, which shall be made specific to the software and/or hardware implementation projects to be provided to the individual municipal corporation. Greater Lynchburg Transit Company makes no guarantee implied or expressed that any other municipality will procure from this RFP nor does it assume any liabilities incurred as a result of any other municipality purchasing from this RFP. This section also applies to optional modules, software, and equipment.

1.24 **Addendums**

Any addendums issued by GLTC will be placed on GLTC's website (www.gltconline.com/business.htm). Notice of addendums will be emailed to interested parties.

1.25 **Optional Components**

The optional components specified in Part VI are required. That is, proposers must have a product or solution that meets the specification for each component. GLTC believes these options are important for the future viability of the CAD/AVL solution. Although it is not guaranteed, it is GLTC's desire to purchase the optional equipment/software as funding becomes available. Any proposer that does not have products or solutions that meet the requirements of the specifications will be considered non-responsive.

PART II

SCOPE OF WORK & TECHNICAL SPECIFICATIONS

2.0 **GENERAL INFORMATION**

The Greater Lynchburg Transit Company (GLTC) seeks bids for the procurement of CAD/AVL System. GLTC intends for the system to provide real-time information about vehicle position as well as schedule adherence and other information.

The purpose of this Request for Proposal (RFP) for CAD/AVL system is to set forth minimum requirements, solicit bids, and gain adequate information by which GLTC may evaluate the products and services, and may ensure that all products and services normally provided for the price bid have been received and are functioning properly.

2.0.1 **Project Description**

A CAD/AVL System procurement, installation, implementation services (including data input and training), and ongoing support are requested as part of this bid. The implementation will be at the Greater Lynchburg Transit Company, 1301 Kemper St, Lynchburg, Virginia, 24501.

2.0.2 **Project Management**

The vendor shall appoint a Project Manager who will be permanently assigned in this capacity through the warranty period. The Project Manager assigned to the project shall have the authority to make commitments and decisions that are binding for the vendor. The Project Manager shall assure GLTC that the system provided meets both the near and long term needs of GLTC's operation as spelled out in this RFP. The Project Manager shall ensure that a service contract is in place for the vendor's complete system, including all hardware, software, and maintenance. The Project Manager cannot change without approval by GLTC.

GLTC also will designate a Project Manager to coordinate all project activities on their behalf and that of GLTC. All project-related communications between GLTC and the vendor will be coordinated through and by the respective Project Manager(s):

Designated project manager for GLTC is:

Scott Willis

Assistant General Manager
Greater Lynchburg Transit Company
1301 Kemper St.
PO Box 797
Lynchburg, VA 24505
Telephone: (434) 455-5085
Fax: (434) 847-8621
Email: scott.willis@lynchburgva.gov

2.0.3 **Project Goals and Objectives**

The overall objective of a CAD/AVL System will serve as a timely and efficient system, with strong supporting processes which will deliver to GLTC:

- Real-time location and schedule adherence data to bus dispatchers, maintenance, and administrative staff.
- Ability to easily analyze past on-time performance by storing data in a robust database. Proposer must provide a battery of analysis tools and the ability to create customer reports.
- Help administrative staff report information required by National Transit Database (NTD) which will include revenue miles/hours, deadhead miles/hours, etc.
- Real-time notification of vehicle emergency via a vehicle operator activated emergency switch
- Customer's ability to view real-time next bus arrival information via SMS text message, email, mobile internet website, and GLTC's website

The following are options that will provide GLTC with future expansion. Proposers must be able to accommodate these options. Proposers must provide the pricing for these items in the appropriate form. Additional information about these items will be provided in the specifications section.

- Provide real-time next bus information at selected bus stops via a wayside equipment mounted to a bus stop pole. The equipment must be easy to use, require minimal maintenance, and be extremely rugged.
- Provide real-time bus arrival information at GLTC's main bus transfer area. This system shall be capable of displaying a minimum of 4 routes at a time. The system must be capable of running multiple bus arrival information signs with a different set of routes on each sign.
- Provide a compatible, robust paratransit scheduling software system.
- Provide mobile data terminals for paratransit vehicles.
- Provide mobile data terminals for fixed route buses. Send/receive canned text messages, information about deviated fixed route pickups, etc.
- Provide an IVR system for customers to get real-time next bus information for each bus via telephone by inputting a unique bus stop identification number.

2.0.4 **Information for Proposers**

GLTC span of service is 5:00AM to 2:00AM, Monday through Saturday; 9:00AM to 2:00AM Sunday. GLTC's fleet is numbered at 38 fixed route buses, 9 paratransit, 6 non-revenue vehicles for operations

department, 4 maintenance vehicles. GLTC serves Lynchburg (including Liberty University) and portions of Amherst County (Madison Heights) with 23 routes and 28 peak vehicles. In FY2009, GLTC provided 1.3 million passenger trips on its "city" routes and 2.1 million passenger trips on the campus of Liberty University. GLTC also provided 24,000 trips on its paratransit service.

GLTC utilizes Schedule Masters Inc's The Master Scheduler (TMS) for fixed route scheduling and runcutting. Proposers CAD/AVL system must accept an export from this software (in Google Transit format or similar CSV or tab separated files) in our schedule's current form. GLTC currently utilizes Engraph's Paraplan Lite for paratransit scheduling.

2.0.5 **GLTC's current fleet**

Fixed Route
Twelve 2008 Gillig 35' buses (6 hybrid, 6 conventional)
Eight 2007 Gillig 35' buses (hybrid)
Five 2002 Chance Opus 30' buses
One 2000 Chance Trolley Replica
Seven 1997 Gillig 30' buses – slated for replacement, may or not install AVL system on these.
Five 1995 Gillig 35' buses – slated for replacement, may or not install AVL system on these.
For Dec 2009 delivery: Four Gillig 35' buses (conventional)
For July 2010 delivery: Three Gillig 40' buses (hybrid), seven Gillig 30' buses (hybrid)

Paratransit
Two 2002 Ford E450 cutaways
Five 2006 Ford E450 cutaways (15 pax)
Two 2006 Ford E450 cutaways (19 pax)
Two 2009 Ford E450 cutaways (19 pax)
For 2010 delivery: Two 2010 Ford E450 or Chevy cutaways

Non-Revenue
Four Ford service trucks (1999 – 2006)
One 2001 Chrysler Concord
One 1999 Ford Expedition
Three 2009 Ford Escape Hybrids
For 2010 delivery: two 12 passenger vans.

2.1 **TECHNICAL SPECIFICATIONS**

The following technical specifications describe a system that GLTC believes will best meet the requirements of our operation. However, the vendor is encouraged to recommend alternative hardware/software solutions that they believe will better suit these requirements.

GENERAL GOALS

This project has clear objectives as expanded below. These objectives are:

1. Increase GLTC ridership
    a. by providing better information to passengers
    b. by improvement to services with better information for transit planners
2. Improve operational efficiency by providing better information to transit management
3. Improve the collection and reporting of Federal and State required transit data
4. Meet ADA requirements

GLTC believe these objectives will be met by implementing:

- An CAD/AVL system that will track every vehicle in service and generate arrival information for all bus (roughly 800) stops serviced by GLTC's Fixed Route Service and that this information will be made available to passenger via the Internet, at stop sign displays, and future IVR system.

- An ITS system that will allow dispatch staff and management to
    a. actively monitor and manage the on road performance of the buses.
    b. service reporting, real time and historic, enabling customer complaints to be answered with real information and;
    c. provide transport planners with accurate performance and passenger data to assist in the design of new time tables and services.

The goal of deploying the proposed System at GLTC is to improve customer service and increase ridership by improving the predictability of fixed route service. This goal is approached both from an improvement in operational reliability and consistency of service, as well as information accessibility from a travelers perspective. It is our intent to not only provide customers access to real time information, by mobile device, by website access and by street side and terminus information displays, but also to provide the GLTC operational staff with immediate, comprehensive information to improve service planning, maintenance and customer service.

GLTC would also like to use the system to analyze the operations, schedules, routes, asset utilization, passenger use and long term the monitoring and maintenance of the fleet vehicles, as well in the preparation of mandatory transit reports that meet State and Federal requirements.

TECHNICAL GOALS

The technical goals for implementing the proposed CAD/AVL System at GLTC include the following:

- GPS based Automatic Vehicle Location
- Real Time Computer Aided dispatch, vehicle assignment and monitoring

- Distribution of Real Time Passenger Information
- Integrated Mobile Radio data communications
- Trip Planner Interface
- Street side and Terminus passenger information displays
- Monitoring and Management of on-time performance

GENERAL SCOPE

The Scope of this project includes all software and hardware necessary to implement a fully functioning CAD/AVL system including on-board and street side components. These following components were identified by GLTC as the most beneficial technologies to realize our project objectives.

The complete list of ITS technologies to be deployed during the implementation includes:

- CAD/AVL including all hardware and operating and application software
- Predictive Arrival information distribution System
- Integration of proposed system to other GLTC network based transit information

CONTRACTOR RESPONSIBILITIES

All Contractor responsibilities are outlined in this specification. However, the contract between the Contractor and GLTC shall describe the Contractor's responsibilities as they are agreed to by both parties.

GENERAL CONTRACTOR RESPONSIBILITIES

Generally, the Contractor's responsibilities will include the following:

- Be an active partner with GLTC to assure project success and satisfaction;
- Contractor is responsible for acquiring and implementing a stable and reliable integrated system able to provide GLTC with the functionality described herein.
- Provide experienced staff that understand the design, development, testing, integration, implementation and deployment of ITS systems for public transportation, best practices, project management methodology;
- Provide a project manager to act as the single point of contact for all communication regarding work under this Request for Proposal (RFP);
- Coordinate all tasks with the designated GLTC project manager; and
- Actively participate in and provide input to the development, tracking and updating of all project management documents.

SPECIFIC CONTRACTOR RESPONSIBILITIES

Before commencing this project, the Contractor is responsible for preparing a detailed Work Plan and Schedule as described in these specifications with a minimum of the following requirements:

Work Plan:

- Include the following components in schedule: task ID, percent complete, task description, duration, start date, end date, predecessor tasks, resources required with percentage of time based on an eight-hour day and 40-hour week
- Take into account GLTC working times and holidays

Schedule:

- Relate tasks back to the appropriate detail in the Work Plan by using the same task number
- Establish project milestones identical to those shown in the Work Plan
- The Contactor shall provide detailed written status reports to the designated GLTC project manager that include, but are not limited to work completed; work in progress; scope changes; schedule changes; and issues and delays
- The Contractor will document in writing all decisions made, recommendations, results of reviews, and meetings or other appropriate communications where information is exchanged. This may be accomplished by updating the detailed Work Plan or updating other documents as appropriate and agreed upon with the GLTC project manager
- The Contractor shall meet regularly with the GLTC project manager and other staff designated to review progress, critical risk factors that may affect the project schedule or other success factors, as well as unique issues that may surface
- The Contractor shall obtain signed GLTC acceptance for all deliverables, tasks and milestones as outlined and agreed upon in the project Work Plan

GLTC RESPONSIBILITIES

GLTC will:

- Provide a project Steering Committee to provide project oversight, high-level guidance and necessary decision making;
- Provide a project manager who will act as the primary point of contact with the Contractor;
- Provide appropriate access to the premises, facilities, systems and GLTC staff members assigned to the project.
- Conduct joint project team and planning meetings;
- Facilitate for the Contractor, the setting up required meetings.
- Provide the necessary interface requirements for other GLTC transit applications
- Assist with arranging all necessary permits that may be required during the project implementation
- Facilitate connectivity to the existing radio network to be used for communications
- Provide necessary GIS mapping data for all routes and bus stop locations

COMMUNICATION REQUIREMENTS

GLTC's project implementation must provide vehicle operators, dispatchers and other system users with accurate and timely vehicle location status and information while minimizing the use of voice

radio communications in favor of the transmission of vehicle location and status data via the AVL system.

Contractor is responsible for developing and implementing a radio based communication system that will provide communication of location data and vehicle status between GLTC administration/operations/maintenance facility, revenue and non-revenue vehicles, and eventually wayside equipment at bus stops and transfer areas. The goal of this communication system beyond providing communications should be to keep on-going operational costs as low as possible.

COMPUTER ENVIRONMENT

GLTC requires the contractor to specify and price the hardware and software requirements for a server to run the System and client PCs to serve as work stations. GLTC will purchase the hardware and software as necessary.

GLTC requires the contractor to specify the necessary user terminal configuration to enable user access to the proposed system. As an indication GLTC will ensure that each terminal will be configured as a minimum with Windows XP SP2 and Office 2007 Professional with internet and network LAN/WAN connectivity. New systems will be running Windows 7 32-bit.

GLTC requires that the contractor size and price the required system on the basis of providing user access to a minimum of 15 concurrent users, with additional user access licenses if required being added in lots of 5 as necessary.

All software should be compatible with Windows 7 as this operating system will be used in the future.

RADIO/DATA COMMUNICATION

The contractor is responsible for designing a complete data network to meet the needs of a fully functioning CAD/AVL system. The final design is subject to GLTC's approval. The proposal shall describe any and all requirements for FCC license, cost, modifications, installation, optimization, testing, and maintenance of a fully integrated mobile data communications system. The proposer is responsible for delivering a fully functional data communication system for this project.

GLTC anticipates the CAD/AVL system to be capable of sending AVL data (at least latitude, longitude, speed, time, date and direction of travel) from the vehicle to dispatch at a minimum once every 30 seconds, immediately each time an onboard alarm is activated, and every 15 seconds if the vehicle is considered off-route.

The end result of the design shall be a complete, functioning mobile data communications system.

COMMUNICATIONS REQUIREMENTS

The contractor shall design and install all communications equipment necessary to have a fully functioning CAD/AVL system. This includes any wiring/cabling for interfacing new equipment with GLTC's existing equipment.

All installations shall be accomplished in accordance with good engineering practices. The end result will be a completely integrated and operating data radio system.

The Contractor is required to adhere to FCC Rules, local electrical code and building regulations, and perform all work in a manner consistent with good engineering practices.

The Contractor shall coordinate all installation and service cutover work with GLTC prior to commencement. The installation of any new on board equipment shall be coordinated with GLTC to arrive at an agreeable cutover methodology and schedule to minimize disruption of services and transit operations. All mobile radio upgrades will be conducted in accordance with an GLTC-approved work plan.

The proposer may recommend alternate wireless network connections via a separate, wideband wireless communication link such as commercial cellular mobile data or other medium but must clearly indicate how the call group capabilities will be available and the expected annual recurring charges of the separate medium. In addition, if a commercial cellular mobile data system is recommended, the proposer must clearly indicate the carrier's wireless coverage area, and the model and type of the vehicular data modem and antenna that will be utilized. The vehicular modems must be capable of withstanding normal wear and tear and weather conditions associated with field use inside transit and supervisory vehicles.

FUTURE COMMUNICATION REQUIREMENTS

In the future, GLTC may switch to a cellular modem for data transfer on each bus. It is GLTC intention that all data being produced on-board via equipment from different vendors will use this single cellular modem. Data will include on-board surveillance video, APC data, AVL data, MDT data, etc. The proposer's system must be able to be reconfigured to accomplish this.

SERVER ROOM

The CAD/AVL server equipment will be located in an area to be agreed with GLTC. The Contractor shall provide information regarding the scope and layout of all proposed dispatch equipment to GLTC within two months of notice to proceed. GLTC will be responsible for leasing the required telephone circuit, if required, based on Contractor specifications. Contractors may propose their preferred server

environment (hosted by contractor, hosted by server farm, purchased as a part of this requirement by GLTC or contractor), at their option

MOBILE EQUIPMENT

The Contractor shall provide and install a vehicle logic unit (VLU) which may or may not be a Mobile Data Terminal (MDT)/control head or other device to provide the necessary interface between the vehicle equipment and central system.

