TECHNICAL REQUIREMENTS

Note: Any gaps in the ID Numbers in the Technical Requirements are intentional. Additional “Value Add” Technical Requirements may be set forth in Exhibit D to the Agreement (TSP’s Commitments, and Clarifications, Proposal Modifications) based upon the Toll System Provider’s Technical Proposal.

System Architecture Requirements

Req ID	System Architecture (Section SA)
SA-001	The Toll System Provider shall provide equipment and technology that has already been designed, developed, tested, and currently is deployed on another AET System with a similar scope and in a similar or larger revenue operation. (i.e. multiple toll zones, reversible lanes, "off-the-shelf" BOS/CSC)
SA-002	The Toll System Provider shall provide a System which provides a future upgrade path throughout the Term of the Contract, including the extension.
SA-003	The Toll System Provider shall provide a System which provides redundancy for the TCS such that the TCS will meet and continue to meet all Performance Requirements as outlined in Section PR of the Technical Requirements at all times.
SA-004	The Toll System Provider shall configure all servers, desktop and tablet computers to have virus protection and intrusion prevention Software that automatically obtains definition updates according to an approved, recommended, and configurable maintenance schedule provided in the Maintenance and Support Plan by the Toll System Provider. Note: Virus protection Software is not applicable to Linux based platforms provided by the Toll System Provider.
SA-005	The Toll System Provider shall: 1) integrate the ETC into the Roadside System; 2) certify during the Installation and Delivery Phase and the TCS Operations and Maintenance Term that the Toll Zones are tuned and maintained to the ETC Contractor’s specifications; 3) synchronize all ETC readers that are in the same Toll Zones; 4) analyze the site conditions, and install and configure all required sensors and Hardware in accordance with the Technical Requirements; 5) ensure full sensor coverage at all areas of the Toll Zone; 6) ensure front and rear ALPR cameras provide image coverage at all areas of the Toll Zone including during individual camera failures and excessive glare conditions and other extreme weather conditions; and 7) integrate all components of the Roadside System to provide a fully functional and operational TCS.
SA-006	[Intentionally not used.]
SA-007	All data entered or generated in the TCS shall be retrievable through reports, applications and screens via tools by TCS authorized users at remote locations.
SA-008	[Intentionally not used.]
SA-009	All Traffic, Financial and Event Transactions and images shall be retained on-line for one (1) year after the date of Reconciliation, and shall be archived and stored for 10 years. Archived data shall be recovered and made available to the Joint Board within 48 hours of a request made by the Joint Board.
SA-010	All TCS system logs shall be retained on-line for one (1) year and then shall be archived and stored for 10 years.
SA-011	All data except TCS system logs shall be retained on the server in accordance with requirements of Indiana and Kentucky state statutes and administrative codes as may be in effect during the Term of the Agreement.
SA-012	The Toll System Provider shall provide a quarterly written report that shows data backup and retention status for all elements of the System (e.g. Roadside System, BOS); and System access audit reports shall show the user access data and modification to the access made.
SA-013	The Toll System Provider shall provide a backup and archiving schedule and Plan for the System and staff (if any) required for backing up the System. The backup Plan (included in the Maintenance and Support Plan) shall include data type and frequency of backup. Data related to the following shall be included in the backup Plan: application and associated configuration, Transaction and data information, database, operating systems, account management system, and Transaction system.

Req ID	System Architecture (Section SA)
	System Scalability
SA-015	The Toll System Provider shall provide a communications bandwidth sufficient to handle all System functions and ensure the data collected by the Roadside System is accessible from the CSC and TOC in near-real-time. Near-real-time means the user actions necessary to remotely access the TCS are of duration less than 2 seconds.
SA-016	The TCS database management system shall be scalable to process at least five million (5,000,000) Transactions per day plus all associated ancillary messages without major architecture changes to the database management system.
SA-017	The TCS storage shall be scalable to store at least five million (5,000,000) Transactions per day, which number is intended to include all Traffic Transactions, Financial Transactions and Event Transactions, without major architecture changes to the storage system for at least one (1) year after the date of Reconciliation. Note: The Toll System Provider shall size the system to work in accordance with the expected traffic based on information provided in the Traffic and Revenue Study provided to KYTC by Steer Davies Gleave. This could be done upon initial deployment or scalable as required through the term of the Contract to meet all Technical Requirements.
SA-018	The TCS must retain Violation enforcement images and associated Transactions online in the BOS for one (1) year after the date of Reconciliation. Note: Valid ETC Traffic Transactions may be removed after they have gone through the OCR process and validated that they are not on the Watch List.
SA-019	The TCS BOS shall be configured and sized to support at least fifty (50) concurrent users, which shall include 10 concurrent Joint Board users, and shall also support a growth rate of 15% per annum without any degradation in performance. Note: This requirement assumes that customers will only access the System from the Customer Website and customer access is not included in this Technical Requirement.
SA-020	The TCS shall provide load balancing in accordance with the RS, SA and BO sections of the Technical Requirements.
SA-021	The TCS shall transmit and post to the BOS database available for reporting Financial, Traffic and Event Transactions in near-real-time between the Roadside System and the BOS. Near-real- time for this requirement is defined as Transactions sent from the Roadside System to the BOS not less frequently than within four (4) hours.
SA-022	The Toll System Provider shall integrate all Transponder lists and Toll Rate Schedules in the TCS such that the BOS has a record copy of the Transponder list and corresponding Toll Rate Schedules for the time of the Traffic Transactions.
SA-023	The Toll System Provider shall provide full integration between the CSC and BOS, including but not limited to: association of all customer contacts with the customer account and association of detail regarding the customer contact with the customer account (for example, wrap codes, email, letters, lockbox operations, and ad-hoc authorized user entered information).
SA-024	The TCS shall provide graphical user interface (GUI) based applications that shall accommodate any authorized device connected to the System and application based on access roles and security levels.
SA-025	For any systems accessible by a commercial internet browser, the Toll System Provider shall provide secure browser-based system access and navigation for internal users and role-based access for external users using the latest version and the previous version of a web browser approved by the Joint Board. Acceptable web browsers include, but are not limited to the following: Microsoft's Internet Explorer, Mozilla Firefox, Google Chrome, Apple Safari iOs.
SA-026	The Toll System Provider shall provide secure browser-based access and navigation of the Customer Website for Project customers using the latest version and the previous version of a web browser approved by the Joint Board. Acceptable web browsers include, but are not limited to the following: Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Apple Safari iOs.
SA-027	The TCS shall provide the following regarding web navigation: 1) self-service navigation that is optimized for speed regardless of the web browser used; 2) the capability to detect and report errors if the browser used to access the Customer Website is outdated or not supported; and 3) paginate content in various ways corresponding to differences in device characteristics.
SA-028	The Customer Website shall be 1) accessible to mobile devices irrespective of differences in presentation capabilities and access mechanism; and 2) accessible on a range of mobile devices, including but not limited to: smart phones and tablets.
SA-029	The TCS Customer Website shall support the latest versions of mobile operating systems, including but not limited to: Apple's Safari iOs, Android operating system, Windows operating system, BlackBerry operating system.

Req ID	System Architecture (Section SA)
SA-030	Any original Financial Transaction, Traffic Transaction or Event Transactions entered in the System shall only be modified in the System or deleted as necessary to move Transactions to long term storage in accordance with the archive requirements. Any updates to the data associated with any message shall be traceable to the original records. The TCS shall also identify the user that made the original record and any users that update original records.
SA-031	Any manual intervention required shall be only by authorized users and a full audit trail of such manual intervention shall be provided with appended records within the TCS.
SA-032	All confidential data (e.g. passwords, authorized user names and access rights) and Personally Identifiable Information shall be encrypted at a level of PCI commensurate with the size of their organization.
SA-033	The TCS shall provide access privileges for different levels of user authorization which shall be fully configurable by a System administrator.
	System and user configurable parameters
SA-035	The TCS shall provide the functionality to create, manage, store and automatically transmit the then-current Toll Rate Schedules (including toll rate schedules for special events), per Toll Zone, by authorized users. The TCS shall create an audit trail that logs when the rates were configured, the user making the change in the System and the time at which the rates were effective.
SA-036	The TCS shall provide a default rate table for all Toll Zones when no Toll Rate Schedules can be found. The toll rate values in the default rate table shall be approved by the Joint Board.
SA-037	The TCS shall provide storage capacity thresholds which shall trigger alarm messages to be generated by and logged into MOMS. These thresholds shall be configurable between 0% and 100%.
SA-038	The TCS shall be configurable based upon a confidence rating for video image processing transactions.
SA-039	The Toll System Provider shall provide a TCS with a disaster recovery system including facilities, Hardware, and Software that will ensure that the TCS continuously meets all availability performance guarantees set forth in TR Section PR. The TCS shall allow for continued use of the CSC, Roadside System and BOS in degraded mode whenever necessary.
SA-040	The TCS shall recover all Mission Critical Systems of the TCS within 4 hours of the time of failure. The TCS shall recover all Business Critical Systems of the TCS within 8 hours of the time of failure.
SA-041	The Toll System Provider shall provide a disaster recovery site that shall be located at least 100 miles from all of the TCS Sites used for the Project.
SA-042	The Toll System Provider Disaster Recovery System Plan shall ensure no data will be lost prior to, during and after a disaster.
SA-043	The Toll System Provider shall ensure that the application and use of the ETC Components complies with all applicable FCC regulations. The Toll System Provider shall secure a FCC site license for each Toll Zone on behalf of the Joint Board. The FCC site license shall be transferred to the Joint Board no later than 60 days after Revenue Service for each Bridge.
SA-044	The Toll System Provider shall install, configure, tune, test, and integrate the ETC Components into the Roadside System and ensure that they are operational and meet all functional and Performance Requirements. Note: The ETC Component includes all components in Exhibit L required by the Toll System Provider to operate the TCS at the Performance Requirements.
SA-045	The Toll System Provider shall provide ICDs including an interface test plan in the Master Testing and Commissioning Plan (see TR Section TP for plan requirements) for all single and two-way external interfaces including, but not limited to: a) Interoperable agencies b) Transponder statuses c) Mobile devices d) Cash bank(s) e) Credit card payments f) Court(s) g) Collection agency(s) h) Walk-up Centers i) Traffic management center(s) j) Transponder management k) Retail outlets and kiosks l) Legal entities (for persons of interest) m) Mail address skip-tracing service n) Indiana and Kentucky DMV o) Third party suppliers (e.g. out-of-state registered owner look-up) p) Financial management system

Req ID	System Architecture (Section SA)
SA-046	The ICD shall provide for a message level interface. It shall include protocols used in the interface, a brief concept of operations that describes how the messages are used, the related Business Rules and all networking and interface requirements including network diagrams. The ICDs shall include interface test procedures that describe all aspects of the interface testing and validation of each test requirement.
SA-047	The TCS shall generate files to transmit, receive and process information with multiple registered vehicle owner look-up service providers and DMVs via electronic interface portals provided by the Toll System Provider. It is desired that if the registered driver information is available in addition to the registered owner information, this information be provided by the Toll System Provider. Note: Registered driver information may be used in the case of lease or fleet vehicles.
SA-048	The TCS shall generate reports that detail all interoperable Transactions sent and received from or to the interoperable agencies.
SA-049	The Toll System Provider shall provide a fully functional TCS network from the Toll Zones to the BOS. The architecture shall use an existing communications service provider to provide "last mile" infrastructure (e.g. conduits and cable) and network connectivity from the toll equipment pad to an existing fiber optic commercial network owned by a commercial carrier. The Toll System Provider shall contract with a local communications service provider to provide data communications, including all necessary fiber cables and network equipment, from the Toll Zones to the local data center to be approved by the Joint Board. The Toll System Provider shall provide connectivity from the Toll Zones to an existing commercial service and back to a local data center that supports multiple internet service providers. The Toll System Provider shall connect its BOS with other supported external services (e.g. Walk-up Center, lockbox, and retail distribution centers) using commercial internet service providers. The high level architecture is described in Attachment C-1 of the Technical Requirements. The Toll System Provider shall comply with the architecture specified in Attachment C-1 or an alternative architecture approved by the Joint Board in its sole discretion.
SA-050	The Toll System Provider shall manage and be responsible for all elements of the network communications in the TCS. The actual, direct costs charged by the data communications service provider to TSP shall be billed to the Joint Board as a "Pass-Through Cost Item" without any mark-up. The Toll System Provider shall manage the identification and repair of any communications outages. The Toll System Provider shall require a monthly report from the network communications service provider that will be distributed to the Joint Board in the Monthly Operations and Maintenance Report. The content of the reports and all service level requirements will be negotiated after contract award. The Toll System Provider shall contract directly with the communications service provider for a 3 to 5 year contract on terms and conditions approved by the Joint Board, in its sole discretion.
SA-051	The Toll System Provider shall provide, update and maintain a Data Mart for the TCS that shall be available to and accessible by the States' Parties at all times from and after six months prior to the first Tolling Readiness Deadline. The Data Mart shall include ETC and license plate transaction data and ETC and license plate account data from the Roadside System, BOS and CSC in its native format and not aggregated to summary level data. The MOMS work orders and system tickets shall also be made available in the Data Mart. The purpose of this Data Mart is for the States' Parties to develop States' Parties' reports outside of the TCS The data retention period for the Data Mart shall be one (1) year..
SA-052	The Data Mart shall provide for the use of an Extract Transfer Load (ETL) with a full written data dictionary of the TCS data or a separate copy of the data to be replicated by the States' Parties for their own reporting. Note: States' Parties may retrieve this data using one methodology or two separate methodologies as described below. Alternative 1 is to provide a copy of the database management system for the States Parties to use the data within the Data Mart. Alternate 2 is the use of an Extract Transfer Load (ETL) tool. The Toll System Provider shall accommodate both methodologies of retrieving this data from a specified operational database within the TCS
SA-053	For the ETL method, the Toll System Provider shall provide all data available in the TCS to the ETL to be accessed by the States' Parties no less frequently than every 24 hours. The Toll System Provider shall provide this capability no later than six (6) months prior to the first Tolling Readiness Deadline.

Roadside Requirements

Req ID	Roadside Requirements (Section RS)
RS-001	The Toll System Provider shall provide a Toll Collection System that accurately detects, classifies, rates and reports vehicles. The major function of the Roadside System is to accurately detect, classify and identify every vehicle passing through Toll Zones including the bi-directional lanes. The TCS shall provide the following functions: 1. Detect, classify and rate vehicle Traffic Transactions in accordance with accuracy requirements and Performance Requirements; 2. Provide backup and archiving functions; 3. Operate in degraded modes with redundancy; 4. Be audited from BOS to individual lane Traffic Transaction records; and 5. Be a single source of toll collection data. The TCS shall generate a Traffic Transaction for every vehicle passing through any Equipment Lane of the Toll Zone. The Toll Zone shall accurately read Transponders, capture license plate images and classify vehicles anywhere in the Toll Zone between the left edge of the left shoulder and the right edge of the right shoulder, unless otherwise directed by the Joint Board.
RS-002	The TCS shall implement classification-based toll rates for specific Toll Zones and specific lanes. Rates set by the Joint Board may vary by time of day and classification. The TCS shall categorize vehicles into at least ten unique classifications without the Joint Board incurring additional charges from the Toll System Provider. The Toll System Provider shall provide a vehicle classification system that provides sufficient vehicle characteristics to categorize all vehicles based upon FHWA vehicle classifications. Each vehicle type shall be mapped by axle count and/or profile (i.e. length, width, height) to the classification structure presented below that will be finalized with the Business Rules. In addition, the TCS shall identify and record extra axles for each vehicle detected (e.g. passenger vehicle pulling trailer), and assign a corresponding toll rate in accordance with the Business Rules. The TCS shall provide, at a minimum, the following rating categories: 1. By vehicle class, from lowest to highest: a. Class 1 (passenger vehicle), b. Class 2 (small truck), and c. Class 3 (large truck). 2. By type of Transaction: a. Transponder with discount based upon a specified number of trips for a specified period of time (Class1 only), b. Transponder, c. Registered Video, and d. Unregistered Video 3. By other variables such as time of day. The TCS architecture shall support congestion pricing functionality from an external congestion pricing system in the future if required by the Joint Board.
RS-003	The Toll System Provider shall ensure that no Traffic Transactions are lost and shall provide reports and the capability to check Traffic Transaction sequence numbers for purposes of audit and review. Transaction sequence number gaps shall be flagged by the BOS and reported by an alarm in MOMS.
RS-004	The Toll System Provider shall have a Second Source Hardware Plan for all Roadside System equipment, including functionally equivalent second sources for any equipment for which a direct second source is not available.
RS-006	The Toll System Provider shall provide a separate Toll Collection System that can discretely identify Traffic Transactions for each Equipment Lane for each direction of traffic at the Toll Zones.

