



Background:

Tolltex, Inc. was formed in 1994 to address the system integration needs of the toll collection industry. Projects have included designing and building hardware and developing software. Toll collection systems are transaction-based systems that include real time control and monitoring of sensors installed in toll lanes combined with LAN and WAN communications and database management systems. Much like a point of sale application, a toll collection system provides a user interface for the collection of revenue, a real time monitoring system that checks the operational status of equipment and detail transactions for each payment received. A database management system is used to store transaction data and produce revenue reports.

Software Experience:

Tolltex is proficient in the following areas:

- Real Time "C" Programming;
- C++ Programming;
- QNX, LINUX, and NT Operating Systems;
- QNX Photon Application Development;
- QNX Embedded Systems Development;
- TCP/IP Ethernet Socket-level Programming;
- Design of Local and Wide Area Networks;
- Sizing and Configuration of Application Systems;
- Oracle and Sybase Database Management Systems;
- Oracle Forms, and SQL;
- Erwin Data Modeling;
- PLC Ladder Logic.

A strength of our staff is their ability to design and develop the software needed to integrate various devices and sub-systems together.

Hardware:

- Intel PC Client/Server Platforms;
- Touch Screen Technology;
- Tolltex also designs and builds systems according to client requirements. Some of the products we provide can be seen on our web site www.tolltex.com.

Tolltex, Inc. - Major Project Experience

1. Florida Department of Transportation - Provided 72 lanes of Automatic Coin Machines including final assembly of ACMs, lane controller hardware and software, collector training, and maintenance training.
2. Florida Department of Transportation - Designed and provided 466 lanes of lane equipment for the SunPass ETC system. Equipment supply included lane controllers, treadles, and loops. Also provided lane controller software for mixed-use lanes for ETC integration with manual terminals, coin machines, and ticket issuing machines. Integration of the lane controllers and equipment was made to Florida's existing plaza/host computer via a local area network.
3. Florida Department of Transportation - Contracted to provide custom software integration services including:
 - Development of an automated method to distribute software throughout the State of Florida's 1,100 toll lane system. Previously, State personnel manually loaded operating system software, application software, and system configuration data, which was cumbersome and prone to errors. The new method we developed uses the State's wide area network and a central server to load and manage all software onto any lane located at any plaza throughout the State of Florida.
 - Development of a new method of interfacing with the State's older Automatic Coin Machines (ACM). With the introduction of ETC, patrons are given the choice of either paying the toll with coins or via their ETC account. The older ACMs did not allow this mixed-mode of toll collection due to the fact that devices such as traffic lights, automatic gates, loops were connected and only controllable by the old ACMs. The new method we developed uses new distributed input/output methods that allow our lane controller to fully control the old ACM as well as to support payment by ETC transponders.
 - Development of a standard method of testing all software in use throughout the State's system. The Florida system is large and has many different types of toll collection including ETC, open manual, closed ticket systems (entry and exit lanes), automatic ticket issuing systems, automatic coin machine lanes, and reversible lanes. The software for each different type of lane is based on our core lane controller software. The new software we developed allows for a standard method of testing changes made to each different type of lane. This new standard testing tool is of a great value to the State due to benefits and time savings it offers for implementing changes on what is the largest toll system in operation in the US with more than 1,100 toll lanes.
4. Harris County Toll Road Authority, Houston, Texas - Supply of 155 Stainless steel receipt printers that we custom fabricated for use in Manual Collection lanes and Automatic Coin Machine lanes.

5. Mitsubishi Heavy Industries (MHI), Kobe Japan - During the first quarter of 2003, we completed the development of a new Automatic Vehicle Classification system (AVC) for use by MHI. The AVC consisted of an embedded processor, fiber optic treadle sensors, and light curtains. The fiber optic sensors are used to count axles and detect the presence of dual tires. The light curtains provide accurate vehicle separation which is needed to ensure that the correct number of axles and number of dual tires are associated with the correct vehicle. Our RoadMate embedded processor served as the controller to integrate all components together.
6. Kharagpur India - During June 2004, Tolltex successfully commissioned a 10-lane system in Kharagpur, India, which is located approximately 3 hours South of Kolkata. The system was part of the National Highways Authority of India (NHAI) newly constructed NH-6 toll road. Civil work for the project including construction of the roadway, plaza building, and toll booth area was performed by Hindustan Construction Co. Ltd., of Mumbai (HCC). Installation work was performed by Metro Road Systems Pvt. Ltd. of New Delhi (MITS) who is also responsible for providing system maintenance and ongoing user training and operations support.

This system features touch screen terminals, lane controllers, receipt printers, a Local Area Network, a complete revenue audit system, and a moneyroom sub-system.

7. Pre-Paid Account Software - During July 2004, Tolltex successfully added pre-paid account software to the previous system we delivered to the State of Alaska. This software sub-system allows accounts to be established for commercial accounts such as bus and trucking companies. These accounts allow pre-paid trips to be purchased in advance. Drivers present ID cards to collectors in the lanes to use the accounts.
8. Alaska Department of Transportation, Whittier Alaska - Complete toll collection system for a single toll plaza tunnel during the year 2000. Supply was lane controllers, toll terminals, receipt printers, island traffic signals, violation alarm, loops, slot card readers, local area network, central computer, database, audit reports, real time monitoring software, two types of credit card payments, and modem transfer of credit card data to clearing house for electronic funds transfer.

During the year 2002, the State of Alaska decided to add support for 4 different classes of vehicle, and two different types of payment. The new payment types included the sale of discounted ticket books and a seasonal pass that was available to commuters. To meet these new needs, the stainless steel manual toll terminals were replaced with color touch screen toll terminals. Bar code scanners and a completely new database were added to support the new processing needed for discounted tickets and seasonal passes. The challenge of making such a major change to the operations of an existing toll facility was preserving all existing transactions that were generated over two years of previous operations. To address this challenge we developed special software that completely re-created each transaction in the format needed by the new system. All toll collectors as

well as supervisory staff had to be re-trained by Tolltex staff due to the completely new operational procedures and equipment that we provided to implement the changes. The commissioning took place during June 2002.

9. Jalan Duta Expressway, Malaysia - ETC system on ticket-based toll road. Work included providing lane controller hardware/software, plaza software for real time monitoring, local area network, wide area network, host computer database for audit reports, and tag store database issuing ETC accounts.
10. Hopetech Sbd, Kula Lumpur, Malaysia - Automatic Vehicle Classification (AVC) product for 20 lanes. Work included the design and supply of a custom made embedded processor with software to classify vehicles according to the number of axles, number of dual tires, and height of the vehicle over the front axle.