GLTC anticipates that Contractor staff will be able to have access for installation of their equipment; during normal business hours to a minimum of 2 vehicles per day, and up to five vehicles per day after hours (between 2000 and 0500) and at weekends.

The Contractor shall ensure that the mounting locations of their equipment and cables shall be in "protected" locations at least three inches above the floor to avoid water and chemical exposure during routine vehicle cleaning. The proposer shall provide technical documentation of the proposed equipment as part of their response. The proposer shall also provide a diagram depicting the proposed configuration and integration of the equipment.

If a commercial cellular mobile data system is recommended, the proposer must clearly indicate the model and type of the vehicular data modem and antenna that will be utilized. The vehicular modems must be capable of withstanding normal wear and tear and weather conditions associated with field use inside transit and supervisory vehicles.

FUNCTIONAL SPECIFICATIONS: GENERAL

The proposer shall describe the planned system architecture for this deployment in their proposal, using a combination of descriptive text and diagrams. This architecture shall represent a fully interoperating collection of distinct systems, subsystems and components.

GLTC shall retain ownership rights to all data collected and generated by the system. GLTC shall be granted an irrevocable, perpetual and royalty-free license to use all software provided by the Contractor, whether such software is provided directly by the Contractor or by a third party. Annual licensing fees for operating systems, application software, and/or device licenses must be included in the annual operating costs submitted as a part of the contractor's proposal.
The contractor shall supply all hardware, software, maintenance and support agreements necessary to deliver a fully functional system as specified in the requirements.

Components shall not drain vehicle battery when the vehicle is not running. \

The contractor shall recommend and provide options for hardware and software configurations that will accommodate initial needs and growth over at least a 5 year lifecycle. All hardware, software, maintenance and support agreements must be approved by GLTC prior to acquisition. Where necessary the contactor shall make good all openings caused by the removal of old equipment in a manner acceptable to GLTC.

The contractor design shall accommodate changes based on GLTC's standards or other factors required to ensure the compatibility with the GLTC environment. All hardware, software, maintenance and support agreements shall be procured on behalf of GLTC and become GLTC property at time of system acceptance.

GLTC will provide contractor with Cisco VPN client software and account for support functions. This will be provides though the City of Lynchburg Information Technology Department.

VEHICLE: ON-BOARD SYSTEMS

General

The Contractor shall be responsible for the overall integration of the on-board components into the overall transit ITS system. This procurement is for the **Fixed Route and Paratransit** fleets.

Vehicle equipment

Vehicles shall be equipped with communications cabling compliant with the standard Society of Automobile Engineers (SAE) J-1708/1587 or J-1939, or equivalent or Serial or Ethernet connections as required.

All equipment, wiring, etc must conform to the most stringent standards dealing with fire-prevention/safety. GLTC strives provide a safe environment for our customers. A fire onboard a transit vehicle will put numerous lives at risk. All precautions must be taken to prevent an onboard fire.

Vehicle logic unit (VLU)

VLUs, which serve as the controlling computing device for the on vehicle equipment shall be capable of being remotely configured and maintained wirelessly or by using a direct connected laptop computer or other programming device. The chosen method may also be used for performing routine diagnostic maintenance.

Operator terminal (MDT or similar)

The vehicle operator display **if required and fitted**, shall, be readable by the vehicle operator from the seated position under the full range of ambient illumination conditions. This could be accomplished through the incorporation of such measures as vehicle operator controlled brightness and/or /contrast control, anti-glare coating and adjustable orientation mounting.

The device shall be able to be readable while wearing sunglasses. The vehicle operator terminal shall allow the user to adjust the speaker volume at any time while the device is operating.
The application software shall be operated using either programmable function keys (contractor to define number of keys/buttons) or touch screen programmable buttons.

The device speaker shall provide audible feedback when a function key or on-screen key is pressed. Function keys shall also provide tactile feedback when pressed. The vehicle operator shall not be able to manually shut off or disconnect the operator terminal power or manually shut down the application software.

In line with recent transit conventions, if fitted, the operator terminal shall not be usable by the vehicle operator while the vehicle is in motion. It is GLTC's preference that the terminal only be usable either when the vehicle doors are opened such as at a bus stop, or at traffic signal controlled intersections where the vehicle is at rest.

If fitted, the device should provide the operator a single point logon. To accomplish this the device should control destination signs (Twin Vision), automatic vehicle announcement system (Digital Recorders Talking Bus), and fareboxes (GFI Odyssey).

Integrated GPS receiver and antenna

The on-vehicle equipment shall incorporate an integrated GPS receiver. GPS receivers shall report latitude, longitude, speed, time, direction of travel. The GPS receivers shall be parallel tracking receivers, capable of simultaneously tracking at least four GPS satellites in the best available geometry, while also serially tracking the four next best satellites and upcoming (rising) satellites.

The GPS receiver shall have a cold start solution time of two minutes or less and a re-acquisition time of 15 seconds or less. The GPS equipment shall include multi-path rejection capabilities to help eliminate spurious signals caused by reflections of buildings or other structures. Velocity measurements provided by the GPS equipment shall be accurate to within 0.1 meters per second.

The GPS antenna shall be a low-profile unit housed in a rugged and weather tight enclosure. The GPS antenna shall be securely mounted on the exterior of the vehicle, clear of obstructions and interference-generating devices. GPS antenna location shall be determined in collaboration with GLTC staff. The antenna, mounting and sealants shall be impervious to physical and chemical attack by automatic bus washing equipment.

While GLTC has determined that differentially corrected GPS may provide some benefit, the cost to implement is not an effective use of resources. Contractors may however propose differential corrected GPS at their option.

Interface with existing odometers

If contractor proposed, the vehicle logic unit may be interfaced with the existing odometer, receiving the digital or analog signal and determining the distance traveled since the VLU was powered on. This functionality is optional and non-mandatory.

Emergency switch

The Vehicles shall be equipped with silent alarm switch or button. The silent alarm switch shall be mounted at a location agreed by GLTC. The silent alarm switch shall be of the normally open type, with a small parallel resistance that creates a monitoring current with an open circuit, and a closed circuit when the switch is depressed by the vehicle operator. If the system is designed to provide control of destination signs, then the system shall also allow for a emergency message to be displayed on the destination signs. The switch must have a mechanism to prevent accidental triggering of the silent alarm switch.

Card readers

Although not a requirement of this RFP the ability to integrate seamlessly (preferably plug and play) a smart card reader. The smart card will be used for the drivers to sign on using a photo ID. Contractors should propose how their system can provide this functionality as a part of this procurement, or as a future system enhancement.

WLAN Card and antenna

Although not a requirement of this RFP, if the contractor believes it to be beneficial WLAN equipment may be installed on each vehicle. The Contractor shall determine the appropriate number of WLAN access points needed and shall be responsible for installing the access points. Some vehicles are already equipped with wireless networking equipment as part of on-board security camera systems.

Installation

Vehicle Logic Units shall be replaceable as discrete units and identified by unique serial numbers. Each connector shall be keyed or otherwise configured so as to prevent incorrect wiring during replacement.

Electrical power for on-board components shall be drawn from vehicle's unconditioned nominal power supply. All data inputs and outputs shall be designed to absorb "routine" intermittent low voltage, over-voltage and reverse polarity conditions, and to use inexpensive and easily replaceable

components to open circuits in the event of “extraordinary” conditions (e.g., through the use of fuses, optical isolation).

Devices shall be securely mounted in the interior of the vehicle, so as to avoid blocking vehicle operator sightlines to front and side windows. The location of, and mounting method for the units shall be determined in collaboration with GLTC staff.

ON VEHICLE SOFTWARE

Vehicle Assignment

Reliability and accuracy of AVL data is of the upmost importance to GLTC. There for it is required that GLTC dispatchers have the ability to assign routes to buses from the computer terminal used by dispatchers. This feature should override any logon information incorrectly input by the operator via at mobile data terminal, if equipped.

The central system should recognize that the vehicle is ready to commence its assigned work, has started work and completed work for the day.

GLTC understands the importance of operator logon and so is open to alternate approaches which can increase the reliability and accuracy of this function.

Location reporting

The Vehicle logic unit shall send in real time, regular location reports, indicating its current GPS location and optionally the odometer reading. The locations reports shall be a programmable number of intervals per minute between each location report.

Transmitted data shall include following information: date and time, GPS location latitude/ longitude, vehicle number, route number, trip number, and odometer reading (if enabled).

Silent alarm

The on board system shall detect if the silent alarm switch circuit is closed for at least one (1) second and automatically send a silent alarm message to dispatch and place the on board devices into silent alarm mode.

When the vehicle is in the silent alarm mode, there shall be no indication on any on board device other than an unobtrusive symbol or icon on the operator terminal, if equipped. When the vehicle is in silent alarm mode, the vehicle shall automatically increase the frequency of location reports.

The silent alarm mode will be configured so that it is disarmed by command from central dispatch.

Text messaging

The operator terminal **if fitted** should allow the vehicle operator to exchange canned or pre-recorded messages with the dispatch center by selecting from a set of pre-defined messages.

The operator terminal or shall store unread messages received from dispatch, indicate to vehicle operators when there are unread text messages, and allow stored messages to be viewed or deleted.

The operator terminal should allow the vehicle operator to view received messages, longer than a single line by scrolling. Operators should be able to acknowledge receipt of messages by a single button or touch.

CENTRAL SYSTEM

General

All software shall use a commercial-off-the-shelf relational database management system (RDBMS) for all database applications. All software shall provide a comprehensive purge capability that minimizes database storage requirements and purges archived records from online storage, so as to satisfy GLTC records management policies.

The Central Back Office application software will be the interface for administration, management and, dispatch staff to view and monitor the operation of the bus system. The Back Office system shall integrate with and store all operational data including; timetable, schedule, trip, route, timing point, bus stop, and vehicle information and will collect and compare data from the AVL system to provide the necessary functionality.

- Schedule and Route Adherence – The System will use the information from the AVL System to alert the Dispatcher when vehicles deviate from established routes and schedules, service interruptions, vehicle breakdowns and communication gaps based upon user defined parameters. The schedule and route adherence alarms must be presented in real time. The Dispatcher will be able to clear as well as set and control all alarms.
- Automatic Vehicle Monitoring – The System will display all vehicle locations on a geographic map of the GLTC transit service area.

The vehicle location map shall allow the operator to click or hover over a vehicle icon to view more detailed information in real time. Vehicle icon shape and color on the map will indicate the vehicle status and vehicle type. The icons should be user definable to allow for future types of vehicles in the vehicle inventory. The reported locations will be accurate within 10 meters and shall be updated based on user defined intervals (preferably one minute or less).

- Vehicle Arrival Forecasting – Real time vehicle arrival times will be available to passengers viewing the Dynamic Message Signs (DMS) at selected bus stops, and via the website, email, and SMS text message for every bus stop serviced by GLTC.
- Operational Hours – The Entire System will be available for customers 24 hours per day, 7 days per week. There will be no more than 1 hour unplanned system down time per calendar quarter including all devices and /or subsystems.
- A draft Service Level Agreement should be included in the contractor's proposal detailing proposed fault remedy response times
- Data availability – Management and Supervisory users shall have the ability to view and query "live" data collected over a rolling minimum of sixty (60) days and to view/query consolidated data archived over a period of at least 3 years.

At a minimum, the CAD/AVL system should:-

- Track AVL equipped transit vehicles; reporting; displaying to system users; and recording for real time/historical use; the minimum following data;
    - Vehicle identification
    - Vehicle location and time of update
    - Driver initiated Alarms
- Contractors should describe how their system caters for these requirements, the frequency at which vehicle locations are updated, whether the location update parameters are user configurable, and what and how other data may be collected from the vehicle, displayed and stored. Contractors should define how their system interfaces to third party scheduling and roistering systems, GIS Mapping solutions.

- Contractors should describe how their tracking solution will deliver predictive arrival information to the proposed On Street Signs, and Web site and discuss
    - Vehicle Arrival prediction accuracy
    - How often predictions will be updated and delivered to the signs and Web site
    - What other distribution options are available from the contractor and their relative merits

- Provide dispatch and management system users with a minimum choice of GIS Map based, and tabular/textual format views of all vehicles being tracked
    - Uniquely identify each vehicle being tracked
    - Identify vehicles in "alert" condition
    - Display Schedule adherence for every vehicle
    - Display Route adherence for every vehicle
    - Display latest vehicle position and time
    - Support user definable choice of icons/colors
    - Allow users to view
        - Multiple vehicles on a map
        - Single vehicles on a map
        - Single vehicle on individual route pattern
        - Multiple vehicle on individual route pattern
        - Last known position of all vehicles at a user defined time (hh:mm)

- Alert users to system faults

- Contractors should describe how their proposed system caters for these requirements, what parameters are user configurable, and how information will be presented to system users.

- Collect performance information on each vehicle and store in a database supporting creation of performance reports including:
  - Schedule adherence
  - Time point travel times
  - Trip Travel Times
  - Emergency events
    - Vehicle and driver identity
    - Date/time of alarm
    - Type of alarm
    - Event Clearance information
  - Vehicle communication problems such as date/time of lost contact, date/ time regained contact

The contractor shall be responsible for resolving any compatibility issues between software and any other existing installed software. The contractor shall implement all applicable and available software upgrades and patches during the implementation and warranty periods, and be responsible for resolving any compatibility issues with other parts of the overall system due to such upgrades or patches.

Proposals must identify how the product(s) is licensed, as well as how many copies of the product(s) are being recommended, the type and cost of each product (cost shall be indicated on the Pricing Proposal Form), and the annual support cost (also shall be indicated on the Pricing Proposal Form).

Proposals should offer descriptions and pricing options for the full range of technical support agreements alternatives offered. Proposals must describe the Contractor's support system (e.g., website, remote, help desk, phone or other), the exact hours of support, and any/all fees associated with the support (indicate fees on the Pricing Proposal Form).

COMPUTER AIDED DISPATCH/AUTOMATIC VEHICLE LOCATION (CAD/AVL) SOFTWARE

General

The CAD/AVL software shall be installed and initially provide user access to a minimum of ten concurrent users via individual workstation PCs on the GLTC network to access the CAD/AVL software, with location tracking, schedule adherence monitoring and location playback functionality only, without needing to have the full application software installed on the workstation.

Vehicle dispatch assignment

The system shall log all outgoing and received data in a real time database, including date/time, vehicle number, route number, trip number, and odometer reading (if enabled), GPS location latitude and longitude. Consolidated data should be regularly transferred to a historic database for archival purposes and statistical analysis.

The historical database shall be read-only. Historical data shall be available in a format that is directly accessible by or importable into common database management and analysis tools.

The system shall be capable of central assignment of vehicles by dispatcher to Blocks, Trips/Runs, and shall not necessarily require vehicle operators to activate the system.

Location tracking

The system shall display on the map the last reported location for all vehicles, using an icon indicating route direction and labeled with the vehicle ID, route ID or Block ID as selected by the user. The display shall provide an indication if the last reported location is older than the current reporting interval.

Route and schedule adherence tracking

Based on configurable thresholds, the system shall use the reported vehicle location data updates to determine schedule adherence data to designate when vehicles are “early,” “late” or “on time.” Based on thresholds configurable by GLTC, the system shall designate when vehicles are deemed off-route.

The system shall highlight to the dispatcher those vehicles that are operating early, late or off-route, using tabular and map displays to indicate their current schedule and route adherence status. The tabular display entries and the map display symbols for these vehicles shall use distinct and configurable color codes for early, late and off-route status.

The system shall provide a real-time output of the current location and schedule adherence for all fleet vehicles, for use by the next stop prediction software. The Contractor shall describe how this functionality is met by their proposed system.

Voice call set up

GLTC is not currently seeking to replace its voice radio network as a part of this procurement. The following is a future requirement and contractors should discuss how their proposed system might accommodate this functionality.