Req ID	Roadside Requirements (Section RS)
RS-007	The Roadside System shall run independently of the BOS and continue to build Traffic Transactions if communications are disrupted.
RS-008	The Roadside System shall immediately build the Traffic Transaction with the information available, and shall operate in a degraded mode if some components are not functioning so that Performance Requirements are met.
RS-009	The Toll System Provider shall provide a complete Roadside System, with ETC, AVC and Image Processing System, on all Equipment Lanes in the Toll Zone.
RS-010	The Toll System Provider shall provide the network connections between Toll Zones and the BOS. The Toll System Provider shall comply with the System architecture requirements for data communications architecture and all other Technical Requirements when configuring and implementing the network system.
RS-011	The Toll System Provider shall size the communication link to handle all functions of the Roadside System and make the information available at the BOS, CSC and TOC in near-real-time. Near-real-time is defined as access to the Roadside System applications and data displayed from the BOS, CSC, TOC and from a VPN within 2 seconds.
RS-012	The Joint Board will provide the Toll System Provider with a toll equipment site as shown in Attachment C-2. A 120/208 VAC commercial power service meter, provided by others, will be terminated at the equipment pad provided by others. Data communication conduits and a pull string will be provided by others from the toll equipment to the Toll Zone gantry. The final locations of the pads are being reviewed and are not yet final, but it is expected that the toll equipment pads will be within 330 linear feet of the Toll Zone gantry. The Toll System Provider shall provide all cabling and terminations for all data and power between the toll equipment pad and the Toll Zone gantry. A network connection from the toll equipment pad to a commercial service provider shall be provided by the Toll System Provider. Note: Toll System Provider's architecture may include Toll Gantry mounted equipment.
RS-013	The Toll System Provider shall provide a Roadside System with a minimum operational lifecycle of 10 years.
RS-014	The TSP shall provide all installation/setup of the network at the Toll Gantries and at the BOS/CSC, and associated costs shall be included in the Contract Price.
RS-015	All components of all equipment shall be modular in nature for maintenance, testing, and replacement purposes. All components shall be designed such that they are easily accessible with hand tools by maintenance technicians as needed.
RS-017	The Roadside System shall provide lightning and other surge protection such that the equipment can continue to perform without impact on normal functions during an electrical surge on the System. The TSP is responsible for surge protection as to the equipment it is providing, but may use the grounding apparatus provided by the DB Contractor and the Developer. The Toll System Provider shall provide its surge suppression and lightning protection design and plan no later than 180 days after NTP. The Toll System Provider shall implement the approved plan during the installation of the Toll Collection System.
RS-018	The Roadside System shall classify vehicles under all weather conditions without any degradation.
RS-019	The Toll System Provider shall provide remote access to authorized users with credentials and administrative controls of the Roadside System through the BOS. The Toll System Provider shall report each time the TCS is accessed remotely for any purpose, and identify from where and by whom the remote access was generated and make this report accessible to the Joint Board at all times.
RS-020	Toll System Provider shall take reasonable measures to ensure that all equipment in the Toll Zone is secure against damage, theft and vandalism, but is accessible by authorized personnel without special tools or equipment other than electronic or physical security keys or as may be necessary to assist in reaching heights.
RS-021	The Toll System Provider provided equipment shall comply with the latest adopted version of the National Electrical Safety Code as defined in the applicable codes and standards.
RS-022	A Traffic Transaction shall include, but not be limited to the following: date and time stamp, Toll Zone gantry location and lane number, unique transaction sequence number, vehicle classification, state or province, special plate identifier or vertical letter stack, license plate number, ETC Transponder id (if applicable), Watch List status (if applicable, based on plate or transponder read), and the status of lane and Roadside System (e.g. open, closed, maintenance, degraded, etc.).
RS-025	The Toll System Provider shall provide a thin-client application for Traffic Transactions, Financial Transactions and Event Transactions queries and traffic activity monitoring by individuals with proper identification and password authorization.
RS-026	The Toll System Provider shall provide vehicle detection, separation, classification and camera triggering such that there are no single points of failure (e.g. using redundant subsystems - smart loop system and overhead laser scanner) in the TCS, and it shall continue to detect, separate, and classify vehicles and capture front, rear and color overview images of each vehicle without degradation for vehicles traveling at speeds from and including 0 MPH to 100 MPH, in stop and go conditions, and in all weather and lighting conditions.

Req ID	Roadside Requirements (Section RS)
RS-027	The Toll Collection System shall receive and process BOS configuration information including Toll Rate Schedules, Transponder files, video license plate files, and other configurations as required.
RS-028	The Roadside System shall provide one of the following options: 1. Send the transactions to the BOS immediately without batching, i.e., in near-real-time, or 2. Send transactions to the BOS every 4 hours (or more frequently) which would allow batching.
RS-029	The Roadside System shall meet the service level requirements for audit, reporting, and all other business functions. No Transactions shall be lost during periods when communications with the BOS are not available. Transactions shall be available to be manually (via laptop or tablet) downloaded from the Roadside System and BOS in case of long term loss of communications between the BOS and Roadside System.
RS-030	The Toll System Provider shall take reasonable measures to protect the Roadside System from vermin and keep it rodent proof at all times.
RS-032	The Toll System Provider shall provide time synchronization for the TCS. All elements shall use this time for all associated time stamps.
RS-033	The current E-ZPass Transponder list is approximately 44,000,000 entries for approximately 26,000,000 Transponders. The list is expected to be 95,000,000 entries in the next 5 years. The TCS shall process the current size Transponder list and current anticipated growth and shall process E-ZPass transactions in accordance with the E-ZPass policies and procedures.
RS-034	The Toll Collection System shall process E-ZPass Group files or lists received from the BOS including the Transponder list (ITAG file), customer license plate list (ICLP file), invalid Transponder customer list (IITC file), and authorized non-revenue vehicles.
RS-035	The Roadside System shall be remotely accessible and user configurable to view operational status and data for reconciliation purposes.
RS-036	The Roadside System shall be installed and configured for multi-lane free flow tolling operations. The Roadside System requirements apply, and the Roadside System shall accurately process all Traffic Transactions in accordance with the Performance Requirements, regardless of the vehicle position while traveling within the Toll Zone.
RS-037	The Roadside System shall accurately capture and process 2,300 vehicles per hour per equipment lane at each Toll Zone for all vehicle types.
RS-038	The Roadside System shall accurately toll vehicles traveling at any speed up to 100 miles per hour.
RS-039	The Roadside System shall operate so as to meet all Performance Requirements in an ambient (external to cabinet) temperature range of -20˚F to 120˚F in full sun or shade with a relative humidity ambient from 5 to 100 % (external to cabinet).
RS-040	The Toll System Provider shall provide, install and configure a generator that allows the Roadside System to operate without refueling for 72 consecutive hours. The Toll System Provider shall provide a single generator per each Toll Gantry. The Toll System Provider shall provide all labor, materials and equipment and perform all civil work required to prepare a concrete pad for the generator. Note: A diagrammatic view of the toll equipment site including the location of the generator is provided in Attachment C-2.
RS-041	The Toll System Provider shall provide a Changeable Message Panel LED 35 x 7 array Daktronics 1020 DDMS or approved equivalent. The Toll System Provider shall provide a local serial connection and wireless option. The Toll System Provider shall provide, procure, install, test and configure the changeable message panels. The Toll System Provider shall connect the TCS with the sign to update rates via a wireless communication. The changeable message panels shall provide rate information between $0 - $99.99 dollars and shall also be able to display other text information such as No Tolls. Note: The toll rate sign structures and foundations will be provided by others. A diagrammatic view of the toll rate signs is provided in Attachment C-4.
RS-043	The Roadside system shall be sized to operate continuously for 72 continuous hours without interruption in case of commercial power loss.

Back office System Requirements

Req ID	Back office (Section BO)
BO-001	The Toll System Provider shall provide a BOS that consists of a transaction system and an account management system to manage toll accounts and process Traffic Transactions, Financial Transactions and Event Transactions.
BO-002	The Toll System Provider shall provide a complete, functioning, AET System that includes a Roadside System, BOS account management system, image review system and Customer Service Center. The BOS shall be configured and sized to support the functionality of the AET System, and shall also support account and Transaction growth at a rates of 15% per annum without any degradation in performance. The TCS shall collect revenue, accept Traffic Transactions and roadside data from the Roadside System, manage customer accounts, process images for vehicle identification, interface with numerous external systems, offer retail options for transponder sales and distribution, and provide access for toll patrons to utilize other E-ZPass toll facilities. The TCS shall be expandable to allow toll patrons to utilize other nationwide facilities in the future and perform all other functions as necessary to comply with the other Technical Requirements and other Contract Documents.
BO-003	The BO TCS shall have a transaction database, video image storage array and an interface with the Roadside System to receive Traffic Transactions. The BO TCS shall have a CSC account management system, an IVR telephone system, a web interface, a local area network provider, a video image review process, a Disaster Recovery System Plan, an auditing and reconciliation process, interfaces with the CSC, Walk Up Centers, web services, an archiving system, and extensive reporting capabilities.
BO-004	The Toll System Provider shall provide 1) account management and maintenance functions; 2) the Customer Website; 3) Transaction processing for Traffic Transactions, Financial Transaction and Event Transactions; 4) collections transaction processing and interface(s) for both current and past-due accounts; 5) DMV and rental car look-ups and interfaces; 6) functions necessary to allow authorized users to input Toll Rate Schedules into the System; 7) image review processing; 8) Transponder fulfillment functions; 9) IVR phone system for customer service use; 10) Walkup Centers and retail operations support services; 11) distribution of Transponders, reloading and replenishment services and toll and Violation payments collections and processing; 12) payment and credit card processing of Customer Statements; 13) transaction auditing and reconciliation; 14) customer contact services through phone, email, and SMS; 15) automatic generation of Customer Statements and Correspondence production and tracking; 16) operations and financial reporting; 17) remote location account services (Mobile Van); 18) physical and logical security; 19) Hardware; and 20) disaster recovery systems.
BO-005	The Toll System Provider shall provide functionality for mobile operations (off site, not only Walk-Up Centers and retail operations, but mobile van services) for account setup, account management, retail distribution of Transponders and for retail operations. However, the System shall support the use of a mobile van in order to meet this requirement. The mobile van shall be a Pass-Through Cost Item if required by the Joint Board.
BO-006	The Toll System Provider shall provide typical account services including making adjustments to accounts, changing Toll Rate Schedules, processing refunds, handling Violations, closing accounts, denoting customer contact and documenting those contacts, and offering account statements through print, email, and the Customer Service Website.
BO-007	The TCS shall have the ability to search, look-up and find customer accounts using numerous fields including customer name, account number, Transponder number, and address.
BO-008	The TCS shall be able to replenish an account through the use of a credit card, at retail distribution outlets and through the use of cash or credit card at Walk-Up Centers. The TCS shall have a methodology to identify lost or stolen Transponders when a Traffic Transaction occurs using a lost or stolen Transponder.
BO-010	The Toll System Provider shall provide a TCS that assigns static toll rates to Transactions from the roadway based upon the latest Toll Rate Schedule or discounts established by the Joint Board.
BO-011	The Toll Rate Schedules shall be transmitted electronically and updated as approved by the Joint Board. Toll Rate Schedules shall be utilized to establish the numerous toll rates to be assigned based on type of Traffic Transaction (ETC or pay by plate (pre-or post-registered)), vehicle classification, and discounts or promotions.
BO-013	The TCS shall store and link electronic copies of any inbound or outbound Correspondence to an account, including all types of mail, email, regular mail, fax, etc. and the Correspondence shall be visually available to the CSRs. Hard copy Correspondence shall be scanned and converted to a viewable electronic file for storage in the TCS. The TCS shall provide sufficient archiving capabilities for Correspondence associated with each customer account.
BO-014	The TCS shall generate automated notices, letters and communications by regular mail, text messages, fax and e-mail. The Toll System Provider shall provide automated notices, one-time notices, bulk mail notices or individual notices for any Correspondence related to Toll System Provider and TCS operations. This function shall be configurable and shall allow management to prevent any type of notice from being processed automatically. The TCS shall provide functionality to process and send bulk mail Correspondence resulting from notices and general Correspondence. TSP shall provide such notices as are required by the approved Business Rules.

Req ID	Back office (Section BO)
BO-015	The Toll System Provider shall provide a BOS account management system that provides customer service channels by phone, web and an Interactive Voice Response system.
BO-016	The Toll System Provider shall provide a BOS that offers a simple, intuitive process for establishing accounts and managing and modifying those accounts through the Customer Website, through the help of a CSR by phone, through retail distribution outlets, through mail received at the CSC, or through the help of a CSR at a Walk-Up Center. The TCS shall provide an efficient and user friendly platform for CSRs to optimize their time in establishing and helping customers to manage their accounts.
BO-017	The Toll System Provider shall provide a BOS that can provide a resident, commuter and/or local plan. This functionality shall allow eligible customers, as determined by the Joint Board, to have a percentage or fixed dollar amount reduction in their tolls each month after a configurable number of trips on a Bridge. This functionality shall have the ability to reduce toll rates from 0% to 100% tolls for eligible account holders. The functionality shall also include the capability to charge a fixed fee per month, quarter or year for unlimited use of each Bridge and aggregated to all Bridges.
BO-018	The TCS shall provide functionality to transfer an account from one account owner to another account owner using an affidavit process.
BO-020	The TCS shall provide functionality for rental car Traffic Transactions accepted within the E-ZPass system.
BO-023	The TCS shall provide a configurable minimum balance to open an account. The minimum balance shall be configurable by account type (e.g. ETC, registered license plate, commercial, government) and once configured shall allow CSR supervisors to override the minimum balance requirement for individual accounts where necessary. The required minimum balances shall be subject to Joint Board approval.
BO-024	The TCS shall allow accounts to be converted from one account type to another account type. The TCS shall update the Toll Rate Schedules for the new toll account when the conversion occurs in accordance with the Business Rules.
BO-025	The TCS shall provide a configurable low balance threshold for accounts by account type. The TCS shall allow the low balance threshold to be overridden with management approval on a case by case basis. The required minimum low balance threshold shall be subject to Joint Board approval.
BO-027	The Toll System Provider shall ensure consistency of service, regardless of whether these services are provided in-house or by one or several external service providers, by developing policies and procedures and ensuring compliance with these policies and procedures.
BO-028	The TCS shall set up and maintain all account types including ETC Accounts, Registered Video Accounts, Unregistered Video accounts, commercial accounts and government accounts.
BO-029	Any external stakeholders including but not limited to the Joint Board shall have access to review, view, and examine customer accounts in accordance with the approved System Access Control Plan. The TCS shall allow at least 10 Joint Board users to examine customer accounts, concurrently.
BO-030	The TCS shall display in the account the most current address available through DMV look-up or the address provided by the customer.
BO-032	The TCS shall include functionality to re-look-up addresses after lapse of a configurable period of time to ensure the correct address is being used by the Toll System Provider. Note: This functionality is intended to ensure the Toll System Provider has current name and address information for infrequent unregistered customers.
BO-033	The TCS shall have functionality or operations processes to address Customer Statements or Violations notices returned with NIXIE (as defined by the United States Postal Service) codes. The TCS shall use skip tracing or other methods to find and update the correct address associated with customer accounts.
BO-034	The TCS shall provide Customer Statements that shall be configurable by account type.
BO-035	Customer Statements shall be provided to toll patrons monthly and as requested at any time by mail and email. Customers may opt in and opt out of receiving statements.
BO-036	Customer Statements shall be configurable to include a fee to the customer account from $0-$99 per statement. The fee shall be established by the Joint Board.
BO-037	The Toll System Provider shall have a near-real time interface with the Roadside System to transmit Traffic Transaction information from the Roadside System to the BOS and transmit configuration or customer information from the BOS to the Roadside System. Near real time requirements are defined in SA-021.
BO-038	The Toll System Provider shall integrate the BOS with the changeable message panels as outlined in Technical Requirements Section RS. A record of all Toll Rate Schedules shall be stored in the BOS in accordance with the backup and archiving timeframe for the TCS.