The system shall allow the dispatcher to view Request To Talk (RTT) and Priority Request To Talk (PRTT) messages received from mobile vehicles on a tabular display, together with the time received.

The vehicle operator shall have the ability to gain immediate access to a voice channel in emergency situations by sending an emergency request-to-talk (ERTT) message. The system shall display all ERTT messages received from MDTs on the dispatcher screen in a window separate from that showing RTT/PRTT messages.

The voice call functionality shall allow the dispatcher to set up a voice call response to the initiating vehicle operator by first selecting RTT or PRTT from the tabular display. The system shall allow the dispatcher to initiate a voice call by selecting vehicles individually; by selecting a set of vehicles from the vehicle list or running on a specific route; or by selecting all vehicles running on routes within a rectangular map display area, The system shall require the dispatcher to establish a timeout interval for any voice call, after which the radio will revert to mobile data transmission.

Location playback

The dispatcher shall be able to review on the map display the chronological sequence of reported locations for a specified vehicle over a specified time period. The software shall provide controls to view the entire sequence of reported locations for the selected time period or to step through the sequence incrementally forward or backward.

Silent alarm handling

The system shall notify the dispatcher that a silent alarm message has been received using anGLTC-approved user interface visual method. There shall also be a GLTC-approved audio notification method, which GLTC shall be able to configure as on or off.

The vehicle shall be capable of sending updated location information at least every 15 seconds when the alarm is activated.

The system shall allow the dispatcher to command the VLU to terminate the silent alarm state.

Data logging and retrieval

Information storage and retrieval requirements fall into two categories the real time information and the non-real-time information. Real-time information is that which must be processed when available and upon which a particular and immediate course of action may be dependent. Near Real time information is defined as that requiring action within tens of seconds or minutes. Non-real-time

information is that which is either static, not in a constantly changing state, or which can be processed offline, after the fact.

The proposed system shall have capabilities for processing both real-time, near real-time and non-real-time information as appropriate and for being able to store and retrieve such information. Near Real-time data shall be managed based on designated action schedule, such as reporting every 30 seconds. All real time vehicle location and status data transmitted to the central system shall be maintained online for a rolling period of 90 days months for immediate retrieval, analysis, display and printing. This information shall include all data transmitted from vehicles to dispatch (logon/log-off data, emergency alarms, vehicle system alarms, location data, and data transmitted from other equipment; and all user logons and logoffs. The online data storage system shall ensure data integrity in the event of a computer disk drive failure.

In addition, the system shall include a means of archiving transaction data, while the system is in operation. It shall not be necessary to shut down the database to perform a successful transfer to a historical information database. Historical information may be consolidated to store timing point data rather than every location update in order to conserve storage requirements.

Historical data shall be read-only with modification permitted only to individual pre-defined fields.

On-board device alarm monitoring

The system shall display all alarm messages received from on-board devices to the dispatcher using a tabular display, and shall display a modified vehicle icon on the map display when an alarm condition is in effect.

Mobile data communication gateway software

The system shall be interfaced with the mobile data communications gateway support software to exchange data in real-time with vehicles.

Interfaces

All database tables shall be made available in a compliant format, with the data dictionary provided to GLTC, so that GLTC can import this data for analysis and reporting purposes into a common database management and analysis tool (e.g., Microsoft Access). Contractors may propose an alternative solution for analysis and report extraction

GPS Output

All GPS output shall conform to the NMEA (National Marine Electrical Association) 0183 standard. This applies to all GPS data stored on the database.

PREDICTIVE ARRIVAL SYSTEMS

One of the main outcomes of this procurement is to acquire predictive arrival information for every bus stop in the GLTC transit system.

This information will be made available to passenger via the Internet, mobile device, and telephone based system.

The central system shall combine vehicle location data from the CAD/AVL system with other relevant data to continuously update predictions on when the next vehicle will arrive at each stop. GLTC requires proposers to submit in their proposals a description of the algorithm(s) that would be utilized to determine next bus arrival predictions, including the data used as input and the outputs provided.

The percent error for next vehicle arrival time predictions at a given stop shall be calculated as: absolute value of (predicted time to next arrival minus observed time to next arrival) divided by (observed time to next arrival). For example, if the observed time to next arrival was 7 minutes relative to a predicted time to next arrival of 8 minutes, the percent error would be 1/7 (i.e., 14%).

AVL INSTALLATION PLAN

The contractor shall design and submit for approval an “AVL Installation Plan” at least 15 days prior to any planned work. This requirement does not apply to prototype installations. The AVL Installation Plan shall address at least the following:

1. Rate of installation (buses per day)
2. Composition of installation crew(s)
3. Approximate dates at bus garage
4. Cutover scheme.
5. Asset/Inventory accounting

The buses must be radio capable when returned to service.

AVL INSTALLATION SCHEME

The contractor shall design an installation scheme for the AVL equipment that will optimize the operation, service life, reliability, availability, and maintainability of the equipment without interference to passenger movement or driver functions. The contractor shall consider the following information when designing the equipment installation scheme for the AVL equipment:

1. The only electronic installations that have remained dry are those above the floor level of the bus.

2. The location(s) on the buses proposed by the contractor for installation of AVL components shall operate reliably in the bus environment with its susceptibility to vibration, shock, electromagnetic interference, water, and bus cleaning operations. Methodology shall be submitted to GLTC for review and approval.

3. Security of bus radio components is a continuing problem; therefore, every exposed AVL component shall be designed to resist vandalism. Vandal-resistant fasteners, microphone cords, control heads, and cabinets shall be designed into the AVL installations. Submittals shall be made to GLTC for approval prior to proceeding.

INSTALLATION ON NEW BUSES

In the event that GLTC purchases new buses, GLTC may elect to negotiate with the contractor for the provision and installation of additional AVL vehicle units during the building of its bus orders at the bus manufacturers' plants. This might include installation of wiring (including the Vehicle-BUS) and connection to all peripherals and onboard processor.

The contractor would be required to deliver the AVL equipment F.O.B. the bus manufacturers' plants and provide technical assistance, as needed, to permit the bus manufacturers to fully test the AVL hardware before the buses are delivered to GLTC. Submittals shall be made to GLTC for approval prior to proceeding

AVL SYSTEM CUT-OVER PLAN

The contractor shall insure that the installation of the new AVL does not affect normal bus operations. The contractor shall prepare an AVL cutover plan and submit it to GLTC at least 15 days prior to the planned cut-over of any AVL equipment. No work shall be undertaken to implement the AVL cut-over plan until it is approved by GLTC.

The plan will detail the maintenance of radio service for the bus system during the entire cut-over period. A detailed plan including all steps necessary and who will be responsible shall be submitted to GLTC for approval prior to proceeding.

WIRING AND WIRING PRACTICES

1. Wires and cables shall be installed according to the following:

2. All conductors shall be pure copper, of not less than 99% conductivity. The use of aluminum conductors shall not be permitted.

3. Conductors shall be continuous without splices.

4. Conductor gauge, insulation, and shielding shall be designed according to industry Standards and Accepted engineering practice for the intended purpose.

5. Industry Standard color coding shall be used throughout.

6. All applications requiring physical movement and flexing shall use stranded conductors.

7. All crimp lugs shall be copper, or plated copper. The use of aluminum lugs is not permitted. Connections shall be made only with the manufacturers approved crimping tools. All crimp connections shall be made to the manufacturers recommended compression. The tool die shall imbed the manufacturer's impression and listing.

8. Unless installed in conduit, wiring within console cabinets, shall be neatly installed, bundled with appropriate wire-ties.

9. All wiring in plenum spaces shall comply with the requirements of Article 800 of the National Electrical Code.

10. In dispatch centers, signal and control wiring, and connection of devices referenced in these specifications, shall be installed in conduits or raceways, other than that installed in the equipment room, and shall be included as part of the work to be performed by the proposer. Wiring shall be accessible for maintenance. Wiring installed in modular furniture shall be run in the trays or channels designed for that purpose. All wiring in communications sites shall be installed in accordance with all standards referenced in this specification.

11. Cable and wiring penetrations through metal cabinets shall be insulated with dielectric grommets.

12. Wiring in dropped ceiling areas shall not lie on top of light fixtures or ceiling tiles, and shall comply with Article 800 of the National Electrical Code.

13. All transmission line shall be submitted to GLTC for approval prior to being installed. All transmission lines shall be installed in full accordance with the manufacturer's recommended minimum bending radius, and length of span at any point of the installation. All connectors shall be installed according to the manufacturer's instructions and specifications. All connectors must be manufactured by the same manufacturer as the cable, no substitutions will be allowed.

14. Cables, wiring forms, and terminal blocks shall be identified by permanent labels, tags, or other appropriate means. Marking shall clearly indicate the function and source. Cables shall be identified at both ends with indications of the source and destination of that cable run. The cable identification shall agree with the wiring and interconnect diagrams.

EQUIPMENT IDENTIFICATION

1. Controls, adjustment points, displays, connectors, terminal strips, and circuit boards shall be legibly and clearly labeled, indicating the function.

2. Legends on control panels and other equipment shall be permanent, resistant to fading or peeling, and capable of withstanding repeated cleaning without degradation or loss of legibility.

3. Legends shall be applied to equipment by silk-screening, etching, engraving, or other approved method. Stencil transfer letters, hand applied letters, or embossed strips are not permitted.

4. Labels shall be the equivalent in quality, legibility. Proposers shall submit samples of labeling for approval by GLTC before commencement of any labeling. Labels shall be protected from deterioration, and “smearing” by a protective surface.

EQUIPMENT INSTALLATION

The following shall apply to all fixed equipment:

1. All fixed equipment shall be securely anchored to the floor and/or wall. If applicable, the first rack in each row shall be securely anchored to the wall, and additional racks shall be bolted to the adjacent rack at the top of the rack.

Stand-alone racks, and every third rack, shall be securely cross braced to the ceiling. Racks and cabinets shall be shimmed to plumb alignment; the use of leveling screws or leveling legs shall not be permitted.

2. Equipment rack spacing shall allow not less than 3’ clear working space. All equipment shall have full access front and rear, except that equipment mounted on swing-out racks is permissible.

3. All equipment and equipment racks shall be grounded, in accordance with this specification.

4. Audio lines and control function lines shall be terminated on industry standard “66-type” punch blocks, with 25-pair telephone-connectors. Cabling shall not be accumulated in cable racks to

accommodate excessive lengths; all cabling shall be fitted to the site. Color coding shall follow telephone industry accepted standards.

5. Lightning suppression devices shall be provided for power input circuits, control circuits, telephone lines, antenna transmission cables, and all other circuits, equipment, and cabling that could be exposed to lightning generated transients. Three-tube gas protectors shall be used on all telephone cable entries. Lightning suppression devices shall be rated for maximum surge current, turn-on voltage, turn-on time, power capacity, and other characteristics as appropriate to the protected circuit, and the proposer's equipment and design. Lightning suppression devices shall be connected to ground ring with bare solid copper wire appropriate to the application.

The following are general requirements:

1. Maximum surge current shall be 20,000 A, based on the ANSI/UL467 Standards-microsecond rise-time/20-microsecond decay-time waveform.

2. The turn-on voltage shall be no less than 600 VDC.

3. The turn-on time shall be no less than 7 nanoseconds after voltage attains the 600 VDC turn-on level.

4. The device shall be capable of passing up to 600 micro Joules of energy.

5. All equipment operating from AC power, including consoles, console electronics, base station, and computer terminals shall be equipped with surge protection devices. The proposer shall submit to GLTC for approval the type device proposed for each application. The device(s) shall be listed by a third party laboratory.

CORROSION

Contact surfaces of dissimilar metals shall be treated to prevent galvanic corrosion (rust).

BRACKETS AND FASTENERS

All metal used as part of the antenna system shall be hot dip galvanized or made of stainless steel. Materials shall not be galvanized until all shop operations upon it have been completed, except as specified for nuts. Galvanizing of shapes and plates shall be in accordance with ASTM Specification A123. Galvanizing of bolts, nuts, washers, locknuts, and similar hardware shall be in accordance with ASTM Specification A153.

MOBILE INSTALLATION STANDARDS

The following standards shall apply to mobile equipment:

1. The Proposer shall coordinate with GLTC to establish a work area, other necessary facilities for mobile equipment installation, vehicle availability, and a detailed installation schedule.

2. Installation of mobile equipment shall minimize the exposure to and possibility of damage due to abuse, vandalism, and theft.

Mobile equipment shall be installed in such manner that the radio transmitter cannot be operated without the vehicle key being turned on or in the accessory position, unless otherwise specified by GLTC. The radio receiver shall be installed so that it may be turned on at any time. Theft-resistant fasteners and mountings shall be utilized. Cables shall be run in hidden and protected spaces to the best degree possible.

3. The emergency alert button in vehicles shall be located in a position convenient to the driver; exact locations shall be coordinated with GLTC for each type of vehicle.

4. Mobile Installation Schedule. The schedule developed by the Proposer for approval of the Department Contact shall provide for the installation of all mobile radios.

GENERAL INSTALLATION REQUIREMENTS

GLTC will require a successful demonstration of all ITS components a pilot vehicle before installation sign off will be granted. Installations shall be performed overnight between the hours of 20:00 and 05:00 hours each day.

At the request of the contractor and with at least two days advance notice, GLTC may permit installations at other times.

The contractor shall install and configure the entire system, including GLTC-provided computer hardware and integration with existing systems.

The contractor shall provide all necessary personnel, tools, test equipment, transportation, hardware and supplies for the successful and complete installation of all equipment and software. The contractor shall be responsible for their own and subcontractors' performance and safety. Installations shall be performed in accordance with all Federal, State and Local laws and regulations.

The contractor shall supply any electrical equipment necessary to operate system components using existing DC electrical power available on GLTC vehicles and existing AC electrical power at fixed facilities. If existing power arrangements are unsatisfactory, the Contractor must specify proposed alterations.

The contractor shall submit Installation Design Documentation (IDD), for GLTC approval prior to undertaking any installations. The IDD shall provide text, drawings, illustrations and images using adequate detail to allow for quality installation by a technician without further training in conjunction with other installation instructions provided by the contractors of individual equipment components.

The IDD shall include details on (1) equipment installation locations/mounting; (2) routing, conductors, color-coding, labeling, and connectors for power, communications and vehicle ground circuits; (3) connections with, any required modifications to and restoration of existing infrastructure; (4) work area and equipment storage requirements (5) methods and quality standards; and (5) supervision and quality assurance procedures.

GLTC reserves the right to allow no more than 10% of its vehicle fleet to be out of service within any given 24 hour period to accommodate vehicle installations. GLTC also reserves the right to when necessary allow less of its vehicle fleet to be out of service if needed in order to avoid disruption to revenue service requirements in conjunction with maintenance requirements.

The contractor shall ensure that all vehicles made available for overnight installation work are ready for revenue service by the start of the next day.

The capabilities or availability of existing infrastructure affected by or to be integrated into the new system, such as the GLTC LAN, WAN and WLAN facilities, shall not be reduced at any time by system implementation.

The contractor shall only be authorized to undertake installations after GLTC approval of a pre-installation inspection documenting the existing condition of any existing infrastructure that may be affected by the installation.

All spare components must be delivered before GLTC will allow equipment installation. After installations, the contractor shall be responsible for restoring the condition of any affected existing infrastructure at the installation sites to their pre-installation condition.

The contractor shall be responsible for the security of equipment prior to installation. GLTC will provide space for the contractor to establish secure storage facilities adjacent to each installation area.

GLTC will provide space for central system installations and vehicle installations. GLTC will provide light and electrical service at all installation locations, as well as access to compressed air at vehicle installation locations. GLTC will provide sufficient staff to move vehicles to and from the installation

locations. GLTC will complete agreed upon modifications to existing infrastructure required to support the installations.

The contractor shall prepare all deliverables in both Microsoft Office (Word, Excel or PowerPoint) and Adobe PDF formats, with GLTC granted full rights to reprint as needed. The contractor shall for all deliverables include the filename in the document footer and include in the filename the file release date.

INSPECTION AND TEST

GLTC shall have the right to observe and inspect any and all installation activities, at will. GLTC shall have the right to test any piece of equipment furnished, in a lab of GLTC's choice. If a type of equipment does not meet the manufacturer's specifications as stated in the proposer's accepted proposal, it will be the proposer's responsibility to correct the problem in all pieces of that type of equipment furnished, at no additional cost to GLTC.

ACCEPTANCE TESTS

Milestone payments as outlined in Section 3.2, by GLTC to the contractor will be contingent upon inspection, verification and acceptance of the contractor's completed. Deliverables for each milestone by GLTC, according to the following minimum testing requirements:

Task responsibilities

1. The contractor shall establish and implement a test program that will ensure all mobile, fixed radios and related subsystems, equipment, material and services furnished during the performance of this contract meet the technical requirements and standards, as specified within this RFP. Contractor will be required to perform tests outlined below for this project. All tests are to be performed for the completion of the system.

a) Measure and validate all radio parameters to ANSI/TIA/EIA 603 latest edition.
b) Validate that the radio transmission and reception is equal to the current system.
c) Validate that data messages can be transmitted and acknowledged by the operations control workstation.
d) Validate that data messages can be transmitted and acknowledged by buses throughout the coverage area.
e) Validate that each segment of the In-Vehicle Logic Unit (IVLU) functions as specified on each bus.
f) Perform an overall system operation validation by utilizing all available data messages to and from a bus and the operations control workstation.

2. The following task requirements are the contractor's responsibility for the test program:

a) Develop comprehensive test plans detailing methods and test procedures to be utilized to ensure compliance with all applicable requirements. Submit to GLTC for review and approval.
b) Develop detailed test procedures for each individual test within each category of testing. Submit to GLTC for review and approval.
c) Submit the test plans and all test procedures to GLTC for evaluation, review.
d) Furnish personnel, calibrated test equipment, tools, and miscellaneous supplies as necessary to perform all tests and retests, and to maintain all systems and equipment during the test period and until acceptance by GLTC. Certificates of proof calibration traceable to NIST shall be provided to GLTC is so requested.
e) Coordinate unified test program activities with the schedules and activities of other contractors, if applicable, and with GLTC to avoid conflicts with operational requirements.
f) Perform test and inspections as detailed in all test procedures. Submit to GLTC for review and approval.
g) Prepare detailed test reports, summary reports and progress reports beginning within 10 days after GLTC's' approval of test plans.
h) Submit all raw test data, test results, evaluations, and summary reports for review by GLTC.
i) Prepare and submit revised test procedures and test plans to correct procedural and technical errors or omissions discovered in those documents after their initial GLTC review.
j) Furnish labor and material to correct and/or effect RFP compliance. This shall occur without unreasonable delay.
k) Participate in GLTC final acceptance activities. Except for the equipment already installed on the buses, clean the equipment and worksite, secure the equipment, and remain responsible for prompt repair or replacement in the event of loss or damage, until acceptance by GLTC. Furnish inventory services and demonstrate system or equipment operation in support of requests by GLTC. Provide support and access so that GLTC technicians and mechanics can inspect and test any portion of the work during normal work hours.

3. The contractor shall advise GLTC, in writing, two weeks prior to the date(s) of scheduled tests and inspections. GLTC will witness these tests. Two certified copies of installation completion test and inspection data shall be submitted to GLTC within 7 days after test completion for review and acceptance.

4. GLTC reserves the right to perform additional non-destructive tests and inspections at any time during the course of the contract work. Results indicating deficiencies involving non-compliance with these RFP requirements will be reported to the contractor for corrective action.

Deficiencies

If GLTC determines from test data acquired from any category of test(s) that the system, equipment, materials, technical documentation, or services furnished do not conform to any of the RFP

requirement(s), the contractor shall begin appropriate remedial action based on an analysis of test results within fifteen days after receipt of GLTC's notice of deficiency. When such recommendations relate to engineering deficiencies, the contractor shall, upon receipt of approval, make the necessary changes to all equipment and documentation of that type to be delivered or previously delivered (even if previously accepted) during the course of the contract, at no additional cost.

When recommendations relate to other deficiencies such as quality control and installation workmanship, the contractor shall correct all deficiencies at no additional cost to GLTC. Retesting after the changes have been completed (factory tests and inspections, installation completion tests and inspections, and technical documentation verifications) shall be required in whole or part; as determined by GLTC, at no additional cost to GLTC.

Categories of tests

Tests and inspections shall be required in each of the categories listed below:

a. Custom developed equipment tests and inspections
b. Installation completion tests and inspections
c. System and integration tests
d. System validation tests (GLTC- conducted program)
e. Technical documentation verification inspections
f. Substantial completion acceptance tests and inspections (GLTC conducted program)
g. Final acceptance tests and inspections (GLTC conducted program).

Custom developed equipment tests and inspections

Where required, two copies of test results certified by the manufacturer shall be furnished to GLTC for review.

Installation completion tests and inspections

Installation completion tests and inspections shall be performed after installation to ensure that equipment and materials were properly installed and functioning in accordance with this RFP, parameters, and good commercial practice. Installation completion tests and inspections shall consist of:

a. Visual inspection to verify the following:

1) Full compliance with requirements detailed in this RFP;
2) Use of only approved products;

3) Installation of equipment in accordance with approved installation drawings;
4) Location and workmanship of wire and cable terminations, identification, routing, and color code.

b. Detailed testing will be required to demonstrate that material and equipment installed meet the criteria, and possess the characteristics and parameters contained in the contract documents and in the manufacturer's published specifications.

c. The testing of all items of equipment and material will include electrical, mechanical, operational, and functional parameters. Such parameters include, but are not limited to: levels of voltages, currents, power, distortion, noise, cross-talk, insulation resistance, continuity, attenuation (optical and electrical), physical strength, suitability of mounting method, paint and marking quality, graphics quality and style, location of operating controls and adjustments, maintainability, etc.

d. These tests shall be performed after the installation of material and equipment and shall be in addition to any tests and inspection previously performed. The contractor shall perform all necessary alignments, adjustments, and maintenance, prior to the scheduling of installation completion tests and inspections.

System and integration tests

1. System and integration tests shall be on-site performance tests to verify that all operating parameters and functions perform as specified and that each system and subsystem performs as specified in conjunction with each system or subsystem with which it interfaces. The contractor shall demonstrate that all material and equipment elements of each installed system function together to meet the system criteria specified. Each major subsystem (excludes vehicle systems) shall be powered a minimum of 40 hours (five eight hour days) prior to commencing system and integration tests.

2. The contractor shall be responsible for meeting all system and integration test requirements including testing and documenting interface compatibility and integration with existing GLTC-owned systems and equipment.

3. Each and every interface shall be verified as to operation, functions, levels, and voltages, as specified. The contractor shall test across the interface points; however, these tests shall only be made under the observation of appropriate GLTC personnel. When minor adjustment to, or reconfiguration of, existing equipment is required, the contractor shall notify GLTC, in writing, of the required adjustment or reconfiguration. An GLTC representative will make the adjustment or reconfiguration in the presence of the contractor. The contractor shall be responsible for the necessary adjustments or reconfiguration of contractor-furnished equipment to ensure proper functioning as specified.

4. The successful completion of all specified tests and inspections, including installation completion tests and inspections, and the correction of all outstanding discrepancies and subsequent retesting, is required as a prerequisite to system and integration tests.

5. The tests will vary with each specific subsystem (and ITS interface with other systems); however, each test shall include all operating parameters and functions. Tests shall be conducted on each subsystem installed, including vehicle installations with all failures and discrepancies noted. The contractor shall not engage in further testing until GLTC has verified that the contractor has taken necessary corrective action with respect to those failures and discrepancies. The contractor shall retest after each successive failure and corrective action to verify specification compliance.

Specific required system and integration tests

In addition to other testing requirements, the contractor shall conduct the following specific system and integration tests:

1. Bus Stop Communications Test

If bus stop equipment is installed under this contract, this bus stop communications test will be intended to demonstrate uniform radio system coverage over the entire GLTC operating area. In this test, 2-way data communications will be demonstrated between the AVL and each bus stop on each bus route in GLTC operating area. The contractor shall record relative signal quality between a typical bus and the operations control workstation.

System validation (GLTC conducted test)

System validation will be performed by GLTC, to verify performance at each installation, as follows:

The subsystem validation is a GLTC program and will be scheduled and performed for the vehicle, operations software, and traveler subsystems.

The contractor may furnish a representative for the duration of such tests. If the contractor elects not to furnish a representative or the representative is absent during scheduled test(s), GLTC will not accept claims of discrepancies in the test(s) results. GLTC will evaluate subsystem validation results.

In the event that the test results are unacceptable, the contractor shall correct all deficiencies. GLTC may retest when the contractor's correction of deficient work is completed.

Test conditions

The test period shall be a minimum duration of 50 consecutive days, extended by corrective maintenance, or at the discretion of GLTC for a maximum period of 70 test days (subject to contract scheduled limitations). Each test day shall nominally consist of 8 consecutive hours. Exact test starting and finishing times shall be designated by GLTC. AVL shall be continuously powered on an operational-day basis for the entire system validation period, unless otherwise directed herein or by GLTC.

NOTE: IF AT ANY TIME DURING THE 50 DAYS THE TEST FAILS FOR A REASONABLE PERIOD OF TIME, THE TEST PERIOD BEGINS AGAIN AND SHALL CONTINUE UNTIL A SATISFACTORY TEST IS COMPLETED.

GLTC shall endeavor to perform at least the minimum of test operations specified during each test day. A test operation failure shall be recorded in the test data when a detected cessation or error in the specified response of the system being tested occurs.

The failure of the system to furnish all correct responses to a test operation in accordance with each and every applicable specification requirement shall result in the recording of a test operation failure for that entire test operation.

Limited preventative and corrective maintenance actions in the form of repairs involving specific component parts, wiring, or minor internal equipment assemblies and adjustments, shall be allowed during test operations. The replacement or interchanging of whole equipment units, plug-in subassemblies, or major material items shall be allowed once during each test operation.

An GLTC designated representative shall witness each test operation attempt and resulting system response throughout the test period.

Optionally, GLTC may perform more than the specified minimum number of test operations per day, total test operations, and number of test days, so long as all data collected is recorded and included in the test computations. A maximum test period as specified shall be allowed. The contractor may be allowed to start, stop, and restart, the system validation tests. GLTC will report a test failure, discontinue testing, and after the contractor completes the correction, the testing begins. After the second such attempt, GLTC will require a detailed examination of contractor discrepancy correction efforts and all specification compliance related actions to date, prior to further testing. Equipment replacement or other extensive corrective measures may be required in accordance with all applicable specification provisions.

Vehicle Logic Unit (VLU) subsystem test operation

Radio transmissions originating from the AVL operations control workstation and transmitted through the transmitter(s) shall be received on a VLU at the required percentage of locations, not to exceed (70) vehicles and not to exceed number of bus stops, within the coverage areas. The reception shall comply with the specified characteristics and grade of service for a period of 10 minutes. Multiple reply

transmissions from the VLU at each location shall be received with specified quality at the AVL operations control workstation. VLU units shall be operated from various locations designated by GLTC during a 15 minute period.

Final acceptance

Final acceptance is a GLTC-conducted program. GLTC accepts the systems, equipment, and material furnished, as being complete and in accordance with this Specification. All discrepancies (if any) documented at substantial completion and any other discrepancies discovered thereafter, shall be corrected prior to final acceptance.

The contractor shall participate in GLTC final acceptance activities by providing support, as follows:

a. Produce records, copies of documentation, etc. for inspection
b. Furnish the original copy of all test logs and data to GLTC
c. Correct all discrepancies that are not in compliance with this RFP

INSTRUCTION AND TRAINING

Contractor shall perform training per the following minimum requirements:

Purpose

The objective of the training program shall be to train GLTC mechanics, technicians and operating personnel to properly operate, diagnose, troubleshoot and maintain the ITS equipment provided in accordance with this contract. The contractor shall furnish operating instruction manuals for initial training. Contractor shall also furnish operating manuals in the following formats: PDF, reproducible hardcopy, and MS Word file(s) (including charts, graphs, etc.) on CD-ROM. Each manual shall contain the procedures for the normal use of the installed equipment showing step by-step cause and effect results of each action taken by the user.

Equipment troubleshooting and reversion to manual modes will be included in the training process. The contractor will prepare such written and practical (hands-on) tests that will assure system fluency. The contractor shall use demonstrations and visual aids (including working models, where practical) for training; however, adequate handouts shall be available for each student attending the classes.

Scope of training program

The training program shall be devoted primarily to instruction on key items of equipment. The training shall be a combination of formal and hands-on training, including demonstrations. Formal classroom

and hands-on training will be conducted at GLTC's facility, while hands-on training and demonstrations will be conducted in the bus garage or other designated locations.

Maintenance training shall be provided in two levels: field and shop. Field maintenance covers configuration, interconnection and alignment, and "quick-fix" troubleshooting techniques utilizing the concept of lowest unit replacement. Shop maintenance shall be equipment oriented and include subsystem testing, equipment and component troubleshooting techniques and equipment and component repair, calibration and final testing.

Operations training shall be provided at bus operator, field supervisor operations controller and management levels. "Train the trainer" strategies may be utilized to deliver training to some levels as approved by GLTC.

The contractor shall submit a training concept plan/program for approval. It shall include the subject matter to be covered, a tabulation of the hours of instruction to be provided and the equipment to be included in the training program.

The contractor shall furnish all required training aids and material necessary for the training program. The contractor shall provide copies of each course outline, instructor's guide(s), student work books, models for hands-on demonstration, and hardware cut-aways. All material used for training shall become property of GLTC after training is completed. Printed training materials shall be prepared on personal computer word processing equipment, as practical and digital data files for all materials shall be delivered on CD-ROM discs. Digital files shall be in the current Microsoft Word and PDF formats.

Trainer's experience

Fully qualified instructors, fluent in the English language, shall conduct the contractor's training program. The instructors shall have thoroughly mastered the specific specialized subject matter involved and shall have the ability to impart equipment and system technical information to others in easily understood terms.

Training aids and materials

The contractor shall furnish all required training aids and materials necessary for the training program. All material used for training, such as lesson plans, study guides, student handouts, etc. and training aids such as DVDs, computer presentations, photographs, dynamic mockups, test fixtures and test equipment, models for hands-on demonstration, training and hardware cut-away shall become property of GLTC after training is completed. Printed training materials shall be prepared on personal computer word processing equipment, as practical and digital data files for all materials shall be delivered on CDROM discs." Digital files shall be in the current Microsoft Word and PDF formats.

Training deliverables

Instructor's guide

An instructor's guide shall be provided which contains the information and directions necessary for an effective presentation. It shall include adequate guidelines to conduct a comprehensive training program. Individual lessons within the course shall be organized as separate blocks (or modules), which may be taught as a unit. The instructor guide shall contain, at a minimum:

a. A discussion of student prerequisites (if any)
b. Program overview
c. A statement of overall program goals
d. Lesson plans (a session by session outline) containing;
e. Student learning objectives, stated in measurable terms;
f. Overview of each lesson;
g. Suggested instructional methods/learning activities;
h. Required equipment and/or resources.

Student workbooks

Student workbooks shall be provided that include all materials for the student to interact in the learning situation. It shall contain, as a minimum:

a. Program overview/introduction
b. Statement of overall program goals
c. Learning objectives, stated in measurable terms that specifically describe desired behaviors or knowledge to be gained. A fully developed prose treatment(not outline format) of content presentation, developed in the same modular format as the instructor's guide
e. Illustrations, charts, or graphics, as needed to enhance content presentation
f. Problems/questions related to lesson content, as appropriate
g. The repair guide in checklist format, showing all tools, parts (with part numbers), and steps in operation.