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BO-039	The TCS shall have an interface with the E-ZPass system and interoperable agencies, and the Toll System Provider shall comply with the E-ZPass Operating Agreement, any agreements with other interoperable agencies, and all applicable amendments. Note: The E-ZPass Operating Agreement and all associated and applicable amendments as of the date of the RFP are available in the Reference Information Documents.
BO-040	[Intentionally not used.]
BO-041	The Toll System Provider's BOS architecture shall operate within limited degradation for specific failure modes that shall be established during the Business Rules and system architecture review.
BO-042	The Toll System Provider shall process customer payments for tolls, fees and fines via credit card, check, money order, or cash. The Toll System Provider shall provide system functionality to encourage customers to establish auto replenishments for pre-paid accounts.
BO-043	The Toll System Provider shall safeguard cash deposits and shall provide armored car services in accordance with the Safety Plan.
BO-044	The TCS shall process refund requests from customers. Credit card or debit card based toll accounts shall be refunded to the same card. Cash toll accounts shall be refunded with a check mailed to the address of record on the account.
BO-045	Lockbox payments shall be received through an internal or external lockbox. The TCS shall process configurable returned check fees and TSP shall support the occasional times when cash is mailed to the lockbox. Returned check fees shall be identified and the appropriate account shall be charged a configurable fee for a returned check and record of the returned check and the fee shall be linked to the customer account in the TCS.
BO-046	The Customer Website shall provide access for customers who do not have a Transponder to pay tolls, to pay Violations, to sign up for Registered Video accounts and ETC Accounts, and to manage Unregistered Video accounts. Note: Unregistered Video Accounts may be available from the web, depending on the Toll System Provider's design, to pay for tolls prior to the issuance of a Customer Statement.
BO-048	The TCS shall provide functionality for customer account communications and related system updates for adding vehicles to an account, requesting a Transponder, account maintenance communications, and payments, among other customer account communications.
BO-049	[Intentionally not used.]
BO-050	The TCS shall transfer payments between ETC Accounts, Registered Video accounts, Unregistered Video accounts and Violation accounts. The TCS shall accept post payments or other Joint Board designated account types.
BO-051	The TCS shall associate a credit card to an account for the purpose of toll payment where necessary as indicated in the Business Rules. The credit card transactions, debit card transactions, automated clearing house payments and refunds shall be processed in near-real-time. The TCS shall provide for the credit card information to be added, changed, or deleted on the customer account. Near-real-time is defined as an authorization code provided within 2 minutes. The settlement of the transaction may occur up to 72 hours after the time of the authorization.
BO-052	The TCS shall accept and process various types of payments including credit card, debit card, automated clearing house, money order, cashier's check, traveler's check, personal check and cash, and shall track those payments and methods of payment, posting them to the appropriate customer account in near-real-time. The TCS shall provide multiple payment options within one Financial Transaction and shall accept partial payments towards the account balance based on the Traffic Transaction and Financial Transaction posting date/time in a first-in, first-out (FIFO) manner. For credit card, debit cards, and automated clearing house payments, please see definition of near-real-time in BO-051. For money order, cashier's check, traveler's check, personal check and cash, near-real-time means the payments shall be posted to the customer's account no later than 1 business day from the bank making the funds available for that financial instrument.
BO-053	The TCS shall allow for review of Customer Statements by customers at the Walk-Up Centers and the Customer Website.
BO-054	The Toll System Provider shall provide a credit card processing merchant and system for approval by the Joint Board.
BO-055	The TCS shall provide for automatic replenishment of funds for a toll customer account and provide for the acceptance of notifications from banking institutions regarding status of credit, debit, or automated clearing house accounts.
BO-056	The Toll System Provider shall provide a license plate image review system and operations.
BO-057	The TCS shall manually view images to confirm or correct the vehicle LPN and state information when below a specified configuration OCR confidence threshold.

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BO-058	The TCS shall report an exception when the number of image-based trips exceeds a configurable threshold for an ETC Account. The TCS shall change the toll rate from the ETC rate to an Unregistered Video or Registered Video toll rate in accordance with the Business Rules once this threshold is reached. This process shall initiate an alert or BOS ticket.
BO-059	The TCS shall identify License Plate Numbers and jurisdictions from all 50 states and all provinces of Canada. Note: The Toll System Provider shall provide a list of the 15 states expected to originate the most Traffic Transactions within 90 days after NTP.
BO-061	The Customer Website shall allow customers to establish, maintain, update, and review account information, order Transponders, pay Violations, pay "pay by plate" Traffic Transactions, establish Registered Video accounts, and ETC Accounts and make payments via a PCI compliant secure methodology. Customers shall be able to complete all Transaction activities through the Customer Website. The Customer Website shall be user friendly, high quality, attractive and easily understood by toll patrons. The Toll System Provider shall coordinate Customer Website design and content with the marketing firm engaged by the Joint Board.
BO-062	The BOS shall provide information to the CSR regarding account status including but not limited to balance of account, expired credit card information, excessive image Traffic Transactions notification, and outstanding Customer Statements.
BO-063	The Customer Website shall include the following information: road information, branding information, Joint Board contact information (email and phone number), information about how to open a Registered Video account and an ETC Account, information about how to pay a toll after a customer has travelled a Bridge without a pre-paid account, frequently asked questions, any upcoming maintenance or other information and links to other websites.
BO-064	The Customer Website shall incorporate security standards to protect customers from unauthorized access and restrict access to any unauthorized users. At a minimum, customer data shall be password protected and the Customer Website shall include a password change policy. SSL encryption shall be implemented by the Toll System Provider.
BO-065	The Customer Website content management system and actual Customer Website shall be in English.
BO-067	The Customer Website shall include access for customers to Customer Statements and historical data, which historical data shall be available for two years by accessing the Customer Website, and then archived.
BO-069	The IVR and Customer Website shall verify the customer's identity before disclosing or making any updates to customer data.
BO-070	The IVR shall provide access to general information, the option to direct the call to an operator, or direct the customer to select a specific option that corresponds to the customer's inquiry. The IVR shall support a second language, to be determined later by the Joint Board, without any Software changes.
BO-072	The TCS shall maintain a record of customer communications and interactions through the IVR and the Customer Website for customer, Bridge use and account analysis.
BO-073	The IVR shall be integrated with the CSC to allow for transfer of calls and updates to the accounts in near real time. For the purpose of this requirement near real time shall mean that the call is transferred within 2 seconds upon initiation of a transfer by the customer.
BO-074	The Customer Website and IVR shall allow the customers to make replenishments, post-paid toll payments and Violation payments, and update account information.
BO-075	The IVR and call management solution shall track and compile performance metrics statistics for CSC activities. The IVR shall track performance metrics statistics by hour, by day and by month for the following metrics and shall provide the Joint Board with a report of the same within 1 business day upon request and as part of the Monthly Operations and Maintenance Report. The minimum statistics to be tracked and reported are 1) total number of calls received, 2) total number of calls accepted by customer service representatives, 3) average time to answer, 4) maximum time to answer, 5) total number of calls that exceed configurable, specified hold time(s), and 6) total number of abandoned calls.
BO-076	The Customer Website shall be updated in near-real time with information related to Traffic Transactions, Customer Statements, account maintenance, payments, and any other information required by the Joint Board. Near real time is defined as an update to the BOS at least every 24 hours so that TSP shall maintain a complete history of account information.
BO-077	The Toll System Provider shall provide a backup and archiving system for all components of the TCS.
BO-078	All accounts, customer information, IVR, Customer Website, and reports shall at a minimum be backed up every day. All System configurations required in recovering the System in case of outage or failure of any component shall be backed up every quarter and immediately whenever changes are made. These System confirmation backups shall include application, database and operating system settings. The backup data shall be retained off site from the CSC and TCS at the approved DR site.
BO-079	The Toll System Provider shall archive data no later than every month to an offsite system. Archived data shall be available for 10 years. Upon request, data shall be recovered and available to the user for analysis within 2 business days.
BO-080	All credit card payment processing shall be PCI DSS Security Standards Council compliant. The TCS database shall comply with all applicable standards issued by the PCI DSS Security Standards Council, including the PCI DSS at the start of operations in the BOS, and remain compliant throughout the Contract Term. Any costs associated with PCI compliance including e-commerce and merchant service costs are not Pass-Through Cost Items and shall be included in the Contract Price.
BO-081	All external internet protocol addresses shall undergo a vulnerability scan at least quarterly by a qualified vendor, pursuant to the PCI DSS Data Security Standard. The TSP shall provide

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	a copy of the current quarterly vulnerability scan report to the Joint Board within 10 business days of request by the Joint Board at any time during the Contract Term.
BO-082	There shall be no direct user access to the BOS database management system by any interactive or system users. All access to the BOS database management solution shall be through BOS middleware. User authentication and access to the BOS database management solution shall be managed by the middleware application services using generic or function-related database connections.
BO-083	All TCS database management system scheduled jobs shall be executed under a non-interactive account.
BO-084	The BOS database management solution shall not permit any modifications or deletions of the original Traffic Transactions, Financial Transactions, and Event Transactions stored in the BOS database.
BO-085	All TCS database management system records shall provide version control and shall be traceable for all components of the TCS. The TCS database management solution audit trail information for each correction entry shall include, at a minimum, the date and time of the change, identification of the person or automated transaction function initiating the change, and reason code or descriptor justifying the change.
BO-086	The TCS database management solution shall be secure and provide automatic credit card industry standard encryption of all credit and debit card data transmitted to the database via customer service representatives or received via the internet.
BO-087	The TCS database management solution shall provide the following: 1) automatic setup, job scheduling, and execution of backup and recovery scripts; 2) real-time diagnostic testing and problem resolution scripts,3) historical performance data and assistance in database server capacity planning; 4) aid in automating, on a24 hours per day, 7 days per week, monitoring of priority events based on critical threshold; 5) management of database schema modifications; and 6) performance tuning capabilities including, but not be limited to server, database, table, index and query levels.
BO-088	The Toll System Provider shall provide an enterprise commercial reporting system (ERS) that shall allow the Joint Board or authorized agents, vendors or third parties to view, create or edit reports within the System with qualified and trained staff.
BO-090	The Toll System Provider shall provide an existing suite of operational, financial, maintenance and other TCS reports as the basis for reporting. The reports shall be updated as required for the States' Parties.
BO-091	The TCS shall have configuration management tools to manage Software and versioning in the TCS.
BO-092	The Toll System Provider shall provide training and access for the Joint Board to prepare its own user-designed, ad-hoc custom queries in addition to predetermined reports.
BO-093	The ERS shall be an integrated solution covering all report requirements for pre-determined, existing and ad-hoc reporting.
BO-094	The ERS shall provide central administrative control of user roles assignment in the System.
BO-095	The ERS shall provide one of the following electronic report and screen formats: Adobe PDF, HTML, XML, RTF, and Microsoft Office 2010. Any of these products used must have compatibility.
BO-096	The ERS shall provide batch report processing that can run in the background concurrent with other applications. The ERS shall be in a separate layer from the BOS system that processes Transactions for the TCS.
BO-097	The ERS shall have a standard template for report formats and data formats that will be used for future report templates.
BO-099	The ERS shall have the following capabilities and administrative functions: provide data by report columns, dashboard reporting, reporting calendar for scheduling pre-determined reports, graphical representation capabilities, drill down and sideways capabilities, reporting of data source capture points and the data relationship(s), sort data by report columns, filter tools for search and for reporting purposes, support for segmentation reporting based on excluded criteria, recordkeeping for each report created, which shall include, at a minimum, report owner, date created, date last edited, and a brief description of the report's purpose.
BO-100	The ERS shall allow authorized users to receive regular reports automatically. A user interface shall be provided for the user registration and registration edit functions, together with details of current registrations and report links currently available to the user.
BO-102	The ERS shall be configurable to include at least two logos provided by the Joint Board at any time and other facility information such as toll plaza name, facility, or lane numbers and location of the facility.
BO-103	The TCS shall query data imported and exported to other systems when generating reports. The TCS shall allow for unrestricted and flexible reporting of any and all data. States' Parties shall have complete access to any data in the TCS database. The TCS reports shall be batch, ad hoc, standard, and non-standard.

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BO-104	The Toll System Provider shall supply a reporting system that will utilize a query and run reports on the TCS. This reports system may be integrated into the TCS or can be an off- the-shelf system. The reports system shall provide reports for phases of Transactions and their movement through the TCS, and shall be capable of being queried using numerous methodologies. The reports system shall provide reports by ad hoc methodologies and through standard reports for Financial Transaction management, performance, and audits, The reports system shall be electronic; be compatible with Microsoft Office 2010 products~~,~~ provide graphical representations of queries; save and query reports for future use; sort, add, edit or delete filters; and provide dashboards.
BO-105	The TCS shall provide graphical and spreadsheet reports for CSR activity, CSC activity, customer account activity, Transponder fulfillment activities, revenue reports, Transaction reports, financial reports, IVR reports, Violations reports, collections reports, Customer Website activity reporting, Walk-Up Center activity, customer contact reports, and general activity reports of the TCS system.
BO-106	The TCS shall provide functionality for offering promotions and promotional discounts that include but are not limited to: special pricing for certain customer groups, and prepaid trips on the Bridges. In the case of account holder promotions or discounts, the TCS shall be configured to discount the account on a transaction basis and also based on a configurable number of transactions posted to an account for a specific time period.
BO-107	The Toll System Provider shall have account functionality to designate that vehicles with approved Transponders or License Plates shall be charged a 100% discounted toll rate for trips made through the LSIORB Toll Zones.
BO-108	The TCS shall identify, resolve, and manage exceptions based on defined data, parameters and Business Rules.
BO-109	Only authorized personnel of the TCS shall add, update or delete entries on the list of TCS exceptions. A list of all actions of any authorized or unauthorized personnel shall be logged into the TCS and available in exception reports.
BO-110	The TCS shall have the configurable capability to handle exceptions by correcting the exception, charging the customer (including merging of Traffic Transactions), or by coding them off. These actions shall be based on the approved Business Rules.
BO-111	The TCS shall retain an audit trail of the occurrence of each exception including the time and date, type of exception, triggering event and resolution.
BO-112	The TCS shall set configurable Business Rules and thresholds for the purpose of managing exceptions and transaction processing as directed by and subject to the approval of the Joint Board.
BO-113	The TCS shall ensure that only authorized non-revenue Transponders are charged zero dollars for tolls. The TCS shall maintain a Project specific non-revenue account list for the Project. Note: For example, Traffic Transactions initiated by drivers holding Transponders that are designated as non-revenue Transponders from an account established with another E-ZPass agency shall not be treated as non-revenue Traffic Transactions in the TCS.
BO-114	The TCS shall retain records of non-revenue travel and the associated vehicle or Transponder number.
BO-115	The TCS and the Toll System Provider operations shall prevent customers from being erroneously charged (overcharged, double charged or undercharged).
BO-116	The Toll System Provider shall provide a lockbox service that is integrated into the TCS and that updates account records in the System when payments are recorded in the System.
BO-117	The TCS shall perform automated look-ups for customer name and address acquisition and check them against DMV records through interfaces with services provided by the Toll System Provider. The Toll System Provider shall coordinate access with the Joint Board and integrate directly through the Kentucky and Indiana DMV.
BO-118	The TCS shall communicate court evidence packages with the courts through the following interfaces: Web Portal, Paper, FTP, USB drive, and CD-ROM.
BO-119	The Toll System Provider shall provide all necessary mailing services for customer invoices and Correspondence services. The Toll System Provider shall ensure that all Customer Statements mailed to the customer are stored in the TCS and available to the customer service representatives. Postage will be reimbursed to the TSP as a Pass-Through Cost Item.
BO-120	The Toll System Provider shall manage Hardware, Software and equipment life cycles to ensure equipment is replaced prior to “end-of-life cycle” or at such earlier time when the manufacturer no longer provides support for the components.
BO-121	The Toll System Provider shall use field-proven Hardware, Software and equipment configurations that have been deployed on toll projects of similar or larger size and complexity, and that support future upgrades to processors, memory, storage, operating system, database and other System components.