Audio-visual aids

The contractor shall provide all necessary handouts, transparencies, slides, films, VCR tape (in VHS format), and mock-ups.

Instructional deliverables

Instructor qualifications

A description of instructor qualifications, a resume or other description of instructor qualifications must be submitted to GLTC at least 15 days prior to the presentation of training.

The description shall document a thorough knowledge of the equipment being taught, understanding of the adult learning process, and demonstrated experience in vocational instruction.

Course Length

a. The contractor shall provide 40 hours of training to one group consisting of controllers/supervisors/dispatchers and totaling no more than three persons, to acquaint them with the functions and features of the AVL work station.
b. The contractor shall provide 16 hours of instructor training to GLTC's designated personnel ("train the trainer") to familiarize each participant with the AVL mobile equipment and fixed terminal interfaces. Instructors will be responsible for the training of operating personnel.
c. The contractor shall provide training for GLTC's information systems and technical support personnel adequate to acquaint them with system interfaces and software functionality.
d. The contractor shall provide training for GLTC's maintenance personnel adequate to enable them to perform routine maintenance tasks on the system.

Student qualifications

The contractor, for the purposes of course development and presentation, shall assume all GLTC students are high school graduates (or equivalent), and that maintenance personnel will possess the ability to use basic hand tools and electronic test equipment.

Testing

Instructors must give written, oral, and/or practical tests as a measuring device to determine knowledge transference. Tests shall use a multiple-choice or short answer format, and have been validated in a pilot course or by some other means agreed to by GLTC. Whenever possible, a practical hands-on test and oral shall be developed to demonstrate the transference or operational/mechanical skills.

Training schedule

The contractor shall submit proposed training schedules, offers of training to be provided, instructor qualifications and proposed assignment of instructors for the various portions of the training program

to GLTC for review and approval. Training shall be scheduled on a non-interfering basis to GLTC operations and maintenance requirements.

GLTC will exercise wide latitude in approving or directing changes to contractor training schedule submissions at no additional cost to GLTC. GLTC requires that the contractor supply system training the quantity and quality of which is sufficient to fully train GLTC's personnel in the complete operation of the system.

As a part of this document, GLTC specifies numbers of days or hours of required training in this regard, the number of days or hours so stated shall be understood to be suggested minimums. The actual number of days or hours required shall be whatever is necessary in order to provide sufficient training as judged by GLTC.

REPORT FEATURES

The proposed system shall be delivered with the vendor's standard reports. The Bidder shall provide copies of standard reports as part of their submission.

In addition, the system must be compatible with report writing software, such as Crystal Reports. The Bidder shall indicate what report writing software is compatible, how tightly integrated it is with the package and if training is available.

ADDITIONAL SYSTEM MODULES/FEATURES

Please describe additional modules and functionality. Also include them in the pricing proposal as options.

Optional components

Please provide pricing for these hardware and/or software components. GLTC may elect to purchase these optional components at time of bid award, at any time after the award when GLTC determines the need arise and funding becomes available, or not at all.

Please see Part VI of this RFP for the option specifications.

2.1.2 **Software Requirements and Features**

A. Software Licenses

The vendor shall provide perpetual licenses for all supplied software, exceptions should be noted in the vendor's response. The vendor shall provide a complete schedule of all software products, including detailed product information, complete publisher (license grantor) contact information, license model

(per user, per server, per workstation, per vehicle, per concurrent use, etc.), license cost and any other relevant information.

The software license will be held by GLTC.

B. Data Ownership

All data imported, generated and exported will be owned by GLTC. This data will be easily accessible and in formats easily used.

2.1.3 **Warranty and Maintenance**

C. Confidence Testing Support

The vendor shall provide functional and technical assistance for 60 calendar days after GLTC's system acceptance which shall be considered the confidence testing period.

D. Ongoing Support

The first year of support from the Confidence Testing Support period shall be included in the proposal. The vendor shall provide ongoing user and technical support for a period of three years under a Maintenance and Support Agreement. Such agreement shall include providing all generally available product updates and upgrades, support for installing and configuring product updates as they become available as well as user training for upgrades or enhancements, when required, throughout the support period .

The vendor shall provide a single source of technical support for resolution of issues and problems including those pertaining to any third-party vendors. In such cases of a problem involving a third-party vendor, the vendor shall act as the principal point of contact and shall actively work toward resolution of the problem.

The vendor shall provide a typical maintenance support agreement.

The ongoing support will include all major and minor releases.

In the event the software application or the company is sold, three years of support will be guaranteed. In addition, a cost effective migration path to a new product must be provided.

GLTC expects to receive full support from the vendor during hardware and software configuration of the system.

E. Warranty

A warranty will be provided for the software, implementation services, hardware and the operability of the System for a minimum of one year, which is to begin on the date of system acceptance. A copy of the vendor's warranty will be provided.

F. Additional Annual Maintenance

The bidder shall give a price for three or more additional years of annual software maintenance. GLTC may elect to purchase the additional year(s) of maintenance at the time of procurement.

G. Software

The vendor (software licensor) warrants that the software conforms in all material respects to the requirements and specifications. The vendor warrants that the software's capabilities satisfy the functional requirements herein. Furthermore, the warranty shall be valid for the duration of the implementation and three years after final acceptance.

H. Implementation Services

Vendor warrants implementation services (e.g., work products, developed modifications, and system configuration) for three years after final acceptance date.

I. The System

The vendor shall warrant that the System shall properly operate for three years after final acceptance.

2.1.4 **Resource Sharing with Other Localities**

If feasible, the proposer should describe how resource sharing with other localities within a reasonable distance of GLTC's service area could be achieved. It is GLTC's hope that resource sharing with other localities will lower the cost of operation for both GLTC and the other locality(ies).

Please describe the areas of resource sharing, if any, and estimate the cost savings to GLTC.

If the proposer offers this type of arrangement, the proposer shall be responsible for contacting the locality and work out the details and then include them in the proposal. The proposer shall provide the name and contact information of person at the other locality so GLTC can verify the details. GLTC will need to put a resource sharing agreement in place with the other locality before work on the affected part of the CAD/AVL system can commence.

The cost savings generated by an agreement of this type **should not** be reflected in the price proposal forms in Part V of this document (unless specified), however, GLTC will take any cost savings into consideration when evaluating the proposals.

2.1.5 **Use of equipment previously installed on buses**

GLTC would encourages proposers to utilize existing on-board equipment if possible. The onboard equipment currently consists of the following:

- Digital Recorders DR600 with GPS on 2007 Gilligs and 2008 Gillig buses.
    - APC and 802.11 wireless on 2008 Gillig buses.
- Safety Vision on-board video cameras on 2007 and prior buses
- Apollo Video Technology on-board video cameras with GPS on 2008 and newer buses
- GFI Odyssey fare boxes on all revenue vehicles.

PART III

BID PROPOSAL ORGANIZATION

3.0 **General Requirements**

3.1 The bid shall be organized in conformance with the format detailed below. Three (3) copies of each proposal shall be submitted.

a. Cover Letter

b. Point of Contact: Name, Title, Address, Phone Number and Email Address of contact with the lead firm.

c. Background and Experience: This section should provide a description of the firm's and subcontractor's background and history as it pertains to CAD/AVL systems, using Part II, Scope of Work, as a guide. A description of the firm's experience on similar contracts should be provided.

This section should include a list of least three (3) references who are or within the past year have been customers of the proposer and who have been provided similar services. The list shall include the following:

A. Name of Customer
B. Contact Person
C. Complete Address of Customer
D. Telephone Number

d. Organizational Staffing: The proposal should include an organizational chart of staffing, using Part II, Scope of Work, as a guide. The proposal should include resumes that clearly state the abilities, specialties and related experience of the individuals assigned to this project, including subcontractor employees.

e. Approach: The proposal should include a response to the scope of work and its required elements as well as anything that your firm would do for this project that might set it apart from other firms.

f. Schedule: The proposal should include a detailed work plan and schedule outlining the timely completion of the Scope of Work. The desired date for the system to be fully tested, accepted and operational is March 20, 2010. The approximate date for project initiation is October 25, 2010.

g. Price Information: Each proposal must contain a completed and signed pricing form (blank form is attached as Attachment A in Part VI of this RFP). All costs to be in US dollars.

h. List of Exceptions to Specification: Each proposal must include a list of all specifications which the proposer's product does not meet.

GLTC reserves the right to make any and all decisions it feels is in its best interest regarding all pricing proposals.

3.1 **Bid Proposal Evaluation and Selection Process**

The following criteria will be used to evaluate the proposal (includes required optional components):

- Responsiveness of the technical proposal to the requirements stated in the RFP
- Functionality and ease of use
- References (preference will be given to firms with experience in the passenger transit industry)
- Experience and qualifications of the project team
- Cost

Please note this is not a "low-bidder" contract. GLTC reserves the right to award to the bidder that it feels will provide the best value, or to no bidder at all.

GLTC reserves right to hold interviews on a day

3.2 **Payment**

Payment for the software, installation, training and data loading will be as follows:

- Hardware and Software Installation, Initial Testing 60 %
- Completion of Training. Beginning of successful client use 20 %
- Successful client use for six months following end of training 10 %
- Successful implementation of customer-facing website with email and text alerts 10 %

Payment to the successful bidder is contingent on payment of funds from Federal, State, and Local governments. Payment will be made within seven (7) business days of receipt of funds from these sources.

PART IV

REQUIRED FEDERAL CONTRACT CLAUSES

4.0 **Purpose**

By submitting a proposal, the proposer agrees to comply with the following contract clauses issued by the Federal Transit Administration (U.S. Department of Transportation). In the following language "Recipient" refers to GLTC.

1. No Federal Government Obligations to Third Parties. In connection with the Project, the Recipient agrees that, absent the Federal Government's express written consent, the Federal Government shall not be subject to any obligations or liabilities to any subrecipient, lessee, third party contractor, or other participant at any tier of the Project, or other person or entity that is not a party to the Grant Agreement or Cooperative Agreement for the Project. Notwithstanding that the Federal Government may have concurred in or approved any solicitation, subagreement, lease, third party contract, or arrangement at any tier, the Federal Government has no obligations or liabilities to any entity other than the Recipient, including any subrecipient, lessee, third party contractor, or other participant at any tier of the Project.

2. False or Fraudulent Statements or Claims. The Recipient acknowledges and agrees that:
(1) Civil Fraud. The Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. §§ 3801 *et seq*., and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to the Recipient's activities in connection with the Project. By executing the Grant Agreement or Cooperative Agreement for the Project, the Recipient certifies or affirms the truthfulness and accuracy of each statement it has made, it makes, or it may make in connection with the Project. In addition to other penalties that may apply, the Recipient also acknowledges that if it makes a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation to the Federal Government, the Federal Government reserves the right to impose on the Recipient the penalties of the Program Fraud Civil Remedies Act of 1986, as amended, to the extent the Federal Government deems appropriate.
(2) Criminal Fraud. If the Recipient makes a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation to the Federal Government or includes a false, fictitious, or fraudulent statement or representation in any agreement with the Federal Government in connection with a Project authorized under 49 U.S.C. chapter 53 or any other Federal law, the Federal Government reserves the right to impose on the Recipient the penalties of 49 U.S.C. § 5323(l), 18 U.S.C. § 1001, or other applicable Federal law to the extent the Federal Government deems appropriate.

3. Access to Third Party Contract Records. The Recipient agrees to require its third party contractors and third party subcontractors at each tier to provide to the U.S. Secretary of Transportation and the Comptroller General of the United States or their duly authorized representatives, access to all third party contract records as required by 49 U.S.C. § 5325(g). The Recipient further agrees to require its

third party contractors and third party subcontractors, at each tier, to provide sufficient access to third party procurement records as needed for compliance with Federal laws and regulations or to assure proper Project management as determined by FTA.

4. Federal Laws, Regulations, and Directives. The Recipient agrees that Federal laws and regulations control Project award and implementation. The Recipient also agrees that Federal directives, as defined in this Master Agreement, provide Federal guidance applicable to the Project, except to the extent that FTA determines otherwise in writing. Thus, FTA strongly encourages adherence to applicable Federal directives. The Recipient understands and agrees that unless the recipient requests FTA approval in writing, the Recipient may incur a violation of Federal laws or regulations, its Grant Agreement or Cooperative Agreement, or this Master Agreement if it implements an alternative procedure or course of action not approved by FTA.
The Recipient understands and agrees that Federal laws, regulations, and directives applicable to the Project and to the Recipient on the date on which the FTA Authorized Official awards Federal assistance for the Project may be modified from time to time. In particular, new Federal laws, regulations, and directives may become effective after the date on which the Recipient executes the Grant Agreement or Cooperative Agreement for the Project, and might apply to that Grant Agreement or Cooperative Agreement. The Recipient agrees that the most recent of such Federal laws, regulations, and directives will apply to the administration of the Project at any particular time, except to the extent that FTA determines otherwise in writing.
FTA's written determination may take the form of a Special Condition, Special Requirement, Special Provision, or Condition of Award within the Grant Agreement or Cooperative Agreement for the Project, a change to an FTA directive, or a letter to the Recipient signed by the Federal Transit Administrator or his or her duly authorized designee, the text of which modifies or conditions a specific provision of the Grant Agreement or Cooperative Agreement for the Project or this Master Agreement. To accommodate changing Federal requirements, the Recipient agrees to include in each agreement with each subrecipient, each lease, each third party contract, and other similar document implementing the Project notice that Federal laws, regulations, and directives may change and that the changed provisions will apply to the Project, except to the extent that FTA determines otherwise in writing. All standards or limits in the Grant Agreement or Cooperative Agreement for the Project, and in this Master Agreement are minimum requirements, unless modified by FTA.

5. Right of the Federal Government to Terminate.
Upon written notice, the Recipient agrees that the Federal Government may suspend or terminate all or any part of the Federal assistance to be provided for the Project if the Recipient has violated the terms of the Grant Agreement or Cooperative Agreement for the Project including this Master Agreement, or if the Federal Government determines that the purposes of the laws authorizing the Project would not be adequately served by the continuation of Federal assistance for the Project. The Recipient understands and agrees that any failure to make reasonable progress on the Project or any violation of the Grant Agreement or Cooperative Agreement for the Project, or this Master Agreement that endangers substantial performance of the Project shall provide sufficient grounds for the Federal Government to terminate the Grant Agreement or Cooperative Agreement for the Project. In general, termination of Federal assistance for the Project will not invalidate obligations properly incurred by the Recipient before the termination date to the extent those obligations cannot be canceled. If, however,

the Federal Government determines that the Recipient has willfully misused Federal assistance by failing to make adequate progress, by failing to make reasonable and appropriate use of Project property, or by failing to comply with the terms of the Grant Agreement or Cooperative Agreement for the Project including this Master Agreement, the Federal Government reserves the right to require the Recipient to refund the entire amount of Federal assistance provided for the Project or any lesser amount as the Federal Government may determine. Expiration of any Project time period established for the Project does not, by itself, constitute an expiration or termination of the Grant Agreement or Cooperative Agreement for the Project.

6. Civil Rights.

The Recipient agrees to comply with all applicable civil rights laws and regulations, in accordance with applicable Federal directives, except to the extent that the Federal Government determines otherwise in writing. These include, but are not limited to, the following:

a. Nondiscrimination in Federal Public Transportation Programs. The Recipient agrees to comply, and assures the compliance of each subrecipient, lessee, third party contractor, or other participant at any tier of the Project, with the provisions of 49 U.S.C. § 5332, which prohibit discrimination on the basis of race, color, creed, national origin, sex, or age, and prohibits discrimination in employment or business opportunity.

b. Nondiscrimination – Title VI of the Civil Rights Act. The Recipient agrees to comply, and assures the compliance of each subrecipient, lessee, third party contractor, or other participant at any tier of the Project, with all provisions prohibiting discrimination on the basis of race, color, or national origin of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. §§ 2000d *et seq*., and with U.S. DOT regulations, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act," 49 C.F.R. Part 21. Except to the extent FTA determines otherwise in writing, the Recipient agrees to follow all applicable provisions of FTA Circular 4702.1A, "Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients," May 13, 2007, and any other applicable Federal directives that may be issued.

c. Equal Employment Opportunity. The Recipient agrees to comply, and assures the compliance of each subrecipient, lessee, third party contractor, or other participant at any tier of the Project, with all equal employment opportunity (EEO) provisions of 49 U.S.C. § 5332, with Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and implementing Federal regulations and any later amendments thereto. Except to the extent FTA determines otherwise in writing, the Recipient also agrees to follow all applicable Federal EEO directives that may be issued. Accordingly:

(1) General. The Recipient agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, sex, disability, age, or national origin. The Recipient agrees to take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, disability, age, or national origin. Such action shall include, but not be limited to, employment, upgrading, demotions or transfers, recruitment or recruitment advertising, layoffs or terminations; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

(2) Equal Employment Opportunity Requirements for Construction Activities. For activities determined by the U.S. Department of Labor (U.S. DOL) to qualify as "construction," the Recipient agrees to comply and assures the compliance of each subrecipient, lessee, third party contractor, or other participant, at any tier of the Project, with all applicable equal employment opportunity requirements of U.S. DOL regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 *et seq.*, which implement Executive Order No. 11246, "Equal

Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order No. 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note, and also with any Federal laws and regulations in accordance with applicable Federal directives affecting construction undertaken as part of the Project.

d. Disadvantaged Business Enterprise. To the extent authorized by Federal law, the Recipient agrees to facilitate participation by Disadvantaged Business Enterprises (DBEs) in the Project and assures that each subrecipient, lessee, third party contractor, or other participant at any tier of the Project will facilitate participation by DBEs in the Project to the extent applicable. Therefore:

(1) The Recipient agrees and assures that it shall comply with section 1101(b) of SAFETEA-LU, 23 U.S.C. § 101 note, and U.S. DOT regulations, "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs," 49 C.F.R. Part 26.

(2) The Recipient agrees and assures that it shall not discriminate on the basis of race, color, sex, or national origin in the award and performance of any subagreement, lease, third party contract, or other arrangement supported with Federal assistance derived from U.S. DOT in the administration of its DBE program and shall comply with the requirements of 49 C.F.R. Part 26. The Recipient agrees to take all necessary and reasonable steps as set forth in 49 C.F.R. Part 26 to ensure nondiscrimination in the award and administration of all subagreements, leases, third party contracts, and other arrangements supported with Federal assistance derived from U.S. DOT. As required by 49 C.F.R. Part 26, the Recipient's DBE program approved by U.S. DOT, if any, is incorporated by reference and made part of the Grant Agreement or Cooperative Agreement for the Project. The Recipient agrees that implementation of its approved DBE program is a legal obligation, and that failure to carry out that DBE program shall be treated as a violation of the Grant Agreement or Cooperative Agreement for the Project and the Master Agreement. Upon notification by U.S. DOT to the Recipient of the Recipient's failure to implement its approved DBE program, U.S. DOT may impose sanctions as set forth in 49 C.F.R. Part 26 and may, in appropriate cases, refer the matter to the appropriate Federal authorities for enforcement under 18 U.S.C. § 1001, or the Program Fraud Civil Remedies Act, 31 U.S.C. §§ 3801 *et seq*., or both.

e. Nondiscrimination on the Basis of Sex. The Recipient agrees to comply with all applicable requirements of Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. §§ 1681 *et seq.*, and with implementing Federal regulations that prohibit discrimination on the basis of sex that may be applicable.

f. Nondiscrimination on the Basis of Age. The Recipient agrees to comply with all applicable requirements of:

(1) The Age Discrimination Act of 1975, as amended, 42 U.S.C. §§ 6101 *et seq*., and with implementing U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. Part 90, which prohibit discrimination against individuals on the basis of age.

(2) The Age Discrimination in Employment Act (ADEA) 29 U.S.C. §§ 621 through 634 and with implementing U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. Part 1625.

g. Access for Individuals with Disabilities. The Recipient agrees to comply with 49 U.S.C. § 5301(d), which states the Federal policy that elderly individuals and individuals with disabilities have the same right as other individuals to use public transportation services and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities. The Recipient also agrees to comply with all applicable provisions of section 504 of the Rehabilitation Act of 1973, as amended, with 29 U.S.C. § 794, which prohibits discrimination on the basis of disability; with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 *et seq*., which requires that accessible

facilities and services be made available to individuals with disabilities; and with the Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151 *et seq*., which requires that buildings and public accommodations be accessible to individuals with disabilities; and with other laws and amendments thereto pertaining to access for individuals with disabilities that may be applicable. In addition, the Recipient agrees to comply with applicable implementing Federal regulations any later amendments thereto, and agrees to follow applicable Federal directives except to the extent FTA approves otherwise in writing. Among those regulations and directives are:
(1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37;
(2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27;
(3) Joint U.S. Architectural and Transportation Barriers Compliance Board (U.S. ATBCB)/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38;
(4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35;
(5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36;
(6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;
(7) U.S. EEOC, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;
(8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F;
(9) U.S. ATBCB regulations, "Electronic and Information Technology Accessibility Standards," 36 C.F.R. Part 1194;
(10) FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. Part 609; and
(11) Federal civil rights and nondiscrimination directives implementing the foregoing Federal laws and regulations, except to the extent the Federal Government determines otherwise in writing.

h. Drug or Alcohol Abuse-Confidentiality and Other Civil Rights Protections. To the extent applicable, the Recipient agrees to comply with the confidentiality and other civil rights protections of the Drug Abuse Office and Treatment Act of 1972, as amended, 21 U.S.C. §§ 1101 *et seq*., with the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970, as amended, 42 U.S.C. §§ 4541 *et seq*., and with the Public Health Service Act of 1912, as amended, 42 U.S.C. §§ 201 *et seq*., and any amendments thereto.

i. Access to Services for Persons with Limited English Proficiency. To the extent applicable and except to the extent that FTA determines otherwise in writing, the Recipient agrees to facilitate compliance with the policies of Executive Order No. 13166, "Improving Access to Services for Persons with Limited English Proficiency," 42 U.S.C. § 2000d-1 note, and with the provisions of U.S. DOT Notice, "DOT Policy Guidance Concerning Recipients' Responsibilities to Limited English Proficiency (LEP) Persons," 70 *Fed. Reg*. 74087, December 14, 2005.

j. Environmental Justice. The Recipient agrees to facilitate compliance with the policies of Executive Order No. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," 42 U.S.C. § 4321 note, except to the extent that the Federal Government determines otherwise in writing.

k. Other Nondiscrimination Laws. The Recipient agrees to comply with all applicable provisions of other Federal laws and regulations, and follow applicable Federal directives pertaining to and prohibiting discrimination, except to the extent the Federal Government determines otherwise in writing.

7. Disadvantaged Business Enterprise. To the extent authorized by Federal law, the Recipient agrees to facilitate participation by Disadvantaged Business Enterprises (DBEs) in the Project and assures that each subrecipient, lessee, third party contractor, or other participant at any tier of the Project will facilitate participation by DBEs in the Project to the extent applicable. Therefore:
(1) The Recipient agrees and assures that it shall comply with section 1101(b) of SAFETEA-LU, 23 U.S.C. § 101 note, and U.S. DOT regulations, "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs," 49 C.F.R. Part 26.
(2) The Recipient agrees and assures that it shall not discriminate on the basis of race, color, sex, or national origin in the award and performance of any subagreement, lease, third party contract, or other arrangement supported with Federal assistance derived from U.S. DOT in the administration of its DBE program and shall comply with the requirements of 49 C.F.R. Part 26. The Recipient agrees to take all necessary and reasonable steps as set forth in 49 C.F.R. Part 26 to ensure nondiscrimination in the award and administration of all subagreements, leases, third party contracts, and other arrangements supported with Federal assistance derived from U.S. DOT. As required by 49 C.F.R. Part 26, the Recipient's DBE program approved by U.S. DOT, if any, is incorporated by reference and made part of the Grant Agreement or Cooperative Agreement for the Project. The Recipient agrees that implementation of its approved DBE program is a legal obligation, and that failure to carry out that DBE program shall be treated as a violation of the Grant Agreement or Cooperative Agreement for the Project and the Master Agreement. Upon notification by U.S. DOT to the Recipient of the Recipient's failure to implement its approved DBE program, U.S. DOT may impose sanctions as set forth in 49 C.F.R. Part 26 and may, in appropriate cases, refer the matter to the appropriate Federal authorities for enforcement under 18 U.S.C. § 1001, or the Program Fraud Civil Remedies Act, 31 U.S.C. §§ 3801 *et seq*., or both.

8. Federal Standards. The Recipient agrees to comply with applicable third party procurement requirements of 49 U.S.C. chapter 53 and other procurement requirements of Federal laws in effect now or as amended to the extent applicable; with applicable U.S. DOT third party procurement regulations at 49 C.F.R. § 18.36 or 49 C.F.R. §§ 19.40 through 19.48, and with other applicable Federal regulations pertaining to third party procurements and later amendments thereto. The Recipient also agrees to follow the provisions of FTA Circular 4220.1F, "Third Party Contracting Guidance," November 1, 2008, and any later revision thereto, except to the extent FTA determines otherwise in writing. The Recipient agrees that it may not use FTA assistance to support its third party procurements unless there is satisfactory compliance with Federal laws and regulations. Although the FTA "Best Practices Procurement Manual" provides additional third party contracting information, the Recipient understands and agrees that the FTA "Best Practices Procurement Manual" is focused on third party procurement processes and examples and may omit certain Federal requirements applicable to specific third party contracts.

9. Debarment and Suspension. The Recipient agrees to comply, and assures the compliance of each subrecipient, lessee, third party contractor, or other participant at any tier of the Project, with Executive Orders Nos. 12549 and 12689, "Debarment and Suspension," 31 U.S.C. § 6101 note, and U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 CFR Part 1200, which adopts and supplements the provisions of U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 CFR Part 180. The Recipient agrees to, and assures that its subrecipients, lessees, third party contractors, and other participant at any tier of the Project will, review the "Excluded Parties Listing System" at http://epls.gov/ before entering into any third subagreement, lease, third party contract, or other arrangement in connection with the Project.

7. Energy Conservation.
The Recipient agrees to comply with applicable mandatory energy efficiency standards and policies of applicable State energy conservation plans issued in accordance with the Energy Policy and Conservation Act, as amended, 42 U.S.C. §§ 6321 *et seq.,* except to the extent that the Federal Government determines otherwise in writing. To the extent applicable, the Recipient agrees to perform an energy assessment for any building constructed, reconstructed, or modified with FTA assistance, as provided in FTA regulations, "Requirements for Energy Assessments," 49 C.F.R. Part 622, Subpart C.

9. National Intelligent Transportation Systems Architecture and Standards. To the extent applicable, the Recipient agrees to conform to the National Intelligent Transportation Systems (ITS) Architecture and Standards as required by SAFETEA-LU § 5307(c), 23 U.S.C. § 512 note, and follow the provisions of FTA Notice, "FTA National ITS Architecture Policy on Transit Projects," 66 *Fed. Reg.* 1455 *et seq*., January 8, 2001, and any other implementing directives FTA may issue at a later date, except to the extent FTA determines otherwise in writing.

10. Access for Individuals with Disabilities. The Recipient agrees to comply with 49 U.S.C. § 5301(d), which states the Federal policy that elderly individuals and individuals with disabilities have the same right as other individuals to use public transportation services and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities. The Recipient also agrees to comply with all applicable provisions of section 504 of the Rehabilitation Act of 1973, as amended, with 29 U.S.C. § 794, which prohibits discrimination on the basis of disability; with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 *et seq*., which requires that accessible facilities and services be made available to individuals with disabilities; and with the Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151 *et seq*., which requires that buildings and public accommodations be accessible to individuals with disabilities; and with other laws and amendments thereto pertaining to access for individuals with disabilities that may be applicable. In addition, the Recipient agrees to comply with applicable implementing Federal regulations any later amendments thereto, and agrees to follow applicable Federal directives except to the extent FTA approves otherwise in writing. Among those regulations and directives are:
(1) U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 C.F.R. Part 37;
(2) U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27;
(3) Joint U.S. Architectural and Transportation Barriers Compliance Board (U.S. ATBCB)/U.S. DOT regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 C.F.R. Part 1192 and 49 C.F.R. Part 38;
(4) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R. Part 35;
(5) U.S. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36;
(6) U.S. General Services Administration (U.S. GSA) regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;
(7) U.S. EEOC, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;
(8) U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F;
(9) U.S. ATBCB regulations, "Electronic and Information Technology Accessibility Standards," 36 C.F.R. Part 1194;
(10) FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. Part 609; and
(11) Federal civil rights and nondiscrimination directives implementing the foregoing Federal laws and regulations, except to the extent the Federal Government determines otherwise in writing.

PART V

ATTACHMENTS

Please include the following signed and notarized (if required) forms with your bid.

Greater Lynchburg Transit Company

Attachment A
Bid Pricing Forms

Proposer (firm): _____

Authorized Official: _____

Signature: _____

Date: _____

PRICING PROPOSAL (REQUIRED PRICING ELEMENTS)
Total Price for delivery, installation and full implementation of proposed system (including input of data) **that meets minimum technical specifications** (does not include optional hardware/software, technical support license agreements or any additions and/or enhancements). **Proposer should attach a separate sheet detailing the individual components of the total price listed.** $ _____

Price for first year of technical support (if not included in price of software) $ _____

Price for license agreement for first year (if applicable and/or if not included in price of software)
$_____

Hourly labor rate for on-site technicians (if not included in technical support or warranty coverage; labor rate for service within Central Virginia). $ _____

Annual technical support cost for three years starting after Year 1 (if not included in price of software):
Year 2 $ _____
Year 3 $_____
Year 4 $_____

Annual license agreement cost for three years starting after Year 1 (if applicable and/or if not included in price of software):
Year 2 $ _____
Year 3 $_____
Year 4 $_____

Daily rate for additional training $_____

If applicable, please list the credit for partnership arrangement the following items:
Hardware: $_____
Software: $_____
Support: $_____ (per year).

Please list use of preexisting onboard equipment (Part 2.1.5) below, if any:
_____
_____

PRICING FOR OPTIONAL HARDWARE/SOFTWARE (please use another copy of this sheet if more room is needed).