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BO-122	The Toll System Provider shall provide an interface from the TCS to the Kentucky DMV and the Indiana DMV. The TCS shall provide an automated license plate file transfer interface to the Indiana DMV and the Kentucky DMV for look-up and return information for the registered owner. The methodology used to achieve this interface shall be at the discretion of the Toll System Provider. The TCS shall track all files transferred to each DMV with which it interfaces and track how many files were transferred successfully resulting in a license plate return and address, and also how many requests were returned unsuccessfully. Note: The Kentucky and Indiana DMV support automated look-ups for outside organizations that successfully apply. Both Indiana and Kentucky allow multiple owners to be associated with a single vehicle and license plates stay with the prior owner when a vehicle is sold or otherwise transferred.
BO-123	The Toll System Provider shall provide a TCS that includes Transponder inventory and fulfillment application services. The TCS Transponder inventory and fulfillment services shall include Transponder purchasing, distribution, tracking, warranty data, returns to manufacturer, and reporting interfaced with the INDOT procurement process. The TCS shall import Transponder manifest lists from common file formats to be used in the TCS without additional manipulation. The TCS shall include bar code processing which results in automatic entry of Transponder identification numbers into the TCS. The TCS shall track the full life cycle of a Transponder from the time it is purchased through allocation to each of the centers for distribution, through the fulfillment process and finally through the end life of the Transponder when it is removed from inventory. The TCS shall provide a report of the total number of Transponders, the locations of those Transponders, where the Transponders are in the distribution process, the customer account to which they have been assigned, shipping information, and information for final delivery to the customer. The inventory process shall account for the locations (both physical and within the distribution process) of all Transponders during their life cycle. The TCS shall produce reports that detail the number of Transponders distributed, the number of Transponders requested to date, the number of Transponders fulfilled, the number of Transponders shipped, and the number of requests in progress. The TCS shall track and provide reporting for warranty information on the Transponders, returns to the manufacturer warranty expiration dates, and number of Transponders in inventory.
BO-124	The Toll System Provider shall fully audit and reconcile Traffic Transactions throughout the life of the Traffic Transaction. The TCS shall provide for the ability to fully reconcile the flow of Traffic Transactions throughout the system to each end state of the Traffic Transactions from receipt of roadside activity through the TCS, through its final disposition. The TCS shall be fully auditable and provide robust reconciliation processes for customer service representative transactions, ETC Transactions, video Transactions, account balances, front counter and call center activity, adjustments, credit card Transactions, and payments. The methodology used for this reconciliation process shall be at the discretion of the Toll System Provider but shall provide auditable insight into each component of the TCS and into each step of the Transaction. The Toll System Provider shall have an auditable system to track all payments and any Financial Transactions as well. The TCS shall be required to reconcile Traffic Transactions with payment collections. Reports shall be generated for auditable and logical Transaction and payment reconciliation. An audit trail shall be provided by the Toll System Provider to demonstrate the flow and disposition of all Transactions.
BO-125	The Toll System Provider shall provide a TCS that includes a retail distribution network for Transponders, Transponder reloading, account replenishment, and toll payment services such as would occur at local grocers, pharmacies, etc. The TCS shall support at least one type of such service such as kiosks, interaction with store clerks, or use of gift card type packages. The TSP shall be responsible for entering into all necessary agreements with merchants participating in the retail distribution network. All such agreements shall be assignable to the Joint Board or its designee.
BO-126	The TCS shall have functions to support a cash-replenishment network to provide cash based replenishments in retail locations and shall describe the customer experience for the cash replenishment network in the System Documentation. The BOS Operations Plan shall identify any differences in Business Rules to be applied at the retail locations.
BO-127	The Toll System Provider shall provide financial and operations reporting for the cash based replenishments network. Note: The Toll System Provider shall describe the interface with the cash replenishment network-provided and the operations and financial reporting for the interface in the System Documentation.
BO-130	The Toll System Provider is responsible for DMV lookup for all other States and Provinces. The TCS shall track all files transferred to each DMV with which it interfaces and track how many files were transferred successfully resulting in a license plate return and address, and also how many requests were returned unsuccessfully. The Toll System Provider shall also interface with Nlets through an existing INDOT agreement if Toll System Provider does not have existing access to Nlets. Toll System Provider shall establish and maintain all required certifications to utilize the Nlets interface. Note: The Toll System Provider may use an existing Nlets interface if already available and functional within the Toll System Provider's system.

Customer Service Center Requirements

Req ID	Customer Service Center (Section CS)
CS-001	The Toll System Provider shall supply appropriate staffing for a fully functional and operational CSC to support tolling operations of the Project. These services shall include, but are not limited to, 1) account management and maintenance services, 2) Customer Website services, 3) mailroom operations, 4) customer communications through phone, email and or text, 5) interoperability and reciprocity, 6) internal or external financial and lockbox operations, 7) ETC and image review processing, 8) Transponder inventory and fulfillment, 9) Violation processing, 10) internal or external administrative and court collections processing, 11) Walk-up Center operations, 12) quality assurance and quality control, 13) training, 14) management, oversight and personnel services, 15) reporting, 16) security of information, and 17) equipment in order to successfully collect toll revenue for toll customers. The Joint Board shall have no responsibility for increases or decreases in actual levels of equipment, but the Joint Board will pay for some limited services and facilities using Pass-Through Cost Items as defined in the Contract.
CS-002	The CSC shall be staffed with personnel that are experienced and knowledgeable in toll industry practices, and the Toll System Provider shall provide trained, competent and courteous customer service staff to assist individuals and businesses in managing their toll accounts. The CSC shall provide all services required to enable customers to pay tolls by use of a Transponder or image capture of their license plate or through the Violations and collections process; including accounts from interoperable toll agencies, and the resolution and payment of toll bills, notices and collection of civil penalties for unpaid tolls.
CS-003	Customer service representatives shall provide all services related to toll accounts for toll customers, to include account opening, replenishments, account closings, answering inquiries, processing Violations, and handling collections or billing issues.
CS-004	The Toll System Provider shall provide customer service representatives who can provide basic customer service functions over the telephone, in person, or via mail or the web, for all account types. The Toll System Provider shall provide CSRs who can perform customer service tasks include opening accounts, retrieving account information, updating account information, vehicle information, replenishing accounts, changing credit card or replenishment sources, issuing new or replacement Transponders, accepting returns of Transponders, closing accounts, establishing and billing postpaid accounts, refunding errant charges or remaining balances on closed accounts and assisting customers with troubleshooting. Additional tasks such as cash collection, change runs, inventory control, etc. shall be provided as necessary to provide a complete CSC operational facility. Oversight of human resource issues such as time clocks, appropriate conduct and attire are the sole responsibility of the Toll System Provider.
CS-005	The TCS and the Toll System Provider's policies and procedures shall support first contact resolution of any customer issues.
CS-006	The Toll System Provider shall provide a toll free number for inbound customer calls. The Toll System Provider shall minimize transfers and follow-up calls.
CS-007	The Toll System Provider shall provide customer service staff access to a complete customer interaction history for all payment channels to support the resolution of a customer inquiry.
CS-008	The Toll System Provider shall maintain a written record of all customer interactions with the BOS so that TSP shall maintain a complete history of account information.
CS-009	The Toll System Provider shall track and categorize all customer communications by customer, type of communication, dispute status and type of problem as recorded in the TCS.
CS-010	The Toll System Provider shall access data to handle communications, interactions, and workflow management within the TCS.
CS-011	The Toll System Provider shall provide a consistent customer experience across all payment channels.
CS-013	Toll System Provider shall maintain a record of all customer complaints and disputes. All contacts with customers regarding complaints and disputes shall be entered in a customer complaint log and linked to the customer's account, and all subsequent contacts, responses and actions shall be noted in the record, through resolution and final disposition. The record shall identify the customer, means of contact, date, time, issue, action, and identity of CSR responding to the customer information. The record shall be maintained in accordance with the data retention policy period and shall be available to the Joint Board upon request.
CS-014	The Toll System Provider shall support the Joint Board and its consultants in communicating with, media representatives, community representatives and other stakeholders.
CS-015	The System(s) shall record and report in the TCS the types of customer communications being received by the TCS including email, fax, SMS, phone call, letter, retail location or Walk-Up Center visits.
CS-016	The Toll System Provider shall develop procedures, and training materials for responding to customer communications.
CS-017	The Toll System Provider shall provide an option that the customer may select on the IVR to obtain answers to a set of FAQs and answers developed by the Toll System Provider. Toll

Req ID	Customer Service Center (Section CS)
	System Provider shall also include any FAQs and answers that the Joint Board submits to Toll System Provider for inclusion in the IVR FAQs.
CS-018	The Toll System Provider shall regularly update the FAQs and responses for accuracy and timeliness. Toll System Provider shall describe its procedures for updating FAQs and responses in the CSC Operations Plan.
CS-019	The Toll System Provider shall ensure that the Customer Service Center staff are trained by system Suppliers, and are provided with TSP provided manuals including online manuals to support the resolution of interactions. CSR staff shall also be provided with a decision tree and referral directory.
CS-020	The TCS shall have implemented appropriate security and controls to protect the data from unauthorized use and unauthorized users.
CS-021	The Toll System Provider shall provide reports on customer communications status and the resolved reason code for resolution in the Monthly Operations and Maintenance Report.
CS-022	The average mean time for Toll System Provider to respond to all customer communications shall be as follows. • Response to customer emails - 3 days during Startup Operations and 1 day during Steady State Operations. • Response to Voicemails - 3 days during Startup Operations and 2 days during Steady State Operations. • Response to Written Correspondence - 5 days during Startup Operations and 3 days during Steady State Operations. The Toll System Provider shall report the average mean time for response to customer communications on a monthly basis in the Monthly Operations and Maintenance Report, and shall also report minimum and maximum customer communications times.
CS-023	The Toll System Provider and the TCS shall provide capabilities to record in writing customer disputes concerning Customer Statements, processing and enforcement actions.
CS-024	The Toll System Provider (IVR and Web) customer communication channels shall provide information advising customers of the available service options including identification of the appropriate customer contact point for specific issues, payment of Customer Statements, and directions for converting a Customer Statement to a prepaid ETC Account or Registered Video Account.
CS-025	The TCS shall post Traffic Transactions to existing accounts for customers who have Registered or Unregistered Video Accounts and the TCS shall create accounts based on Traffic Transactions for customers who do not have existing Registered or Unregistered Video Accounts.
CS-026	The TCS shall provide the means for potential customers who do not yet have an account to access general information about the Project from the Customer Website, IVR or CSRs.
CS-027	The Customer Website shall provide access for customers who do not have a Transponder to pay tolls and Violations or sign up for a Registered Video Account.
CS-028	The Toll System Provider shall provide a user configurable fee structure to be used for customers to make arrangements to pay tolls and establish a payment plan.
CS-029	The TCS shall address customer account communications including adding vehicles, requesting a Transponder, account maintenance and payments.
CS-030	The CSC staff shall identify potential system and service issues from their interactions with customers. Customer Service Center staff shall communicate with and provide feedback to the Toll Operations Center or Joint Board in a timely manner.
CS-031	The Toll System Provider through the CSC shall monitor the Customer Website, provide notices and daily informational updates to the Customer Website as needed, and coordinate those updates for approval by Joint Board. The CSC shall ensure that Customer Website operations meet Performance Requirements by performing routine checks on the Customer Website account management system, and the Customer Website informational page.
CS-032	The Toll System Provider shall ensure that the toll customers' inbound and outbound mail is handled accurately, expeditiously and confidentially while at the same time operating in a cost-efficient manner. The CSC shall log any and all mail room activity which is not automatically tracked by the TCS. The CSC shall time and date stamp and log all incoming mail and shipments. The mailroom shall be kept clean and orderly with a minimum of materials out of storage at all times. Valuable items, particularly inventoried items such as Transponders, shall be stored under lock and key when not in use. Mail room services shall be appropriately staffed to ensure that all mail transactions are completed daily with no backlog before close of the mail room, and in compliance with Performance Requirements.

Req ID	Customer Service Center (Section CS)
CS-033	The Toll System Provider and CSC operations shall be responsible for printed material and the preparation and mailing of all outbound mail or shipments including but not limited to: notices of expiring credit cards, notices of account balances dropping below a configurable balance, billing and Violation notices up to and including collection notices, Transponder kits to customers, Transponder retail packages to retail outlets, and Transponders being returned to the manufacturer for any reason. The Toll System Provider shall provide quality control and approval of all outgoing Correspondence before release from the mail house or internally at the CSC. TSP shall assemble typical mail distribution packages that may include a Transponder package kit with marketing branding logos, a mounting instructions sheet and a terms and condition statement. TSP shall use such marketing items, branding or logos as the Joint Board may direct during the Term. TSP shall obtain Joint Board prior approval of Transponder kits, instructions, and packaging.
CS-034	The Toll System Provider shall provide for all users of the toll road the ability to pay tolls automatically with their toll account from interoperable and reciprocal tolling members of the IAG. TSP shall provide CSC services to interoperable agency customers. TSP shall perform regular transaction and financial reconciliation with each interoperable toll agency, and monitor all required file exchanges, dispute processing and resolution and the sending of final reciprocity amounts through the established Joint Board channels for fund exchanges. TSP shall perform all processing including final settlement. The CSC shall service Project toll customers in their use of other toll authorities' facilities to the greatest extent possible as well as fully support "away" customers using the Bridges.
CS-035	The Toll System Provider shall provide a lockbox operation that includes extensive oversight of the process, controlled access, CCTV monitoring, processes and procedures for disposal of incoming mail materials, archiving if available, control of paper usage in the lockbox area and attention to detail. The Toll System Provider shall provide a staff to support lockbox operations and provide mail opening processes, scanning of mail procedures, receipt of funds through the mail, acceptance of any Correspondence addressed to the lockbox P.O. Box, and any Correspondence for the Project.
CS-036	The Toll System Provider shall ensure that all money is handled and accounted for in a timely manner. Toll System Provider shall provide the Joint Board with all necessary tools to enable it to track all System activities involving the handling of money and verify reconciliation processes easily and quickly. Employees of the Toll System Provider who handle cash must pass a level of security clearance established by the Toll System Provider and approved by the Joint Board. All TSP Personnel with access to money or account information shall undergo and pass security screenings consistent with Good Industry Practices prior to assignment to the Project. These screenings shall be documented and available for Joint Board review.
CS-037	The Toll System Provider shall provide oversight of Transaction processing such that the CSC has valid, accurate and reliable information from the TCS to successfully service the customer accounts.
CS-038	The Toll System Provider shall provide an image review staff and supervisors to manually enter license plates which are not or cannot be read through OCR Software and maintain Performance Requirements for image review staff and backlogs. This team shall be responsible for review of all images that do not pass the OCR with a confidence level of percentage threshold that is configurable in the System.
CS-039	The TCS shall process Traffic Transactions and Financial Transactions in the same way for both Project Customers and interoperable customers (except for additional steps as identified within the E-ZPass Agreement) so that both customer groups have the same customer experience. Note: This requirement is to ensure that all Transactions are processed in a timely manner and treated in a consistent manner regardless of Transaction type.
CS-041	The Toll System Provider shall accurately identify new and un-matched license plates to the correct owner of record using search tools and mechanisms consistent with Good Industry Practices.
CS-042	The Toll System Provider shall provide that license plate image interpretation results are accurately entered into Transaction records, through implementation of the image review Business Rules approved by the Joint Board, and shall provide spot checks and internal quality control checks of automated image processing system.
CS-043	The Toll System Provider shall ensure that image review clerks perform quality control procedures on images entered, and update data for those images not recognized automatically.
CS-044	The Toll System Provider shall provide that Transponders owned by or in the care of the Joint Board are handled and accounted for in a secure manner. Toll System Provider shall ensure that only authorized users are allowed access to the System or facilities to handle the Transponders. Reports of Transponder inventory shall be generated and reviewed by Toll System Provider not less than monthly. The Toll System Provider shall be responsible for all Transponders under its or its agents or subcontractors' control. This shall include financial responsibility for damaged or stolen Transponders in the Toll System Provider's inventory.
CS-045	The CSC shall accurately track and report the location and distribution of all Transponders. Controls such as bar coding, warranty and location of each Transponder shall be tracked upon initial receipt into inventory, whether in the CSC inventory storage, with a CSR in the CSC or Walk-Up Center, in the mail room or remote facility locations, at a retail outlet prior to sale and registration, assigned to a customer account, reported lost, damaged or stolen, returned to the CSC to be sent back to the manufacturer, or returned for disposal.

Req ID	Customer Service Center (Section CS)
CS-046	The CSC shall take a weekly physical count of Transponder inventory, and shall be responsible for inventory reconciliation every week, and when inventory is received, or transferred to and from locations. Inventory reports shall include minimum order levels. The Toll System Provider shall notify the Joint Board when new Transponders need to be ordered. The Joint Board shall purchase the Transponders in the types and quantities recommended by the TSP and transfer them upon receipt to the CSC for inventory management. The Toll System Provider shall verify the receipt of Transponders and shall acknowledge such receipt to the Joint Board. Toll System Provider's notice to the Joint Board requesting Transponder orders must incorporate purchasing lead times to ensure there is never a shortage of Transponders on hand.
CS-047	The Toll System Provider shall keep Transponder kits in inventory and include them with Transponders distributed over-the-counter, via mail, or through retail outlets. The kits shall include read prevention bags, Bridge maps, mounting instructions, terms and conditions, marketing and branding logo mailer. The CSC shall be responsible for maintaining an adequate inventory of Transponder kits.
CS-048	The Toll System Provider shall provide adequate secured space for Transponder inventory storage, adequate secured space for fulfillment operations and adequate secured space for designated secured locations for mail drop.
CS-049	The Toll System Provider shall support and process Transponders purchased by customers at other E-ZPass interoperable toll agency customer service centers. The TCS shall provide functionality to support monthly fees for different types of Transponder accounts (e.g. E-ZPass accounts may have a service fee whereas the local 6C Transponder based accounts may have no fee or a different fee).
CS-050	The Toll System Provider shall provide staff to oversee, review, and process Violations that are generated from the TCS. This staff shall generate the paper version of the notices, review the notifications electronically and on paper, check the Violation for accuracy, ensure the Customer Statement is appropriate and legible and send the Customer Statement to the mail room for distribution. The Toll System Provider shall provide management that is responsible for answering escalated calls from customers not addressed by the CSR staff.
CS-051	The Toll System Provider shall process all Customer Statements generated by the TCS based on approved Business Rules. Invoices shall indicate fees and fines applicable to each individual Traffic Transaction included in the Customer Statement, and the total amount of fees and fines for the aggregate of all Traffic Transactions listed in the Customer Statement based on approved Business Rules. Invoices generated automatically by the TCS shall be reviewed for quality control and accuracy before processing the invoices and sending them to the customer.
CS-052	The TCS shall support administrative hearings in accordance with Kentucky Revised Statue Chapter 13B. The TCS shall suspend collections and all determined escalation times during the administrative hearing process. The TCS shall notify the Joint Board by email within 24 hours when an administrative hearing process is requested and all records associated with an administrative hearing shall be linked to the customer account. The Toll System Provider shall provide reports on the current number of administrative hearings by account and current status (e.g. open, pending, closed and associated resolution). Note: An administrative hearing can only be initiated by a customer making a request. After the TSP notifies the Joint Board that a customer has made a request for an administrative hearing, the Joint Board will appoint a hearing officer. The hearing officer will send out the appropriate notices and provide the hearing schedule. The TSP will be asked to provide evidentiary support during the hearing. The hearing officer's authority is limited to determining whether the toll charged is owed. Some examples of reasons the hearing officer may determine a toll is not owed include misidentification of license plate, errors in registration look up, and incorrect vehicle classification. If the hearing officer determines that the toll was correctly charged, the Toll System Provider will resume normal collection activities at the point at which they were suspended due to the administrative hearing process, unless the customer appeals the hearing officer's determination to the Kentucky courts. If a customer appeals the hearing officer's decision, the Toll System Provider shall continue to suspend collection activities against that customer until the court issues its ruling. If an appeal is made, the TSP will be asked to provide evidentiary support and possibly to provide a representative to act as a witness.
CS-053	The Toll System Provider shall provide collection services to collect Collection Status Violations in accordance with the approved collections process set forth in the Business Rules during the Collection Status Violation Period. The collection services may be provided by the Toll System Provider directly or subcontracted through the Toll System Provider to a third party service.
CS-054	The TCS shall provide a threshold dollar amount for escalation of accounts sent to collection. If the threshold is less than the configured amounts, the accounts shall not be sent to the Collection Agency for future pursuit but shall remain as a receivable in the TCS with the outstanding debts including tolls and fees due to the Joint Board.
CS-055	The Toll System Provider shall provide Walk-Up Centers to provide face-to-face account establishment and maintenance service for customers; to distribute Transponders directly to the public; and to support revenue collection and oversight by the Joint Board. The Walk-Up Centers shall accept cash along with credit cards, checks, debit cards, and money orders. TSP shall provide management of a cash bank, armored car pickups, and secured access control at the Walk-Up Centers.

Req ID	Customer Service Center (Section CS)
CS-056	The Toll System Provider shall lease space in its own name for the Walk-Up Centers. Two locations shall be required. One location shall be in Louisville, KY and the other location shall be in Jeffersonville, IN. At least 3 potential locations for each Walk-Up Center shall be submitted by TSP to the Joint Board for review and approval. At a minimum, Walk-Up Centers shall be equipped with a waiting room with chairs and writing surfaces, counter surfaces or counter space for customers, customer service representative counters, a small mail room and space for backup fulfillment activities, a small printing and production area, an area for copier, printers, and fax machines, a small secured inventory and storage space for Transponder management, an IT closet, a small break room with sink, drinking water, lockers and microwave, a supervisor's office, separate accessible waiting room and hearing room, and one small office for a Joint Board employee on assignment or inspection. Walk-Up Centers shall meet American with Disabilities Act requirements for employees and customers and comply with all applicable Laws, building codes and standards.
CS-057	The Toll System Provider shall be responsible for the Walk-Up Center storefront build out and shall provide oversight and timely completion. The Walk-Up Center build out shall be subject to review and approval by the Joint Board. Furniture, equipment, Hardware, Software, supplies, computers, printers, faxes, chairs, waiting room chairs, IT equipment, etc. shall be the responsibility of the Toll System Provider. The budget for the Walk-Up Center build out, construction plans, the furniture plans, and all equipment and supply lists shall be submitted to the Joint Board for approval.
CS-058	Toll System Provider shall procure all necessary Utility services for the Walk-Up Centers. The Joint Board shall pay TSP's actual, direct costs incurred for such services as provided in the Agreement. All Utility services must be pre- approved by the Joint Board before TSP enters into any agreement for services to be paid for by the Joint Board as Pass Through Cost Items.
CS-059	The Walk-up Centers shall be highly secured retail outlets, with separate secured rooms for inventory, a safe, and cash handling area. Access control and CCTV monitoring shall be required at both locations.
CS-060	Call monitoring shall be part of the regular QA/QC process and shall be reported on the Monthly Operations and Maintenance Report. Toll System Provider shall cooperate and assist the Joint Board in the Joint Board's exercise of its right to conduct random monitoring of the CSC and the Walk-Up Centers and record the results.
CS-061	The Toll System Provider shall perform ongoing customer satisfaction surveys regarding the CSC and submit the same for quarterly reviews by the Joint Board.
CS-062	The Toll System Provider shall use a training program for employees, such that those trained employees shall present a positive, professional image. This training program shall be reviewed and approved by the Joint Board. Employees shall be well-trained before handling customers' money, customers' accounts, or interacting with customers in person, on the telephone or through mail or e-mail. The Toll System Provider shall provide a training plan included with the BOS Plan that addresses all areas of the CSC, including technical use of the TCS systems and TCS technical processes, information regarding the Project and customer relations, including dealing with difficult customers and situations. The training program shall be ongoing and continuous.
CS-063	The Toll System Provider employees' appearance, demeanor, and behavior shall be professional and courteous at all times.
CS-065	The Toll System Provider shall provide a dedicated CSC manager to oversee the CSC to ensure that procedures and internal controls within the CSC adhere to Performance Requirements. All CSC management and supervisory personnel assigned to the CSC shall be approved in advance by the Joint Board. The Toll System Provider shall submit a complete personnel and staffing plan included in the CSC Operations Plan outlining all job descriptions in each of the functional areas to the Joint Board for its review and approval.
CS-066	The Toll System Provider shall submit requirements for employment at the Toll System Provider's company and affiliated Subcontractors for CSC services in the CSC Operations Plan. These employment requirements shall outline items such as legal citizen status, photo identification from a governmental agency, ability to clearly speak English or English and Spanish, education requirements, etc. These requirements shall be reviewed and approved by Joint Board.
CS-067	The Toll System Provider shall provide CSC supervisors and staff to monitor the IVR and associated dashboard to ensure Performance Requirements are met. The supervisors shall move staff to appropriate operational tasks to ensure performance levels meet or exceed the Performance Requirements.

Req ID	Customer Service Center (Section CS)
CS-068	The Toll System Provider shall provide reports on all customer service representative account-related activities on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board. These reports shall be in a format approved by the Joint Board and shall include, at a minimum, calls received per day and by hour, calls received by the IVR per day and by hour, calls received by the IVR then directed to a CSR per day and by hour, calls directly to CSR per day and by hour, customer service representative availability, customer service representative utilization, telephone center activity logs, average wait time by day and by hour, average talk time by day and by hour, average after call work time by day and by hour, and abandoned calls by day and by hour. These reports shall be graphically presented for use by Joint Board and the CSR supervisory staff.
CS-069	The Toll System Provider shall provide reports on all mail room activities on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board. These reports shall be in a format approved by the Joint Board and shall include, at a minimum, inbound mail by source, category, type and origin, outbound mail printed and prepared, incoming mail received and processed by the post office, daily cost of postage which shall be paid by the Joint Board and any backlog of incoming or outgoing mail.
CS-070	The Toll System Provider shall provide accounting and reconciliation reports on a monthly basis in the Monthly Operations and Maintenance Report, and at any time upon request by the Joint Board. These reports shall be in a format approved by the Joint Board and shall include at a minimum an accounting of cash and all other payments collected at the CSC storefronts, Walk-Up Centers, retail distribution outlets under contract, and by mail; account deposits, shortages and overages, adjustments due to daily reconciliations, and customer accounts balances, CSC and VPS activities; tolls collected and tolls posted, recommended fund transfers, deposits and withdrawals by CSC for each shift, number of Transaction types, deposits by payment type, cash deposits, low, high and average values of, the account balance activity including beginning-of-day and end-of-day balances, all tolls and fees, and replenishments, and interoperable account activities for interoperable home and away Traffic Transactions and Financial Transactions reconciliation and settlements.
CS-071	The Toll System Provider shall provide monthly staffing reports included in the Monthly Operations and Maintenance Report. The weekly staffing report shall be in a format approved by the Joint Board and shall include workforce number per job description, percentage of required positions filled, progress and efforts being made in filling the vacant positions and turnover rates.
CS-072	The Toll System Provider shall provide daily, weekly and monthly production and productivity reports, and accuracy reports related to the number of OCR images which required changes. These reports shall be stored in the TCS and shall be sortable by location and by image review clerk.
CS-073	All facilities provided by the Toll System Provider shall be secure, and only authorized staff shall be allowed access into the facilities other than areas of the Walk-Up Centers designated for general public access. The Toll System Provider shall provide a security and access control management plan included with the BOS Plan that clearly identifies how access is granted, managed and maintained through employee attrition.
CS-074	The Toll System Provider shall ensure that no unauthorized personnel shall have access to individual records, payment histories, any personal information for Project Customers or interoperable toll customers. Paper records shall be locked when not in use, and password and identification controls shall be employed for data access.
CS-075	The Toll System Provider shall not allow cellular telephones, cameras, or other electronic mobile devices capable of capturing still images or video in any area where customer information is visible other than areas of the Walk-Up Centers designated for general public access. CCTV shall be utilized to monitor and deter any and all illegal or unauthorized activities in the CSC. CCTV coverage shall cover all areas of the CSC floor operations, lockbox operations, image review operations, and Transponder fulfillment operations.
CS-076	The TCS shall protect all customer data from access by unauthorized users. The TCS shall ensure that only properly authenticated customers can obtain access to their own data.
CS-077	[Intentionally not used.]
CS-078	For customer authentication, the TCS shall require input of data fields (e.g., name, address, Transponder ID and license plate number) that uniquely identify that customer.
CS-079	For customer authentication, the Customer Website shall require input of data fields (e.g., name, address, phone number, Transponder ID and license plate number) that uniquely identify that customer.
CS-080	The Toll System Provider shall provide a separate phone system outside of the IVR system for typical business calls to be received by the CSC and the CSC staff.
CS-081	The Toll System Provider shall provide an approved security and compliance policy manual to each of its employees and shall obtain a signed copy of the acknowledgement of the security and compliance manual and ensure that all employees working under the Toll System Provider in the CSC are aware of the security policies and enforce compliance.
CS-083	The Toll System Provider shall provide weekly payroll statements to the Joint Board and have records easily accessible and viewable for review by the Joint Board. At a minimum, the employee name, hours and role of employee shall be included in the payroll statements.
CS-084	The Toll System Provider shall provide operating procedures and manuals included with the BOS Plan that provide clear direction to CSC employees governing the basic roles of their job

Req ID	Customer Service Center (Section CS)
	assignment. These manuals shall be available and on site for inspection and review by Joint Board throughout the Term of the Agreement.
CS-085	The Toll System Provider is responsible for providing all Hardware, Software and/or any other equipment for the Toll System Provider's internal or program use purposes. The Toll System Provider shall provide all Hardware, Software, furniture, chairs, phones, headsets, mice, computers, power cords, wireless connectivity, and any other equipment and supplies to provide a fully operational CSC with all capabilities required by the Contract Documents. These include, without limitation, CSR phone bank equipment, furnishings and supplies; image review equipment, furnishings and supplies, Transponder fulfillment equipment, furnishings and supplies, supervisor and management computers, equipment, furnishings and supplies; mailroom operations equipment, furnishing and supplies; Violation processing equipment, furnishings and supplies, interoperability equipment and supplies, lockbox equipment, furnishings and supplies; administrative and courts collection equipment, furnishings and supplies, internal Software programs, third party programs such as MS Office, internal company email applications, quality control programs and associated Software programs and Hardware, all training equipment and training stations, all training materials, all policy and procedure manuals, printers, copiers, faxes, internet connections, desk and furniture supplies, office supplies, printer cartridges, and any types of shared drives or repositories, etc.
CS-087	The Toll System Provider shall provide phone lines capable of supporting a TCS that anticipates an increase in call volume that would be expected to be associated with handling 100,000 additional daily Traffic Transactions above the number of Traffic Transactions currently handled by the Toll System Provider at its existing CSC, or if Toll System Provider elects to provide a new CSC, phone lines capable of supporting a the call volume expected to be associated with 100,000 daily Traffic Transactions, assuming, in either case, that 50% of those Traffic Transactions occur as ETC Traffic Transactions at the commencement of Revenue Service.
CS-088	The Toll System Provider shall provide dedicated commercial customer service specialists to service commercial LSIORB account holders.

Toll Operations Center Requirements

Req ID	Toll Operations Center (Section TO)
TO-01	The Toll System Provider shall provide a Maintenance Online Management System (MOMS) that supports maintenance operations for all Software and Hardware provided in connection with the Project or otherwise pursuant to the Agreement. The Toll System Provider shall also operate the MOMS. MOMS shall have two major components, a system monitoring component that provides alarms and configuration management and the inventory management to track all devices.
TO-02	The Toll System Provider shall provide support and maintenance services for all Systems provided by the TSP, including but not limited to: 1) maintaining the access control system configuration; 2) maintaining the databases, applications, and the Data Mart including data aggregation processes, database optimization of the database schema and Data Mart schema; 3) maintaining proper indexing on all databases; 4) responding to all MOMS alerts and performing repairs and corrections, and 5) providing Software fixes for defects and malfunctions.
TO-03	The TSP shall operate and maintain the TCS so as to provide comprehensive System monitoring services. The Toll System Provider shall include a secure web based real time monitoring system to monitor and report the status of all System components; and assign priorities and actions to events. The monitoring system shall at a minimum: 1) monitor Hardware and Software health; 2) provide and operate a dashboard that graphically displays components' health; and 3) include comprehensive log reporting capabilities. Monitoring of Software shall include monitoring of databases, applications and processes in the system.
TO-04	The TSP shall provide and maintain the TCS by using the automated MOMS. The TCS shall provide system-generated maintenance job tickets, manually created job tickets, information indicating how the preventive maintenance work is scheduled in the System, information indicating how repair activity is logged, reported and resolved in the System.
TO-05	The MOMS shall monitor activities, provide alerts and generate tickets in real-time for all processes and unusual activity triggered by the System and System operators, including but not limited to: communication, Hardware, Software, and database failures.
TO-06	The MOMS shall provide monitors and alerts, and shall calculate and generate tickets in real-time for all processes, including but not limited to: high number of image rejects in a lane, high number of Violations or image Traffic Transactions in a lane; threshold limits exceeded (e.g. Violations, class mismatch); and response times, repair times, and down time from the data entered by the maintenance staff and automatically generated by the TCS.
TO-07	The Toll System Provider shall provide a MOMS that includes but is not limited to receiving and monitoring status messages of all System Hardware and Software and providing local trouble ticket manual entry or email entry by authorized users. The MOMS shall store data in a relational database to permit data recovery and flexibility in reporting via Ad-hoc reporting.
TO-08	The Toll System Provider shall report and log all maintenance activities into the MOMS. The Toll System Provider shall document all information and issues related to a failure condition including all actions taken to complete the correction into the MOMS.
TO-09	The Toll System Provider's maintenance staff shall have real-time access to the MOMS, and the Toll System Provider shall establish and maintain all the required connections to ensure that the maintenance staff has remote access. Maintenance staff shall be trained in the use of the MOMS.
TO-010	The Toll System Provider shall enter and update in MOMS all incidents within 4 hours of the incident. All updates shall be reported by the MOMS.
TO-012	The MOMS shall record all configuration data, and log and retain that data in configuration control after each System component change, including deployment of system patches, backup, archival, data restoration, disaster recovery data transfer and synchronization.
TO-013	MOMS shall calculate response times, repair times, and down time from the data entered by the maintenance staff and automatically generated by the System and shall provide role-based security.
TO-014	All preventive maintenance shall be scheduled through the MOMS and automatic work orders shall be generated at the scheduled times.
TO-015	The MOMS system shall track all system Hardware and Software elements from purchase to their disposal. These include but are not limited to: 1) All system Hardware and Software items, locations and versions; 2) All maintenance and service agreements; 3) A list of suppliers from whom products were procured, original purchase order numbers, Supplier numbers and reference numbers; 4) All warranty information for the individual item; 5) Alerts prior to warranty expiration; and 6) Automatic alerts for Spare Parts levels.
TO-016	The MOMS shall automatically generate reports demonstrating performance, exceptions, availability, and compliance to Performance Requirements (if applicable) for the System and all of its components such as the IVR and Customer Website. MOMS daily, weekly and monthly reports shall be available on-demand.