Option		Hardware Needed to Implement Addition/Enhancement (if applicable)	
Real-time information equipment for bus stops (each)	$ _____		$ _____
Real-time information equipment for transfer center/major stops (each)	$ _____		$ _____
Real-time information equipment – LCD/plasma panels (each)	$ _____		$ _____
Paratransit Software	Use following page	Use following page	Use following page
Mobile Data Terminals for paratransit vehicles (each)	$ _____	If multiple hardware option, please list them on a separate page.	$ _____
Telephone-based real-time information system	Use following page	Use following page	Use following page
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____

PRICING FOR OPTIONAL TELEPHONE-BASED INFORMATION SYSTEM HARDWARE/SOFTWARE
Total Price for delivery, installation and full implementation of proposed system (including input of data) **that meets minimum technical specifications** (does not include optional hardware/software, technical support license agreements or any additions and/or enhancements). **Proposer should attach a separate sheet detailing the individual components of the total price listed.**
Hosted $ _____
In-house $_____
In partnership with another locality $_____

Price for first year of technical support (if not included in price of software)
Hosted $ _____
In-house $_____
Partnership $_____

Price for license agreement for first year (if applicable and/or if not included in price of software)
Hosted $ _____
In-house $_____
Partnership $_____

Hourly labor rate for on-site technicians (if not included in technical support or warranty coverage; labor rate for service within Central Virginia). $ _____

Annual technical support cost for three years starting after Year 1 (if not included in price of software):
Year 2 Hosted $ _____ In-house $_____ Partnership $_____
Year 3 Hosted $ _____ In-house $_____ Partnership $_____
Year 4 Hosted $ _____ In-house $_____ Partnership $_____

Annual license agreement cost for three years starting after Year 1 (if applicable and/or if not included in price of software):
Year 2 Hosted $ _____ In-house $_____ Partnership $_____
Year 3 Hosted $ _____ In-house $_____ Partnership $_____
Year 4 Hosted $ _____ In-house $_____ Partnership $_____

Provide brief description of any additional hardware needed for this option and its cost:
_____ $_____
_____ $_____
_____ $_____
_____ $_____

PRICING FOR OPTIONAL PARATRANSIT SOFTWARE

Total Price for delivery, installation and full implementation of proposed system (including input of data) **that meets minimum technical specifications** (does not include optional hardware/software, technical support license agreements or any additions and/or enhancements). **Proposer should attach a separate sheet detailing the individual components of the total price listed.** $ _____

Price for first year of technical support (if not included in price of software) $ _____

Price for license agreement for first year (if applicable and/or if not included in price of software) $_____

Hourly labor rate for on-site technicians (if not included in technical support or warranty coverage; labor rate for service within Central Virginia). $ _____

Annual technical support cost for three years starting after Year 1 (if not included in price of software):
Year 2 $ _____
Year 3 $_____
Year 4 $_____

Annual license agreement cost for three years starting after Year 1 (if applicable and/or if not included in price of software):
Year 2 $ _____
Year 3 $_____
Year 4 $_____

Daily rate for additional training $_____

Provide brief description of any additional hardware needed for this option and its cost:
_____ $_____
_____ $_____
_____ $_____
_____ $_____

PRICING PROPOSAL FOR RECOMMENDED COMPONENTS NOT INCLUDED IN RFP (please use another copy of this sheet if more room is needed).

Description of Proposed Addition / Enhancement to Software		Hardware Needed to Implement Addition/Enhancement (if applicable)	
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____

	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____
	$ _____		$ _____

NON-COLLUSION AFFIDAVIT

State of:_____

Locality of:_____

The undersigned, being duly sworn on oath says, that he is the contracting party, or that he is the representative, agent, member, or officer of the contracting party, that he has not, nor has any other member, employee, representative, agent or officer of the firm, company, corporation or partnership represented by him, directly or indirectly , entered into or offered to enter into any combination, collusion or agreement to receive or pay, and that he has not received or paid, any sum of money or other consideration for the execution of the annexed contract other than that which appears upon the face of the contract.

Signature:_____

Printed name:_____

Title:_____

Company:_____

Before me, a Notary Public in and for said County and State personally appeared,

_____ , who acknowledged the truth of the statements in the foregoing affidavit on this _____ day of _____, 20 ___ .

Signature of Notary Public:_____

County of residence:_____

Commission expiration date:_____

Printed or typed name of Notary Public:_____

CERTIFICATION AS TO ELIGIBILITY OF CONTRACTOR

The undersigned hereby certifies that it is/is not included on the U.S. Comptroller General's consolidated list of persons or firms currently debarred for violations of various public contracts incorporating labor standards provisions.

Signature:_____

Printed name:_____

Title:_____

Company:_____

Before me, a Notary Public in and for said County and State personally appeared,

_____ , who acknowledged the truth of the statements in the foregoing affidavit on this _____ day of _____, 20 ___ .

Signature of Notary Public:_____

County of residence:_____

Commission expiration date:_____

Printed or typed name of Notary Public:_____

CERTIFICATION OF PRIMARY PARTICIPANT
REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

The Primary Participant (applicant for an FTA grant or cooperative agreement, or potential contractor for a major third party contract), _____, certifies, to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

2. Have not, within a three-year period preceding this proposal, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining , attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and

4. Have not, within a three-year period preceding this application/proposal, had one or more public transactions (Federal, State or local) terminated for cause or default.

[If the primary participant (applicant for an FTA grant, or cooperative agreement, or potential third party contractor) is unable to certify to any of the statements in this certification, the participant shall attach an explanation to this certification.]

THE PRIMARY PARTICIPANT (APPLICANT FOR AN FTA GRANT OR COOPERATIVE AGREEMENT, OR POTENTIAL CONTRACTOR FOR A MAJOR THIRD PARTY CONTRACT),
_____, CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTION 3801 ET SEQ. ARE APPLICABLE THERETO.

Signature and Title of Authorized Official: _____

The undersigned Chief Legal Counsel for the (entity), _____ hereby certifies, to the best ofits knowledge and belief, that the (entity), _____has authority under State and Local Law to comply with the subject assurances and that the certification above has been legally made.

Signature of Applicant's Attorney: _____
Date: _____

CERTIFICATION
OF
RESTRICTIONS ON LOBBYING

I, _____, hereby certify on behalf
(name and title of grantee official)

of _____that:
(name of grantee)

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Executed this _____day of_____, 20__.

By_____
(signature of authorized official)

_____
(title of authorized official)

PART VI

SPECIFICATIONS FOR REQUIRED OPTIONAL HARDWARE/SOFTWARE

If these options are purchased by GLTC, a separate installation timeline agreed upon by GLTC and the successful proposer will apply. A phased payment structure, similar to the one in Section 3.2 will also apply.

REAL-TIME NEXT BUS INFORMATION EQUIPMENT

Hardware

Street side bus stop displays

The contractor's proposal should provide for the supply, configuration, and installation of real-time next bus information equipment at a number bus stops. At this stage GLTC does not have specific locations for these signs and the final location will be dependent on the total costs. Proposers are required to provide pricing for the cost of signs, installation including any structural or civil works, and electrical power and other connectivity requirements. For the purposes of this procurement, contractor estimates or "range of costs" is required. Final locations and firm pricing will be determined with the successful contractor.

GLTC has prefers a self-contained, pole-mounted equipment. The equipment should be able to be branded with GLTC logo and service information. The equipment must be extremely rugged but easily serviceable. The equipment must require minimal maintenance. The equipment must require no connection to AC power, long-lasting (12 months or more is preferable), self-contained batteries are preferred. Proposers are encouraged to propose a range of different equipment options. The proposers system, including radio communications system, must be capable of supporting up to 300 street side bus stop displays.

The proposer should provide pricing of this equipment in lots of five units.

Transfer center/major stop displays

The contractor's proposal should provide for the supply, configuration, and installation of real-time next bus information equipment at a limited number of major bus stops and GLTC transfer center.

This signage should be a LED sign capable of displaying at least 4 lines of information able to display information about at least eight routes in two "pages". The displays must be capable of being read in full daylight, under artificial lighting, or at night. The display must be housed in an enclosure capable withstanding exposure to the elements. These signs can be connection to electrical mains if required.

The proposed system should also be compatibility with LCD or plasma displays that will be used in a future enclosed/conditioned transfer center or other similar locations.

Audio signs

The contractor's proposal should provide for the supply, configuration, and installation of audio signs that will allow GLTC's customers with visual impairments to be able to obtain the same information as is being displayed on visual displays. These signs will likely be installed at GLTC's transfer center and at major stops. The equipment should comply with the general requirements as the visual displays as far as being resistant to weather and vandalism.

General equipment information

The Displays are required to present real time arrival data to the waiting passengers with an arrival "window" of at least 30 minutes (60 minutes is preferable). The bus stop displays shall provide real time information related to all transit vehicles scheduled to arrive at the stop where the display is installed in the correct sequence of arrival. The displays shall be capable of being easily read in daylight and under artificial lighting conditions. Other requirements of the bus stop display are:

- The display device should be protected from the environment by a NEMA Type 4 or higher enclosure. The device must be able to function and operate with direct exposure to rain, fog, snow, ice, and direct sunlight without malfunctioning.

- The displays or enclosures shall be constructed of materials that are resistant to vandalism and be designed to withstand severe abuse without malfunction from, but not limited to: repetitive strikes from wood and metal objects. Device shall include wireless communications link. The contractor shall propose the most cost-effective approach for GLTC. The recommended communications method shall be capable of adapting to suit the electronic signs to the various installation locations.

- The sign shall include adequate intelligence to manage communications and organized format, traveler messaging in terms of arrival times.

- Estimated arrival times in whole minutes shall be received by the sign from the Back Office system with the arrival times displayed, matching the arrival sequence of the vehicles due at the stop.

Software

Next arrival prediction messages shall be generated automatically, based on the incorporation of variable arrival time prediction data received from the central system into a standard message template applicable to the sign for that stop.

The format of the message template shall be "Route" "Destination" "Departing" (or "Arriving") and "xx Minutes" or an approved alternative format agreed to by GLTC. When the sign receives a message

from the central system indicating that current prediction data is not available, the sign shall display an approved alternate message approved by GLTC.

Variable Message Terminus Displays shall be capable of displaying messages on multiple sequential "pages". For example, displaying a next arrival message and a general message with a one row sign would use an alternating sequence of two one row message "pages." The signs shall include ongoing self-diagnostics and shall send an alarm message to the central system in the event that a diagnostic fault is identified.

Audio sign messages shall be constructed in real-time by the sign in a manner than avoid the need to send audio data over the radio system, by concatenating a prerecorded message segments for the numeral selected based on the variable arrival time prediction data received from the central system, with prerecorded message segments for route numbers, route names, destinations and fixed wording within the message templates.

Installation

All signs shall be mounted at a location to be agreed with GLTC. Signs shall be mounted using hardware that allows the vertical and horizontal orientation to be adjusted as part of and subsequent to installation. The contractor will be responsible for the Transfer center/major stop type variable message displays being connected the local power supply provided by GLTC at each sign location.

Central Arrival Information Distribution

The system shall provide current next vehicle arrival information to the signs through an automated process at an update rate to each sign of at least twice per minute. The arrival information shall be generated by the CAD/AVL software and be the same information being offered to dispatcher personnel and to customers via internet, mobile devices, and telephone.

The system shall detect when the current next vehicle for a stop arrives within the defined stop zone and command the sign to change the message to indicate that the vehicle is "due" or similar unique wording. The system shall detect when the current next vehicle for a stop departs the defined stop zone and clear that vehicle from the display within a 30 second period. After clearing the departed route, the system will automatically change the displayed data to reflect the next vehicle arrival.

Messages about arrival predictions where multiple routes approach a stop, or additional text messages, shall be displayed on multiple sign rows where available or in an alternating manner for a single row sign. The system shall allow the user to adjust the time period for which each part of an alternating message sequence is shown. The system shall allow the user to view current messages or preview future messages for any sign in the system. The system shall display any alarm messages received from the signs to the dispatcher using the tabular display.

TELEPHONE-BASED REAL-TIME INFORMATION SYSTEM

The proposer should provide information on a system that will allow GLTC customers at any bus stop to call in and find out the next time a specific route will be arriving at that particular bus stop. Ideally, the system will allow the customer to first enter a bus stop number, then the customer will be presented with a list of routes which serve that particular stop, the customer will choose their route, then the system will verbally read the next one to three arrival times for that route. The system should be configured as above but allow the customer the option of choosing a major bus stop from a list (transfer area, shopping areas, hospitals, etc) and find real-time bus information for a specific route.

This system must present the same information to customer using the phone system as is being presented to dispatchers via the CAD/AVL software, and customers via internet, text message, and email.

GLTC is looking for the lowest year-to-year operational costs. We believe the system will be used extensively but have no indication as to the actual call volumes expected. The system must have the ability to be hosted by a third-party service, in-house, or in partnership with another locality. The system must have the ability to switch between these options with minimal system redesign.

MOBILE DATA TERMINAL HARDWARE FOR PARATRANSIT FLEET

The vehicle operator display shall, be readable by the vehicle operator from the seated position under the full range of ambient illumination conditions. This could be accomplished through the incorporation of such measures as vehicle operator controlled brightness and/or /contrast control, anti-glare coating and adjustable orientation mounting.

The device shall be able to be readable while wearing sunglasses. The vehicle operator terminal shall allow the user to adjust the speaker volume at any time while the device is operating.
The application software shall be operated using either programmable function keys (contractor to define number of keys/buttons) or touch screen programmable buttons.

The device speaker shall provide audible feedback when a function key or on-screen key is pressed. Function keys shall also provide tactile feedback when pressed. The vehicle operator shall not be able to manually shut off or disconnect the operator terminal power or manually shut down the application software.

In line with recent transit conventions, if fitted, the operator terminal shall not be usable by the vehicle operator while the vehicle is in motion. It is ECCTA's preference that the terminal only be usable either when the vehicle doors are opened such as at a bus stop, or at traffic signal controlled intersections where the vehicle is at rest.

Provide turn-by-turn directions at request of operator. The system must have the ability for system administrator to activate this feature for all vehicles giving the operator the ability to change the volume only.

The MDTs must be compatible (or made to be compatible) with software provided by all major demand response scheduling software providers. GLTC will be procuring demand response software within twelve months of this procurement by the related option in this bid or by a separate procrurement. GLTC requires that the successful bidder for the CAD/AVL system (and MDTs) must work with the future software vendor to ensure system compatibility.

General Requirements:

- Mobile Data Terminals/Computers are required for all demand response, to support text messaging between central dispatch and vehicle operator, for manifest acquisition, to automate or semi-automate data collection, to provide security enhancements as described below, and other functions as described.
- MDT/MDC mounting and docking systems must be ergonomic and must not pose a safety hazard to the driver nor the passengers.
- The equipment must be installed in a location that minimizes exposure to the elements, is unobtrusive to the driver or entering / exiting passengers, but remains easy for the driver to locate, view and operate while seated in the driver compartment of the vehicle.
- The installation must be sturdy to withstand the bumps and vibration of a heavy vehicle in service on rough streets as well as those caused by the driver entering and exiting the drivers' compartment.
- The installation shall secure the unit from theft or operation by unauthorized personnel during the absence of the vehicle operator.
- The removal of defective or malfunctioning equipment and replacement with a back up unit must be very fast and easy for a non technical person to accomplish so that drivers are back in communication quickly and service delays are minimal
- Proposals shall include the provision of spares so that units can be removed for repairs or routine maintenance without the need to put the vehicle out of service

The MDT/MDC/driver interface equipment will provide the following functionality:

MDT/MDC's are required to interface with the DRT scheduling software and AVL system in order to provide a dynamic tool for communication of information about vehicle assignments, status and condition between the vehicle and the Dispatcher or other management workstations requiring operating data from the vehicle.

Enable text messaging between driver and dispatcher to improve the accuracy and effectiveness of the information communicated.

The display will be clearly visible under bright daylight as well as dark conditions and from many viewing angles to comfortably accommodate drivers of various heights and seat adjustment preferences without having to move the unit around.

The display will accommodate an adequate number of lines and characters to allow the message to be easily read by the vehicle operator. An example would be to allow a paratransit driver to read the

complete passenger name, address, destination and any special instruction about the assignment on one screen without having to scroll. Any requirement for users to learn special abbreviations and message codes in order to understand information being transmitted or to compose messages to transmit must be minimized. Special key strokes or abbreviations for routine instructions or responses are acceptable to save time.

The alphanumeric keypad and / or touch screen will be user friendly and intuitive in operation.

There will be an audible and visible indicator of messages coming in to the Dispatcher and to the vehicle.

There will be an audible tone to indicate that a key is being pressed.

Tones will be audible from the driver's seat in the normal noise environment on board a transit vehicle in service with passenger conversation, road noise, engine noise, etc.