Req ID	Toll Operations Center (Section TO)
TO-017	Toll System Provider shall include the Maintenance and Support Plan for the Joint Board's approval that demonstrates serviceability of components and the overall system, with attention to how performance metrics will be tracked and reported to the Joint Board. The Maintenance and Support Plan shall illustrate how the proposed structure and position of equipment provides optimum ease of service and maintenance during lane closures, and ease of access during regular maintenance.
TO-018	Toll System Provider shall provide monitoring services with a secure web-based real time monitoring system to monitor and report the status of all System components.
TO-019	The TCS shall provide reports that provide trouble ticket detailed and summary status for Hardware and Software processes for the TCS and any external or internal interfaces.
TO-022	The Toll System Provider shall provide storage space for all Spare Parts. The Toll System Provider shall be responsible for the inventory of all Spare Parts at a Toll System Provider-provided Warehouse Facility that is within 10 miles of one of the Walk-up Centers and co-located if feasible. The Toll System Provider shall provide a Warehouse Facility to store all Spare Parts and equipment and serve as the maintenance depot. The Toll System Provider shall account for all Spare Parts and shall provide safeguards against theft, damage, or loss of the Spare Parts. The Toll System Provider shall ensure that only Spare Parts and equipment required to service the Project are stored at the Warehouse Facility and that such stored Spare Parts and equipment shall only be used for the Project. Note: The Joint Board shall have final approval of the location of the Warehouse Facility. The Toll System Provider shall obtain and maintain a lease for the necessary Warehouse Facility, subject to the Joint Board's approval.
TO-023	The Toll System Provider shall maintain an adequate Spare Parts inventory as specified in the Agreement. The Toll System Provider shall identify the existing spares for the Roadside System and propose the quantity needed to maintain the required performance. The Toll System Provider shall make available all necessary test and warranty repair resources for replacement including test repair and warranty repair, spare modules and spare components to support availability of the TCS in accordance with the Performance Requirements. The Joint Board reserves the right to purchase any and all Hardware for the Project from the Supplier directly. The Toll System Provider shall recommend and periodically update a Spare Parts Inventory Plan identifying the quantity to be maintained in order to support the Project, its Roadside System, BOS, and CSC Revenue Service.
TO-024	Spare Parts Inventory and Tracking: The Toll System Provider shall monitor the inventory quantity and ensure that the inventory is maintained to the levels required in the Agreement. The Toll System Provider shall keep accurate records of all Spare Parts entering and leaving inventory including but not limited to: the time and date the Spare Part was dispensed, and the location within the Project to which the Spare Part was dispatched and used. The Toll System Provider shall track of all warranty replacement through a returned materials authorization (RMA) process. If the replaced part is under warranty, the part shall be immediately replaced with a new part. If the replaced part is out of warranty, the Toll System Provider shall make every effort to repair the replaced item to a usable status and place the part back into the Spare Parts inventory. If the part is unable to be repaired, a new part shall be purchased and placed into the Spare Parts inventory. The details of the repair efforts including problem, status, inventory, and repair disposition shall be included in the MOMS inventory and repair database.
TO-025	Procurement and Control of Spare Parts: Thirty (30) days prior to the first Tolling Readiness Deadline, the Toll System Provider shall purchase and have on-hand the agreed upon inventory of Spare Parts. The facility and storage area shall be secured and connected to an up-to-date security network system with alarm notification provided to the Maintenance staff. The Joint Board shall have full and unrestricted access to the Maintenance and/or storage facility. Any Spare Parts that are lost or damaged due to the negligence, intentional act, or omission of the Toll System Provider or its employees, subcontractors, agents, or invitees shall be replaced by the Toll System Provider at its sole cost. The Toll System Provider shall deliver all Spare Parts to the Warehouse Facility. After the Warranty Period the Joint Board shall reserve the right to purchase all Spare Parts directly from the Supplier and all purchases will be coordinated through a process recommended by the Joint Board at that time. After the Warranty Period, the Toll System Provider-provided Spare Parts not purchased directly by the Joint Board shall be provided at cost, shall not include any mark up, and shall be in accordance with the prices as specified in the Agreement.

Req ID	Toll Operations Center (Section TO)
TO-026	The Toll System Provider shall provide Spare Parts adequate to support operations of the TCS and shall provide a sample inventory list of Spare Parts for the Project for its successful operation to ensure no degradation of service to the Project or customers.

Operations and Maintenance Requirements

Req ID	Operations and Maintenance (Section OM)
	Warranty
OM-001	The Roadside System Hardware and Software warranty shall be 1 year from the Revenue Service Date for each Bridge. Note: The Roadside System warranty start and end dates will have staggered start and end dates if the Revenue Service Dates differ for each Bridge.
OM-002	The BOS and all associated interfaces Hardware and Software warranties shall be a minimum of 3 years from the commencement of Revenue Service for the first Toll Zone. Note: For purposes of this requirement, the BOS shall include the account management system, transactions system, reporting system, MOMS, external systems provided and any systems required by the Toll Operations Center, and CSC and Walk-up Centers.
OM-003	The Toll System Provider shall provide all labor, parts and materials to keep the System performing in accordance to the Performance Requirements.
OM-004	The TCS Software Warranty shall cover all defects and failures.
OM-005	The Toll System Provider shall modify Software and configurations as necessary to maintain and support the TCS in the normal course of business. Toll System Provider shall provide any and all version changes, parameter changes and changes that improve the Toll System Provider's ability to maintain and support the TCS at no additional cost to the Joint Board.
OM-006	All warranty information shall be tracked and notification of expiration sent out to distribution list approved by the Joint Board. The warranty provisions shall be tracked for Major Spare Parts and Components excluding consumables.
OM-007	The Toll System Provider shall maintain warranty records, review Software and Hardware discrepancies and make available patch management reports to demonstrate Software compliance with the warranty.
OM-008	The Toll System Provider shall conduct a System Certification Audit at the start of the third full year after the Revenue Service Date of the last Bridge that will include a compliance audit of all Hardware and Software including operating systems, databases and applications that demonstrates that all Software and Hardware meets a configuration audit and test that demonstrates that the System complies with all Performance Requirements. Any variances shall be reported along with a corrective action plan. Note: The Joint Board may conduct its own certification and audit at any time. TSP shall cooperate with and assist the Joint Board in any such audit.
OM-009	The Toll System Provider shall plan, implement and remove lane closures for toll equipment preventative or emergency maintenance. The Toll System Provider shall utilize the most current state traffic control plans and standards applicable to the Roadside System for the state where the lane closure will occur. The Toll System Provider shall request lane closures in writing and in accordance with the applicable state policy. Any preventative maintenance lane closures shall be requested in writing at least 14 calendar days in advance. Emergency lane closures shall be requested with 12 hours prior written notice. Notice of any immediate lane closures shall be communicated to the Joint Board representative via phone and email as soon as possible. Note: The States' Parties will reimburse the Toll System Provider for each approved lane closure required during installation and during maintenance of traffic.
OM-010	The Toll System Provider shall log any lane closures including incidents reported by the Roadside System into MOMS. Any unusual circumstances shall also be noted in the incident report. If the information can be tracked and reported separately in MOMS, MOMS may be used to log incidents. A lane closure report shall identify who closed the lanes, start and end time of the closure, lane numbers closed and any comments or unusual events regarding the lane closure. If the lane closure was conducted by the Toll System Provider, a reason for the lane closure shall be included in the report. Any lane closures that occur within the Toll Zone area, defined as 1000 feet on either side of the Toll Zone, shall be reported to the States' Parties on a monthly basis. Note: This information is required so that the States' Parties or their agents can confirm the TSP accurately reconciles and identifies anomalies in traffic or revenue with these special events, and to reconcile any Customer Statements sent by the Toll System Provider for reimbursement.

Performance Requirements

Req ID	Performance Requirements (Section PR)
	Roadside System
PR-001	Roadside System shall be available 99.5% of the time. Notes: Compliance with availability requirements will be separately calculated and applied to each Equipment Lane for a Toll Zone as provided in Exhibit N. Available lanes are those with all of their components properly functioning - available to collect revenue and sending all Traffic Transactions and images to the BOS, as more particularly defined in Exhibit N. This 99.5% availability requirement excludes approved maintenance closures. This requirement will be evaluated for compliance on a monthly basis.
PR-002	The Roadside System shall be fully capable of reading and processing a minimum of 1,800 front and rear images (3,600 in total) per Equipment Lane per hour. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-003	The Toll System Provider shall be fully capable of processing all license plate numbers including stacked letters. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-004	[Intentionally not used].
PR-005	The Roadside System shall create and process Traffic Transactions for a minimum of one vehicle per second per equipment lane for fifteen (15) continuous seconds at each Toll Zone without any loss of vehicle data (i.e. classification, images, ETC, etc.). Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-006	For each vehicle passing through a Toll Zone with properly mounted Transponders in or on the Vehicle, the TCS shall accurately detect, report, and correlate with the correct vehicle all required Transponder information (i.e., date, time, Transponder numerical id) at an overall accuracy rate of 99.95%; if more than one Transponder is properly mounted in or on the Vehicle, the TCS shall report all such Transponders identified, but the requirements specified in this Section shall only apply to one Transponder's reads. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-007	Each vehicle passing through a Toll Zone shall be detected and reported once and only once (no exception for lane equipment or network degradation). Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-008	For each vehicle passing through a Toll Zone, the TCS shall capture a sufficient number of images to provide the vehicle make, model and license plate number and correlate this information with the correct vehicle at an accuracy rate of 99.9%. All Images of a vehicle's license plate passing through a Toll Zone shall be human readable at an accuracy rate of 99%. All overview camera images of the vehicle shall be in color. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-009	The Toll System Provider shall comply with the following times to respond to issues, deficiencies and problems and to repair equipment. These times are based on priority classification by event location and exclude provision of maintenance of traffic responsibilities (so long as such maintenance of traffic times are strictly within the time periods of this PR-009 section); These times apply 24 hours per day, 7 days per week: • Priority 1 –Four hours to respond • Priority 2 –24 hours to respond • Priority 3 –7 days to respond In all cases, setup of maintenance of traffic shall be no more than 1 hour upon approval, and demobilization of maintenance of traffic once repair is complete shall be no more than 1 hour. The Priority Levels are defined as follows: Priority 1 is defined as – any failure that will result in loss of ability to collect or accurately collect revenue, including lane closures, safety hazard, or loss of traceability and loss of auditability in the TCS. Priority 2 is defined as – any failure of a System component that will result in a degradation of System performance or results in the loss of redundancy in a key System component, but does not qualify as a Priority 1 event. Priority 3 is defined as – minor failure of the equipment, network or Software or an indication that an event may occur that would result in a malfunction or degradation of the System. In order to ensure maintenance of traffic notification is measured in a timely manner, the Joint Board shall be copied on the notification to the maintenance of traffic provider. The Joint Board, in its sole discretion, shall determine the priority of an event (and any delay or failure by the Joint Board to identify the priority shall indicate that the event has a priority level of Priority 1).

Req ID	Performance Requirements (Section PR)
	Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
	Back Office System
PR-010	The BOS, including the IVR and Customer Website shall be available 99.9% of the time (See Exhibit N to the Agreement for details regarding calculation of BOS availability.) The BOS shall provide all functional service at a 99.9% availability excluding approved routine or approved scheduled maintenance periods of up to 80 hours per year. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-011	[Intentionally not used.]
PR-012	Home and away agency Transponder status files shall be loaded and distributed to the TCS within 2 hours of receipt at least 99% of the time. If the Toll System Provider has written proof that the away Transponder status file was not sent by the away agency, failure to load and distribute a Transponder file for such away agency shall not be counted as a failure in the calculation. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-013	The BOS shall post 99.8% of Traffic Transactions, Financial Transactions, and Event Transactions completely and accurately to the TCS. Any exceptions shall be recorded with an "exception" transaction in the system with an appropriate exception code. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-014	The Toll System Provider shall review and accurately post to the appropriate account all Traffic Transactions in accordance with the approved Business Rules no later than 4 days after the vehicle passed through the Toll Zone, at an accuracy level of 99.5% or higher. Images embedded in any Correspondence shall include a color picture that clearly identifies the make, model, color and license plate of the vehicle. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-015	All required Financial Transactions shall be processed within one (1) business day of business day closure on the day they occurred. Financial Transactions shall include all payments (regardless of payment method). Weekend or holiday Transactions shall be processed no later than the following business day. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis.
PR-016	All required financial exceptions shall be processed within one (1) business day of business day closure on the day they occurred. Financial exceptions are adjustments, reversals or refunds. Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis. The timeframe for a disputed transaction for E-ZPass transactions outside of Toll System Provider's control will be determined during development of the approved Business Rules.
PR-017	The Toll System Provider shall enter into the System all license plate and demographic information received from a DMV within one (1) day of data receipt. Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.
	Customer Service Center
PR-018	The average call wait time shall not exceed a monthly average of 1 minute through the term of the Contract as reported on the phone system reports. The average call wait time is measured based on all calls received during a monthly period. Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.
PR-019	All calls shall be handled in a professional and courteous manner all of the time. The Toll System Provider shall monitor at least 2% of all calls, measured monthly commencing with Pre-Toll Operations. For calls monitored the TSP shall have a regular quality control process and results shall be reported in the Monthly Operations and Maintenance Report. Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.
PR-020	Best efforts shall be made to resolve escalated calls related to TCS services and policies while the customer is on the telephone without need for a call-back. Escalations that require involvement of an external agency are not included for purposes of calculating compliance with this requirement. TSP shall open a service request for all escalations that cannot be addressed while the customer is on the phone, and shall track the service request through the reporting system. Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.

Req ID	Performance Requirements (Section PR)
PR-021	The TSP shall not escalate more than 5% of the total calls received by the CSC outside of the CSC. Note: This requirement will be evaluated for compliance by the Joint Board on a monthly basis.
PR-022	The CSC shall resolve a minimum of 65% of calls during Startup Operations and 80% of the calls during Steady State Operations regarding ETC transactions, video transactions, Violations, products, services and policies accurately on the first contact made by the customer. Note: This requirement will be evaluated by the Joint Board for compliance on a monthly basis. The resolution of the call shall mean that the customer's questions were answered in way such that the customer does not have to call back for the same issue or information was provided in response to the customer inquiry in way such that the customer does not have to call back for the same issue.
PR-023	All call monitoring shall be part of the regular QC process and reported in the Monthly Operations and Maintenance Report. The TSP shall cooperate with and assist the Joint Board in conducting random monitoring and recording the results. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-024	Customer Correspondence shall be stamped as received the business day it is received. Correspondence received on non-business days shall be stamped as received on the first business day after the non-business day. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-025	All new customer account applications shall be processed and recorded within the System within two (2) business days of receipt of the completed application. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-026	All payment types (check cash or credit card) shall be processed for payment by the System within one business day. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-027	100% of all correspondence types other than payments shall be processed and recorded in the System within three (3) business days. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-028	All money paid to the CSC shall be credited into the designated bank accounts provided by the Joint Board. All customer payments shall be deposited within 24 hours of when they are received; if such day is a weekend or holiday day on which the relevant bank is closed, the deposit shall be made by the next Day on which the relevant bank is open for business. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-029	The CSC availability shall meet the following minimum requirements. Self Service – 24 hours x 7 days per week For Startup Operations: Customer Service Representative and Walk Up Center - Monday-Friday 7 am-7pm Saturday 8am-2pm, Eastern Standard Time, excluding approved holidays. For Steady State Operations: Customer Service Representative and Walk Up Center - Monday-Friday 8 am-6pm, Eastern Standard Time, excluding approved holidays. Holidays on which the CSC may be closed include New Year's Day, Memorial Day, the 4th of July, Labor Day, Thanksgiving Day, Christmas Day and other holidays mutually agreed to by the Toll System Provider and the Joint Board. The Toll System Provider shall work with the Joint Board to jointly develop the Holiday schedule for each Contract year. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-030	The Toll System Provider shall notify the Joint Board of all planned outages at least one week in advance. The Toll System Provider shall notify the Joint Board within 2 hours of a known unplanned outage with notice of the planned up time. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-031	99.99% of Transponder orders placed in person shall be filled within the same business day. All Transponder orders placed in person not filled in the same business day in which the order was placed shall be filled before the end of the next business day. 90% of Transponder orders not placed in person shall be filled before the end of the day after the day in which the order was placed. All Transponder orders not filled before the end of the day after the day in which the order was placed shall be filled before the end of the second business day after the day in which the order was placed. In person orders are those placed at a Walk-Up Centers or at a retail provider. An order is filled when it is either handed to the customer or mailed to the customer at the best address available to the TSP as indicated in the Business Rules. Note: This requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-032	The Toll System Provider staff shall be scheduled according to expected call arrivals in order to comply with the requirement that a minimum of 80% of calls be answered by a live representative within 30 seconds, calculated by dividing the number of calls answered by a live representative within 30 seconds by total number of calls received by the IVR. Note: This

Req ID	Performance Requirements (Section PR)
	requirement will be evaluated by the Joint Board for compliance with this requirement on a monthly basis.
PR-034	[Intentionally not used.]
PR-035	[Intentionally not used.]
PR-036	The CCTV system shall be available no less than 99% of the time. Availability is defined as access to the CCTV system by remote users and the ability to use and view video in near- real-time for TCS operations. Near-real-time is defined for this requirement as the video being displayed within 2 seconds of the user requesting a camera view. This requirement will be evaluated by the Joint Board for compliance on a monthly basis.