Drivers will be able to review the messages sent and received. It is important for relief drivers to be able to see what instructions are outstanding for the service they are taking over

The MDT/MDC's shall function to streamline the collection of daily operating data and records and ensure the accuracy of the information collected.

GLTC requires collection of

- vehicle pull out and pull in time;

GLTC requires semi-automated (by minimal keystroke sequence) or automated (where appropriate) collection of passenger trip data such as

- time location and mileage when a demand response passenger trip is completed;

- time, location and mileage when any emergency alarm is activated;

time, location and mileage when a text message is received or sent by the driver interface unit and again when the message is acknowledged.

Data collected must be transmitted to central dispatch automatically through out the operating day. All data collected must be stored indefinitely as part of the system database describe in 5.2.D to allow for retrieval by management and supervisors for operating reports, statistical analysis, etc.

Improve system security for drivers and passengers. Provide a "panic button" to be covertly activated by the vehicle operator in the event of a life threatening emergency.

"Panic button" is to be located so that accidental activation by the driver or passengers is extremely unlikely.

Provide a general emergency alarm that can be activated by the driver to notify Central Dispatch of other on board emergency situations that are not necessarily life threatening i.e. mechanical breakdowns, minor accidents, etc.

Other capabilities for the MDT/MDC include:

MDT/MDC with Graphical map display integrated with the GIS map and way finding capabilities installed in passenger service vehicles. that perform effectively with the components being proposed for the total project.

Additional capabilities, features and functions of the equipment proposed and how those enhance the equipment's suitability to this project should be clearly described in the proposal and demonstrated if the proposal is selected for short-list product demonstrations.

Dynamic Message Sign (DMS) in the new central transfer terminal to provide customers with real-time arrival and departure information and additional programmed information. When installed this sign will form the basis of a possible future system of real-time bus information signs at major stops throughout the public transit system.

Sign will be required to interface with the AVL system described in Section 4.5 of this RFP.

The sign messages shall be updated based on information from the AVL/CAD service about the current locations of vehicles scheduled to arrive / depart from the central terminal or other locations as determined appropriate.

The sign shall inform customers about actual / predicted arrival times of buses; provide information about operational delays; and shall be designed to integrate with additional Dynamic Message Signs that may be placed in other areas of GLTC to form a real time bus information system for transit customers.

The sign face and variable characters shall comply with the requirements of the current version of the American's with Disabilities Act Accessibility Guidelines (ADAAG) at the time of implementation, to maximize readability distance. Compliance shall involve the selection of sign face and variable character features including contrasting black background, high-intensity LEDs, character font selection. Number of pixels per character,character aspect ratio and number of pixels separating characters.

The sign shall be capable of being locally programmed and maintained using a laptop computer or other portable programming device (e.g., via an RS-232 console port). These devices may also be used for performing routine diagnostic maintenance on the sign.

The central dispatch system shall be used to monitor and control the Real-Time Arrival Sign System and to provide authorized personnel with a way of constructing and sending messages to be displayed on the sign(s) at the equipped locations.

The DMS shall operate in the harsh transit environment, including the effects of extreme weather condition on outdoor-deployed equipment. The display signs and monitors shall be watertight and sealed against particulate matter invasion.

DEMAND RESPONSE/PARATRANSIT SOFTWARE

It is GLTC's intent to acquire a robust but easy to use demand response scheduling software package for use by our Paratransit Service. In general, the software package must be compatible with the CAD/AVL system being procured in this solicitation. The package must be able to provide electronic manifests to mobile data terminals on the paratransit vehicles via the same communication system setup for the CAD/AVL system. The package must have the ability to add, remove, and modify scheduled trips on the fly, and have the changes transmitted to the vehicle/operator after the changes have been accepted and applied by a dispatcher or scheduler. The software should also provide frequently updated estimated time of arrivals for customer service staff answering "where's my ride" type inquiries from customers.

At GLTC's discresion the software may be implemented simultaneously with implementation of the CAD/AVL system or after implementation of the CAD/AVL system has occurred. GLTC will take into consideration the suggestion of the successful bidder on this matter.

The successful bidder must assess the feasibility of importing customer data and past trip data from GLTC's current demand response software into the new software. GLTC would prefer to import at least one year of trip records along with all basic customer information into the new software package. If this is not feasible then the bidder must include information on the best method of storing and accessing this information. This method should be outlined in the bidder's implementation plan.

The bidder shall submit an implementation plan that outlines how GLTC will switch from the existing software to the new software. The plan should include software installation, staff training, operator training on MDTs, administrative training (reports, monitoring, etc), method for switching over to new software, and method for storing/accessing information stored on existing software (if not imported into new software/database).

The following sections of the CAD/AVL specifications will also apply to the demand response software implementation:

- contractor responsibilities (p. 10)
- specific contractor responsibilities (p. 10)
- GLTC responsibilities (p. 11)
- computer environment (p. 11-12)
- future communication requirements (p. 13)
- acceptance tests (p. 32-38) – testing will ensure proper function of the software and database, MDTs, data transmission to/from vehicle MDTs, reports, etc
- instruction and training (p. 38-42)
- 2.1.2 Software requirements and features
- 2.1.3 Warranty and maintenance
- 2.1.4 Resource sharing with other localities

Payment for this option will be as follows:

- Software installation, data importation, and initial testing – 60%
- Completion of training, beginning of successful client use – 30%
- Successful client use for six months following end of training – 10%

General Software Specifications

GIS Mapping

1. Use digital maps to geocode locations and calculate distances.
2. Geocode locations by several means, including:
    a. Mouse clicking the location on the map
    b. Matching address information to the map data
3. View major features of service areas, including roads, railways, water features, buildings and various kinds of polygons, as well as routes and runs.
4. Generate a street route between points.
5. Display additional layers over the map, like aerial photos of the area.
6. Navigate the system map – including the ability to resize, zoom, pan.
7. Change map feature attributes (color, width, dotted or solid, zoom threshold).
8. Define polygons for many uses, such as boundaries for service areas and sub areas, fare zones, congested areas.
9. Select which streets, polygons or other map features appear on the map.
10. Find specific streets, cross streets and street ranges using zip codes and addresses to verify locations.

Parameter Settings

The system administrator shall be able to define the categories of ancillary data used to register clients and book trips. Categories include:

- Address types
- Contact types
- Location types (e.g. medical, government, shopping, recreation, etc.)
- Polygon groups (e.g. ADA corridors, service polygons, fare polygons, etc.)
- Space types (ambulatory, wheelchair, scooter, etc.)
- Passenger types (client, attendant, companion, etc.)
- Disability types
- ADA types (e.g. full, conditional, temporary, etc.)
- Mobility aids
- Service types (ADA, corporate shuttle, etc.)
- Load times for different services (by person, by location, by trip)
- Purpose of trip
- Fare types
- Zone to zone fare calculations
- Funding sources

- Funding allowances

Client Registration and Management

1. Register clients with the following client information: disability type, space requirement, load/unload time, companion animal, fare type, paratransit service type, comments, funding sources (including default) and funding date, application, eligibility and suspension dates.
2. Create multiple registered addresses for a client (home, work, etc.); specify effective dates for the client addresses.
3. Register client contact information; specify contact devices (phone, pager, etc.).
4. Search for a specific client record using partial name, client number, Social Security Number/ Social Insurance Number, date of birth and phone numbers.
5. View a list of all registered clients.
6. Define groups of clients that can be used for group booking.
7. Add/remove clients to/from client groups.
8. Track client cancellations, no-shows, etc.

Trip Booking and Administration

1. Book casual or subscription (recurring) trips.
2. Book a trip specifying either a pick-up time or a drop-off time.
3. Receive alerts if a client is suspended/inactive when entering a new trip request.
4. Generate continuation or reverse bookings for multi-leg trips.
5. Receive an automatic warning when attempting to book a trip that conflicts with another booking.
6. Create a booking for a group of clients and provide ability to have a common origin, destination or both.
7. Assign and remove clients from group bookings.
8. Save trip requests for later scheduling.
9. Proceed immediately from booking to real-time scheduling.
10. For subscription bookings, specify when the booking is valid including the following:
    a. From and To dates and days of week
    b. Recurring bookings on a specified day of the month
    c. Recurring bookings on a specified day of the week
    d. Recurring bookings, that happen every other (or every 3rd, etc.) day
    e. Prevent booking from happening on certain days
    f. Display a summary of when the booking is valid on a calendar
11. For subscription bookings, specify which runs are preferred so that the scheduling system favors those runs when providing an automatic solution.
12. Suspend and resume a subscription trip.
13. Discontinue/cancel a subscription. Subscription trips already scheduled to runs will be cancelled.
14. Indicate the reason for or circumstances of trip cancellations using codes.

15. Define duration of stay for each client trip.

Common Locations

1. Create common locations, such as hospitals, doctor offices, schools, tourist attractions, etc.
2. Specify address of a location and provide ability to change it at a specified date.
3. Register location contact information; allow defining contact devices (phone, pager, etc.).
4. Provide ability to display locations on the map as a permanent layer.
5. When booking a trip, allow for easy selection of a location as trip's origin or destination.
6. Look up by entering location name.

Fares

1. Define fare types, including flat fares, zone fares and distance fares.
2. Define funding sources.
3. Automatically calculate the total fare based on the fare type that applies.
4. Automatically calculate the percentage of a fare that will be paid by the funding source.
5. Track usage of prepaid fares. Show record of amount in customer account and deduct fare on a per trip basis.

Vehicles

1. Define vehicle type
2. Define vehicle attributes such as low floor, capacity, number of wheelchair securement areas, etc

Runs

1. Capture details of a run including name, type, days of operations, pull-out/pull-in times, garage, driver and vehicle (optional), vehicle type, capacity, maximum service time, speed factor, and service area.
2. Create pre-scheduled runs that include all subscription trips and other standard events for a weekday schedule.
3. Create live runs that include all events scheduled for a particular date.
4. Add new runs to live schedules to accommodate extra trips.
5. Delete runs from master, template and live schedules.
6. Assign a vehicle and driver to a live run.
7. Search for runs according to various criteria including name, type, effective dates, etc.
8. Automatically verify whether changes to run specifications affect previously scheduled trips.

Scheduling

1. Add and delete schedules.
2. Automatically load schedules into the system so that trips can be scheduled and the schedule optimized.
3. Suggest vehicle type based on vehicle attributes. For example, do not assign more wheelchair passengers than a vehicle can fit.
4. Set up automatic creation of schedules (e.g. 14-day window).
5. Set speed factors that modify the average speed of vehicles to fit varying patterns in traffic.
6. Define the maximum on-board time for clients.

7. Perform single insert scheduling.
8. View multiple run solutions for a booking and select the most appropriate.
9. Update a schedule in real-time.
10. Schedule any number of days in advance up to same-day scheduling.
11. Negotiate with the client for the most efficient trip while considering customer service issues.
12. Add trips to schedules on the day of service.
13. Re-optimize a schedule on the day of service.
14. Produce multiple scheduling solutions for the same run.
15. Adjust parameters and filters while scheduling to optimize scheduling solutions:
    a. Adjust the windows of time in which the system will search for pick up or drop off solutions.
    b. Adjust the number of trips that the system batch schedules at one time.
    c. Adjust the maximum number of solutions the system will produce.
    d. Optimize trips using street routing.
    e. Adjust search time (length of time system searches for solution before timing out).
    f. Adjust costing weights to determine where priority is placed when the system searches for solutions.
    g. Look for scheduling solutions within a particular run or runs.
    h. Limit geographic regions for service.

16. Display and verify the integrity of runs and itineraries on GIS map.
17. Edit details of a booking during the scheduling process.
18. Reschedule trips and re-sequence runs using drag and drop functionality.
19. Batch schedule an entire day of trips “from scratch.”
20. Filter schedule information according to trips, runs, run itineraries, slack time and deadhead time.
21. Adjust rectilinear time calculations by several means including time of day, geographic barriers, additional boarding/disembarking time, speed by distance (for longer trips)
22. Exclude vehicles from solutions where there are geographic and client limitations.

Dispatching

1. Assign vehicles and drivers to runs.
2. Receive alerts about scheduling violations as they occur.
3. Monitor and dispatch schedule changes (undispatched events such as pick ups, breaks) throughout the day.
4. Monitor vehicle’s current activity and on-time performance.
5. View schedule changes only or in the context of run itinerary.
6. View unscheduled trips
7. View unassigned runs.
8. Automatically, based on AVL/MDT data, mark pickup as performed, no-show, etc.
9. Manually mark an event as performed.
10. Mark an event as arrived.
11. Unscheduled a trip.
12. Cancel a trip.
13. Mark schedule changes as delivered to the driver.
14. Filter vehicles and runs by time period.
15. View runs for which vehicles have not been assigned.

16. Reassign a run to another vehicle.
17. Automatically reassign all trips to appropriate runs in the event that a vehicle is taken out of service.
18. Reassign a driver to a run.
19. Record odometer readings from driver manifests into the system.

Reports

1. Allow for ad-hoc reports and export.
2. Generate client no-show letters based on variety of no-show rate calculation, for example number of no-shows in a specific time period, percentage of total trips, etc.
3. Produce a variety of standard reports, including:
    - Cancelled, Missed, No Show trips
    - Daily Operations
    - Denials
    - NTD Standard
    - On-time Compliance
    - Optimization
    - Route Productivity
    - Time and Distance
    - Driver Manifest
    - Trip Count
    - Trip Hours Productivity Details
    - Trip Distance Productivity Details
    - Funding Source

Mobile Data Terminal (MDT) Functionality

1. The MDT should transfer demand response trip data back to the demand response/paratransit software in real-time or with a brief delay (30 seconds or less, preferably).
2. Trips should be able to be sent to the MDT in a varity of methods including, but not limited to, one pick up or drop off at a time, the next three or more (to be set by system administrator) pickups and/or drop-offs, or allow the operator to view all pick ups and drop offs assisted to that specific operator. The idea here is to limit (or not) the operators ability to create their own schedule/route.
3. Operator should be able to, at minimum, enter the following data via touch screen or tactile button. MDT should collect date, time, and GPS location when each of these functions are activated.
    a. Arrived – operator arrived at pick up location
    b. Passenger picked up
    c. Add a companion (fare-paying) passenger
    d. Add a personal care attendant (PCA), but only if customer is allowed to have a PCA in their customer record/profile.
    e. Passenger dropped off
    f. Passenger no-show – button should only be active within GLTC's pickup window for the specific pickup AND after wait for five minutes. This should be configurable by the

system administrator.

4. The dispatcher should have the ability to rearrange trips, add trips, and delete trips and have those changes show up on the MDT immediately after the data is added/changed on the operator manifest. The system should notify the operator that a change has been added to their schedule/manifest.

Operator/Employee Data

The system should have the ability to track all employee related data including but not limited to:

1) Employee personal data:
   a) Address
   b) Phone number – home and cell
   c) Email address
   d) Date of birth
   e) Emergency contact information
   f) License expiry date
   g) Medical expiry date
   h) Etc
2) Internal employee data:
   a) Employee ID number
   b) Work classification – full time, part time, supervisor, etc
   c) Hire date
   d) Seniority data (out of training date)
   e) Full-time date
   f)
3) Employee availability schedule
4) Employee absences
5) Employee vacations/scheduled off-time

PART VII

Interested Vendor Form

Greater Lynchburg Transit Company

Request for Proposals for Computer Aided Dispatch and Automatic Vehicle Location (CAD/AVL) System

Please check one:

____ I/We are interested in submitting a proposal for the RFP, please send information, addenda, etc to the following person/company.

____I/We are NOT interested in submitting a proposal, please **do not** send any further information, addenda, etc.

Company name:_____

Contact person:_____

Title: _____

Address:_____
_____

Phone:_____

Email:_____

Date:_____