Financial Requirements

Req ID	Financial Requirements (Section FR)
FR-01	All elements of the TCS shall be subject to audit of Financial Transactions, Traffic Transactions and Event Transactions. Note: The Revenue Control Manager, external auditors or other entities will audit and require Transaction reconciliation of the TCS from the Roadside System through the BOS.
FR-02	The Toll System Provider shall provide a TCS that meets US GAAP policy and procedures and is subject to US GAAP audits and compliance on a regular basis. All elements of the TCS shall be subject to audit of Financial Transactions, Traffic Transactions, and Event Transactions. The Toll System Provider shall hire a major independent certified public accounting firm to perform a Service Organization Control (SOC 1) Type 2 audit annually in accordance with Statement on Standards for Attestation Engagement No.16 (SSAE 16) and provide such report within 90 days after close of June 30th fiscal year to the Joint Board. This review shall include the effectiveness of operational controls related to software, procedures, data, security, processing integrity, confidentiality and privacy. The costs for such audits shall be borne by the Toll Services Provider.
FR-03	The Toll System Provider shall coordinate with the Revenue Control Manager and Custodian. The Toll System Provider shall be a party to the Custody and Revenue Control Agreement, substantially in the Form of Exhibit O to the Agreement, once finalized prior to Revenue Service. Note: The Joint Board anticipates that Transaction reconciliation will be performed, and top level secure financial accounts will be established and managed, substantially as outlined in Attachment C-3. The Joint Board has contracted with a Revenue Control Manager that will be responsible for the confirmation and certification of reconciled funds received from the Toll System Provider. A Custodian established pursuant to the Custody and Revenue Control Agreement will serve as the trustee's representative to distribute revenues into the States' Parties' accounts.
FR-04	The Toll System Provider shall adhere to the Flow of Funds diagram in Attachment C-3 in handling all Funds.
FR-05	The Toll System Provider shall reconcile Financial Transactions transmitted to Custodian Accounts on a daily basis. All revenues and funds shall be swept on a daily basis to the Custodian to ensure that all revenues are deposited in a secure account and reconciled prior to the distribution to the States' Parties' accounts.
FR-06	The Toll System Provider shall interface the TCS with a commercial accounting system provided by the Revenue Control Manager. Note: The accounting system will be determined at a later date, currently anticipated to be available prior to NTP.
FR-07	The Toll System Provider shall update the accounting system with current financial elements of the System (debits/credits) no less frequent than every 24 hours.
FR-08	The TCS shall track interoperable Financial Transactions by interoperable agency.
FR-09	The Toll System Provider shall map financial (cash management and custodial) accounts established by the Joint Board to multiple Financial Transaction codes (e.g. tolls, fees, credit payments, adjustments and reversals) and such accounts and codes shall be traceable in the TCS to demonstrate that the financial accounting system (provided by others) reconciles with the TCS.
FR-010	The Toll System Provider shall make customer refunds within 24 hours of confirmation that a refund is owed, and shall make payments to interoperable agencies and transfer funds received for deposit into Joint Board accounts, in accordance with the approved Business Rules.
FR-011	The Toll System Provider shall track receipt and disbursal of payments in the TCS by payment type and source, including but not limited to: by interoperable agency, by payment type (credit card, cash, check), by refunds or adjustments, and by tolls or fees such as invoice fees, administrative fees or penalties.
FR-012	Overpayments or underpayments shall be applied to an account, and records of the overpayments and underpayments to an account shall be readily available for review in reports generated by the TCS. Unapplied balances shall be transferrable to the customer account Customer Statements where applicable. An unapplied balance report shall be available on a daily, weekly and monthly basis.
FR-013	The Toll System Provider shall provide exceptions management system functionality and an exceptions operation process for payment. For example, the TCS shall have an operational procedure so that if payments without an account remittance slip are received by the lockbox, the operator is able to research and locate the account holder in the system, and apply the unallocated funds to a credit on a customer account. The TCS shall include a coding mechanism in the ERS that provides sufficient reporting to track any exceptions.
FR-014	Updates to Financial Transactions shall never modify existing Transactions. All Financial Transactions shall be appended to the original record when fees, fines, or tolls are partially or wholly discounted or escalated manually by an operator of the System. A list of all Financial Transactions (including codes) shall be provided in the System Documentation and logged with the associated Traffic Transactions in the TCS.

Req ID	Financial Requirements (Section FR)
FR-016	The Toll System Provider shall safeguard cash deposits and shall provide any necessary or advisable armored car services and other means to secure all cash that is in Toll System Provider's custody or control.
FR-017	All money paid to the CSC shall be credited into the Custodian Accounts. All customer payments shall be recorded in the TCS within 24 hours of when they are received by the Toll System Provider.
FR-018	The Toll System Provider shall process refund requests from customers. Credit card or debit card-based toll accounts shall be refunded to the same card. Cash toll accounts shall be refunded with a check mailed to the address of record on the account.
FR-019	The Toll System Provider shall provide reports used for accounting and reconciliation of financial data. The reports must address the following functions at a minimum: 1. Cash and all other payments collected at the CSC storefronts and other retail outlets under contract, 2. Account deposits, shortages and overages, 3. Adjustments, 4. Daily reconciliations, customer accounts balances, CSC and VPS activities, tolls collected and tolls posted, images received versus video images processed, 5. Recommended fund transfers, deposits and withdrawals, 6. By CSC for each shift, number of Transaction types, deposits by payment type, cash deposits, low, high and average value, 7. Aggregate account balance activity including beginning-of-day and end-of-day balances, all tolls and fees, and replenishments, and 8. Interoperable account activities for home and away Transactions for Traffic Transactions reconciliation and settlement. Additional financial related reports may be submitted for evaluation.
FR-020	The Toll System Provider shall interface to an accounting system (provided by the Revenue Control Manager) to support reporting of the cash flow and all resources. Note: While the TCS and Accounting System will transmit data, there will be no system to system integration between the accounting system (provided by others) and the TCS, except the file transfer of reconciled data shall be automated in the System.
FR-021	The TCS shall provide for a methodology to batch process refund checks to the third party accounting system or Custodian who disburses revenue.
FR-022	The Toll System Provider shall provide an interface to the accounting system.
FR-023	The Toll System Provider shall have financial codes for Traffic Transactions and Financial Transactions that will be transmitted to an external accounting system that separates administrative fees, fines and discounts from the tolls so they can be accounted for separately during reconciliation. All financial codes and associated Transactions shall meet all system availability and data retention requirements.
FR-024	The Toll System Provider shall provide double entry recording for all Financial Transactions in the System.
FR-025	The Toll System Provider shall provide reports that provide the existing debits and credits no less than every 24 hours. All reports shall be automated for delivery and shall be reconciled against the data transmitted to the commercial accounting system (e.g. general ledger) provided by others.
FR-026	The TCS shall provide an audit trail for all Traffic Transactions and Financial Transactions that shows all changes made in the system with respect to the relevant Traffic Transaction and Financial Transactions, including what was changed and by whom (system or non-system user) including a reason for the change if applicable.
FR-027	Every payment (receivable) in the TCS shall be traceable to payment method, payment type and source of payment.
FR-028	The TCS shall provide self-balancing, double entry accounting consistent with GAAP.
FR-029	The Toll System Provider shall provide functionality to support home or away interoperable Traffic Transactions processed by the Roadside System. The TCS shall process all types of Traffic Transactions including but not limited to ETC, Unregistered Video, and registered video Traffic Transactions.
FR-030	The TCS shall provide adjustments and reversals to support refund processing to accounts for the disbursement of money to customers, States' Parties, interoperable agencies, and external service providers, including but not limited to the lockbox provider, collection agency and credit card payment processers.
FR-031	The Toll System Provider shall issue refund checks for overpayments of prepaid ETC Accounts or Registered Video Accounts that are closed or inactive (after a configurable time period) to customers. The TCS shall automatically change an account status to closed or inactive when there has been no activity for a configurable (from 0 to 999 days) number of days.
FR-032	The Toll System Provider shall describe how unclaimed property is handled within the System for in-active accounts with one (1) year or more of no activity. The inactivity period shall be configurable.
FR-033	All funds received from all payment sources external to the TCS shall be provided to the Joint Board on a gross basis unless an approved external vendor does not support gross payment remittance. If an external vendor(s) does not support gross payment remittance, the Toll System Provider shall provide a separate transaction record that clearly itemizes gross revenue and all deductions therefrom made by the external vendor(s).

Req ID	Financial Requirements (Section FR)
FR-034	The Toll System Provider shall accept MasterCard, Visa, and American Express.

Access Control and CCTV Requirements

Req ID	Access Control and CCTV Requirements (Section AC)
	Access Control Requirements
AC-001	The Toll System Provider shall provide an access control system for all the Roadside System cabinets provided by the Toll System Provider. The access control system shall be a card system that provides restricted access for the Toll System Provider staff. The Joint Board staff shall be provided 10 cards for access, but Toll System Provider is anticipated to be the only entity that will access the Roadside System cabinets.
AC-002	The Toll System Provider shall provide setup, install and configure a CCTV pan title zoom camera and all data communications to monitor the equipment cabinets. The Toll System Provider shall trigger CCTV events for recording and pre-sets to position camera at the point of alarm.
AC-003	The Toll System Provider shall track data and provide reports showing entry and exit times for facilities, secure areas, toll equipment and other devices requiring secure access. If a door is not closed within a preset time (configurable) an alarm shall be generated by the access control system.
AC-004	The Toll System Provider shall provide an Access Control System with the capability for authorized users to manage user roles, including but not limited to: create new roles, assign and un-assign users to roles, adjust roles, deactivate roles; and, in general, control all rights within the System through the assignment of user roles.
AC-005	The Toll System Provider shall utilize an existing Access Control System for the CSC with additional staff or roles added for the Project. The Toll System Provider shall have an Access Control System for the Walk-up Centers that provides for key or access card access to the Walk-up Centers. The Toll System Provider shall make available Access Control System audit reports on-demand, including but not limited to: 1) logged activity by activity type; 2) logged activity by user accounts; and 3) logged activity by user.
	CCTV
AC-006	The CCTV roadway cameras shall be used for observation, to audit traffic as it passes the Roadside System, and to monitor Toll Zones and toll equipment sites for security purposes.
AC-007	CCTV video shall have the following Transaction data correlated to the video: 1) The live feed of the CCTV roadway camera shall be available to the CSC; 2) The Transactions shall be indexed to the roadway overview camera for auditing; 3) The CCTV roadway overview cameras and recordings shall require separate identification and password authentication requirements from those of the CCTV site security cameras and recordings, and 4) CCTV video shall include timestamp common to the time base of the TCS.
AC-009	Fixed (not Pan-Tilt-Zoom) CCTV cameras shall provide full coverage for observation of all traffic lanes in each Toll Zone. Pan-Tilt-Zoom CCTV cameras shall be mounted in such locations that the full Toll Zone and toll equipment is visible by the CCTV camera. All CCTV cameras for roadway overview and site security shall record to a digital video recorder for motion video storage. The CCTV cameras shall record periods of inactivity at lower frame rates or resolution than the normal settings, and shall have a viewable image on a 24 hour per day, 7 day per week basis. The CCTV camera shall provide a continuous capture of the tuned field of view.
AC-010	The CCTV cameras provided by the Toll System Provider shall be color digital cameras supporting a minimum resolution of 720 vertical lines. The CCTV camera shall be a proven commercial product with a second source that can be expanded or updated, in a modular fashion, over time, applicable to both Hardware and Software without modification to any portion of the TCS. The CCTV camera shall provide clear video in both normal day and night conditions, and adjust for poor light conditions.
AC-011	CCTV cameras and all of the associated electronic equipment shall be housed in a weatherproof NEMA rated enclosure and be protected against vandalism and mounted out of physical reach.
AC-012	The CCTV camera and associated digital video recorder (DVR) shall include an administrative application at the toll facility host which shall enable authorized managers to determine access authorizations and CCTV settings. The CCTV system shall configure the CCTV network recordings, data, all other network settings, and events based on motion detection in the field of view or other event triggering, for a configurable number of seconds before and after the event, and shall allow playback, such that configurable specific fields of data are only visible by specific categories of users.
AC-013	The CCTV camera DVR and associated Hardware shall be time synchronized with the TCS and CCTV cameras, and applications shall remain in operation and continue recording when the communications fail, such as a failure of any Roadside System equipment.

Req ID	Access Control and CCTV Requirements (Section AC)
AC-014	CCTV Cameras shall detect movement for specific zones near cabinets or building doors. CCTV cameras have the capability to be aimed in any of 360 degrees of direction and 180 degrees of tilt, with a zoom capability of ten times.
AC-015	The Toll System Provider shall provide a digital video recorder to record the CCTV camera video. Authorized users shall access and query the DVR to search video by date, time and location.
AC-016	The DVR shall be configurable to provide a range of recording frames per second and shall be write-protected to prevent anyone from altering the recording. All video recordings shall be accessed within two (2) seconds of a request to review the video and the DVR shall store sixty (60) days of recording on the DVR and be configurable between one (1) and sixty (60) days.
AC-017	Authorized users on the TCS network shall be able to access, open and display cameras on a personal computer through a DVR application provided by the Toll System Provider. The Toll System Provider shall provide VPN access for users to remotely access the TCS network. The authorized user shall access the DVR through the network to play back previously recorded video with selected lane activity data for review. Note: It is expected that the Toll Operations Center staff and the Joint Board will be the primary users of these videos.
AC-018	The DVR shall enable an authorized user to copy, save, and print segments of recorded data as images or full-motion video and to crop and alter those copies if necessary without altering the original. The DVR recordings shall all be in one industry standard open format for recording and displaying live streaming video and full-file downloads. The DVR shall automatically purge CCTV data not marked for archive after a configurable period of time, with the default set at 60 calendar days. The DVR shall provide the ability to automatically archive alarm events and other designated critical events regardless of purge cycle.
AC-019	Toll System Provider shall provide CCTV and DVR report(s) that include but are not limited to the following information: 1) user access to the CCTV camera system including date and time stamp and camera name; 2) firmware version and date, and 3) camera and DVR configuration. It is expected that these reports are commercially available from these devices.
AC-021	The Toll System Provider shall provide CCTV maintenance to satisfy Mean Time Between Failures(MTBF) – of 10,000 hours based on continuous operations of 24 hours a day 7 days a week usage.
AC-022	The CCTV system shall be sized such that a minimum of ten (10) concurrent users may use the system without degradation of the system.

TCS Workflows

Req ID	Work Flows (Section WF)
WF-001	**Transaction payment processing and settlement** The Toll System Provider shall provide system functionality and operations processes to process Transaction payments and settlements on all account types. Note: The system and operations work flows shall also demonstrate traceability of Traffic Transactions and Financial Transactions within the System from the Roadside System into the BOS.
WF-002	**Transaction payment processing and settlement** The Toll System Provider shall provide system functionality and operations processes to process Transaction payments and settlements on all account types. Note: Transactions are paid from the account and settled with home or away agencies as paid, closed or escalated for further notice of payment required.
WF-003	**Account management system functions (open, close, update accounts)** The TCS shall provide account management system functions and operational processes for Traffic Transactions received from the Roadside System and sent to an account for payment.
WF-004	**Customer service representative customer interactions** The TCS shall provide functional customer interfaces that include updates to the account, maintenance of the account or handling of special cases such as habitual violators or other special circumstances.
WF-005	**Image Review** The TCS shall provide System functionality and operations processes to process images in Traffic Transactions and post the Transaction to the BOS prior to the issuing of Customer Statements.
WF-006	**Invoice generation and escalation** The TCS shall provide system functions and operations processes for Registered or Unregistered Video accounts. The TCS shall send individual Transactions on an invoice or bundle Transactions into an invoice.
WF-007	**Violations processing (post-paid no payment)** The TCS shall provide system functionality and operations processes for Customer Statements after unsuccessful collection through the invoice notices for video account customers or now invalid ETC Account customers. Note: The Toll System Provider is responsible for the evidentiary package for the administrative hearing process and court process on the LSIORB Project.
WF-008	**Incoming payments at the Walk-up Center – Credit, Check, Cash** The TCS shall provide system functionality and operational processes to accept credit cards, checks, and cash at the Walk-up Centers.
WF-009	**Payment Processing (including lockbox, reversals, payment plans, refunds or mitigated deals)** The TCS shall provide system functionality and operational processes to accept, process and settle lockbox payments, issue refunds, reverse Transactions and fees and perform mitigated deals for a customer on all account types.
WF-010	**Collection agency and court interfaces** The TCS shall provide system functions and operational processes for use of internal collections process or external collection agency and court processes after failure to collect funds from invoice, Violation, and collection notice process.
WF-011	**Customer self-service payments including cash replenishments** The TCS shall provide system functionality and operational processes for self-service channels such as an IVR system, Customer Website, and mobile payments or other means to provide a low cost and convenient method for receiving and processing customer payments.

Req ID	Work Flows (Section WF)
WF-012	**Financial Reconciliation within TCS and with external accounting system** The TCS shall provide system functionality and operational processes to process Financial Transactions that account for all payments made from the customer to the TCS, external agencies and/or customer interfaces (such as kiosks or retail outlet) or money received from other agencies for Project account holders. Note: An accounting system (e.g. general ledger) will be provided by others. The Toll System Provider shall interface with the third-party-provided accounting system and reconcile all Financial Transactions and Traffic Transactions collected and processed by the TCS.
WF-013	**TCS incident management** The TCS shall provide System functionality and operations processes to create, manage, and dispose of incidents within the TCS (e.g. Roadside System, BOS and TOC). Note: These work flows shall address how priority levels are established in the System, how work tickets are created and how dispatchers will be notified, take action and resolve the incident. This is classically the incident management component of a Maintenance Online Management System (MOMS) and shall include the functions of the Toll Operations Center responsible for managing these incidents.
WF-014	**TCS monitoring** The Toll System Provider shall provide system functionality and operations processes that provide Hardware, Software and System alarm generation, priority levels assignments and final disposition. Note: This is typically the System monitoring component of a Maintenance Online Management System (MOMS) and shall include the functions of the Toll Operations Center responsible for managing these incidents.
WF-015	**TCS inter-agency Transaction processing and settlement** The TCS shall provide system functionality and operations processes to interact with other agencies to process, settle and reconcile interoperable Transactions.
WF-016	**TCS configuration management** The TCS shall provide system functionality and operations processes to provide configuration management of the Hardware and Software in the TCS.

Plans and Testing

Req ID	Plans and Testing (Section TP)
TP-001	**Roadside System and Network System Plan** The Toll System Provider shall provide a Joint Board-approved Roadside System and Network System Plan including but not limited to how the System is designed, installed, configured and commissioned **no later than 90 days after NTP.** The Roadside System and Network System Plan are comprised of two components, the roadside system plan documentation and the network system plan documentation. Each component of the Roadside System and Network System Plan shall include operations and maintenance manuals, System architecture documents and diagrams, installation manuals and all external and internal Interface Control Documents. The Toll System Provider shall also provide a copy of the Software licenses and Hardware cut sheets.
TP-002	**Back office System Plan** The Toll System Provider shall provide a Joint Board-approved Back Office System Plan, which shall include but not be limited to how the System is designed and configured, **no later than 90 days after NTP**. The Back Office System Plan shall include operations and maintenance manuals for all users of the System, System architecture documents and diagrams, installation manuals and all external and internal Interface Control Documents.
TP-003	**TOC System Plan** The Toll System Provider shall provide a Joint Board-approved TOC System Plan and documentation **no later than 90 days after NTP.** The Toll System Provider shall provide Toll Operations Center System Documentation for the monitoring of the TCS. The TOC System Plan shall include all the System monitoring plans and procedures, monitoring alarms, priorities and how issues are identified, tracked and resolved. The Toll System Provider shall provide any existing manuals for incident response externally and internally, levels of escalation for incidents and tracking methodologies for incidents and their resolution.
TP-004	**Roadside System and Network Installation Plan** The Toll System Provider shall provide a Joint Board-approved Roadside System and Network Installation Plan **no later than 180 days after NTP.** The Roadside System and Network Installation Plan shall describe the TCS installation approach, configuration parameters, schedule, methodology, proposed maintenance of traffic, and required resources (including those of the Joint Board, if applicable).
TP-005	**BOS Installation Plan** The Toll System Provider shall provide a Joint Board-approved BOS Installation Plan **no later than 180 days after NTP**. The BOS Installation Plan shall describe the installation approach, proposed installation schedule, configuration parameters schedule, methodology and required contract resources and Joint Board (if applicable) resources in the plan.
TP-006	**TCS As-Built System Documentation** The Toll System Provider shall provide Joint Board-approved As-Built System Documentation for the deployed System at the Project **no later than 30 days after the successful completion of the System Acceptance Test** with any updates made since the first submission addressed in the second submission. As-Built System Documentation shall be provided in native format as well as PDF document format. The As-Built System Documentation shall include all Business Rules, Hardware cut sheets and design, Software configuration and code (where applicable) as well as installation drawings, schematics and other diagrams that describe the physical, logical, business and operational configuration of the System.
TP-007	**Training Plan** The Toll System Provider shall provide a Joint Board-approved Training Plan **no later than 180 days after NTP**. The Training Plan shall provide a list of all training courses planned to be delivered to new and existing staff on the Project. The Training Plan shall also describe training facilities, typical training equipment, proposed training for local staff, and provide course outlines for the training program. A list of all user manuals shall be described in the Training Plan as well. The Training Plan shall describe where the Joint Board staff will be trained throughout the Contract Term. The Joint Board and/or its representatives shall be invited to observe and participate in all elements of the training. The Training Plan shall also include a list and description of all user roles and access rights for the TCS. This list shall include all users of the TCS including Joint Board Designated Representatives.

Req ID	Plans and Testing (Section TP)
TP-008	**TCS Project Management Plan** The Toll System Provider shall submit a Joint Board-approved TCS Project Management Plan for the installation and delivery phase of the Project and update the TCS Project Management Plan for the operations and maintenance phase of the project **no later than 90 days after NTP**. The TCS Project Management Plan shall adhere to the Toll System Provider's project management methodology to deliver the Project, but shall include a roles and responsibilities matrix that clearly identifies roles and responsibilities within the Toll System Provider's organization and any interfaces to the Toll System Provider, including but not limited to the Joint Board, ETC Vendor, Developer and DBT. The TCS Project Management Plan shall also address resources, schedule, communications and delivery of the Work.
TP-009	**Safety Plan** The Toll System Provider and each Major Subcontractor shall submit a Joint Board-approved Safety Plan **no later than 90 days after NTP**. The Safety Plan shall address how the Toll System Provider shall conduct its work using safe methods. The Safety Plan shall also describe how safety is communicated with its employees, how safety audits are completed and any other information necessary to perform Work on the Project.
TP-010	**System Configuration and Management Plan** The Toll System Provider shall provide a Joint Board-approved System Configuration and Management Plan **no later than 90 days after NTP**. The System Configuration and Management Plan shall describe how Hardware, Software and system configuration settings will be managed from Tolling Readiness through the Operations and Maintenance Term. The System Configuration and Management Plan shall describe how any change is identified, documented, controlled and verified during the Installation Work and the Operations and Maintenance Term. Any change proposed by TSP shall be submitted to the Joint Board for review and approval pursuant to the Approval Process.
TP-011	**Maintenance and Support Plan** The Toll System Provider shall provide a Joint Board-approved Maintenance and Support Plan **no later than 180 days after NTP**. The Maintenance and Support Plan shall describe how the Toll System Provider shall conduct preventative and corrective maintenance and support activities for the Roadside System and the BOS. The Maintenance and Support Plan shall describe preventative maintenance, corrective maintenance, Spare Parts and inventory management procedures and how Operations and Maintenance Work is managed for the System. While one plan is required, the Toll System Provider may submit a separate MSP for each functional area, for example there may be a Roadside System MSP and a BOS MSP as two separate plans. However, if more than one MSP is submitted, the MSPs shall demonstrate end to end coverage of the System. If the Toll System Provider has predictive maintenance activities this should also be described in the MSP, and the MSP shall address how the Toll System Provider shall meet all Performance Requirements, priority response and repair times for each item. The Toll System Provider shall include an organization chart and notifications for incidents as well a description of how MOMS is used to track incidents through resolution.
TP-012	**Transition Plan** The Toll System Provider shall provide a Joint Board approved Transition Plan **no later than 180 days after NTP**. The Transition Plan shall describe how the System will be transitioned from test environments to production using the testing approach described in the Technical Requirements. Further the Transition Plan shall include all resources, scheduling and detailed step by step transition procedures for the overall System transition from test environments to production.
TP-013	**Third Party Manuals and Documentation** The Toll System Provider shall provide and maintain standard, commercially available, updated documentation for third-party provided Hardware, Software, and services. This set of manuals shall be maintained on a Toll System Provider provided shared collaboration site (e.g. SharePoint, eRoom) and be available to the Joint Board **no later 180 days of NTP to review and download**. The Toll System Provider shall update these documents as required no less frequently than every 180 calendar days.
TP-014	**End of Contract Transition Plan** The Toll System Provider shall provide a Joint Board approved End of Contract Transition Plan **at the completion of the System Acceptance Test**. This End of Contract Transition Plan shall address how the Toll System Provider will efficiently and seamlessly transition, without any disruption to users or the Joint Board, the operation and maintenance of all aspects of the System to another toll system provider or providers. The End of Contract Transition Plan is subject to Joint Board review and approval and shall be updated no less frequently than annually after approval. All updates are also subject to Joint Board review and approval. The End of Contract Transition Plan shall address the items described in Section 4.13 of the Agreement, and if the BOS and CSC services are provided at a commingled facility the End of Contract Transition Plan shall take into account special considerations related to the commingled facility.

Req ID	Plans and Testing (Section TP)
TP-015	**Business Rules and Operational Requirements (BROR)** The Toll System Provider shall provide an initial BROR for the Project **no later than 90 days after NTP**. Once approved by the Joint Board, the Business Rules and Operational Requirements shall be attached to the Technical Requirements. The Business Rules and Operational Requirements **shall be updated 180 days prior to the Tolling Readiness Date and again 90 days after the System Acceptance Test is successfully completed.** The Business Rules and Operational Requirements shall be submitted to the Joint Board each time for review and approval. The Business Rules and Operational Requirements shall describe all Business Rules for the Operations and Maintenance Work for all components of the System, including any external systems used to operate and maintain the System.
TP-016	**Monthly Project Management Report and Meeting** Every month of the Contract Term, the Toll System Provider shall deliver a Monthly Project Management Report that describes the current status of the Project, current or new risks on the Project, a summary of work completed in the last 30 days and expected work to be completed in the next 30 days. The form of the Monthly Project Management Report shall be subject to the review and approval of the Joint Board. The Monthly Project Management Report shall also include an updated resource loaded GANTT schedule delivered in MS project and delivered in PDF. The Project schedule shall reflect current staff and progress measured against the baseline schedule. The Monthly Project Management Report shall highlight the Critical Path and near Critical Path items on the Project and the Toll System Provider's current plan to ensure no delays are incurred during the delivery. If the Toll System Provider is behind schedule or also upon the request of the Joint Board, the Toll System Provider shall provide a written corrective action plan that describes how and when the Toll System Provider will recover to meet the baseline approved Project schedule. Toll System Provider shall continuously monitor its compliance with this requirement commencing with Pre-Toll Operations, and report its compliance or noncompliance with this requirement each month in this Monthly Operations and Maintenance Report. **The Monthly Project Management Report and an updated Project Schedule shall be delivered at least 3 business days before the Project management review meeting with the Joint Board.** The Toll System Provider Project Manager - Installation shall attend this meeting in person.
TP-017	**Quality Management Plan (QMP)** The Toll System Provider shall provide a Joint Board approved Quality Management Plan **no later than 90 days after NTP**. The QMP shall be subject to the review and approval of the Joint Board and shall describe how the Toll System Provider manages the quality assurance and quality controls throughout the Contract Term. The QMP shall address verification and validation of changes including coordination with the change management plan, supply chain management including how all Suppliers and subcontractors are addressed in the delivery, operations and management of the TCS. The QMP shall address handling of materials, control of records on the Project, and how the Toll System Provider shall conduct audits to ensure the efficient and complete performance of the Work and other obligations of the TSP under the Contract. The Toll System Provider shall develop and maintain a quality assurance and quality control program to ensure compliance to all requirements and obligations in the Contract. The Toll System Provider QMP shall establish key performance measures, regular audits and reporting to ensure requirements compliance is repeatable and the customer experience is consistent and revenue collection is at the highest efficiencies possible. The quality assurance program shall be documented in the Quality Management Plan during delivery and shall be addressed in a quality assurance section to be included in the Monthly Project Management Report provided to the Joint Board.
TP-018	**Configuration and Change Management Plan** The Toll System Provider shall provide a Joint Board approved Configuration and Change Management plan **no later than 90 days after NTP.** The Configuration and Change Management Plan shall describe how the Toll System Provider identifies and manages change including the identification of a change control board to be used during the installation and configuration of the System as well as during operations. The Configuration and Change Management Plan will outline the process in which changes are identified, escalated and brought to the owner, process to notify the Joint Board of changes, and final resolution and tracking of changes throughout the TCS Operations and Maintenance Term.
TP-019	**Master Testing and Commissioning Plan** The Toll System Provider shall provide a Joint Board-approved Master Testing and Commissioning Plan (MTCP) **no later than 90 after NTP**. The MTCP shall include a list of all of the testing including a description of each test, a sample and representative completed test procedure for the Project, roles and responsibilities for each test phase, the entry and exit criteria for each test including test environment for each test, a requirements traceability matrix used to verify the requirements and failure reporting, tracking and analysis. The MTCP shall be developed to satisfy the testing requirements as outlined below in Technical Requirements TP-020 thru TP-025 outlined below.

Req ID	Plans and Testing (Section TP)
TP-020	**Baseline Test** The Baseline Test will provide an initial validation of the System's compliance with the Technical Requirements. The Baseline Test is not intended to be a performance test but rather an initial component level and end to end functional test of the System. The Baseline Test Plan shall include component level testing for the following areas. In addition it shall demonstrate the end to end functionality of the System as it is available in its current state. External interfaces shall be used in all instances possible but simulated external interfaces or external interfaces may be used with Joint Board approval in this test phase. The Baseline Test shall be conducted at the Toll System Provider's test facility or factory environment. A simulated Roadside System or test facility may be used for the Baseline Test. The Baseline Test planning shall be an end to end view of all testing on the Project but the Baseline Test plan and procedures shall provide component level tests that exercise elements of each of the major functional systems below to demonstrate compliance with the Technical Requirements. The Baseline Test Plan shall, at a minimum, encompass the following areas: 1. Roadside System Transaction creation, processing 2. Roadside System degraded mode of operation and failure recovery 3. System Monitoring (MOMS) 4. Image Review 5. IVR 6. BOS ETC and Violations account management 7. BOS, credit cards, Violations, collections and court processes 8. Payment processes and exception management 9. Toll Operations Center including all interfaces 10. Payment processing for all available payment methods 11. Customer Website 12. Disaster recovery including failover of the BOS and CSC. This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.
TP-021	**Pre-Production Controlled Test** The Pre-Production Controlled Test shall occur after the configuration of the external interfaces and Business Rules for the TCS. The same test procedures may be used for the Pre-Production Controlled Test as are used in the Baseline Test, and the Pre-Production Controlled Test shall be conducted at the Toll System Provider's test facility. With the exception of the Roadside System at the Project Sites, the Pre-Production Controlled Test shall use the configured interfaces for the System. The Pre-Production Controlled Test as it relates to the Roadside System shall reflect the System intended to be installed on the Project but shall be connected to the Toll System Provider's test facility. Vehicles shall be run at speeds from 0 MPH to 65 MPH at the test facility to conduct the Pre-Production Controlled Test. A minimum of four Equipment Lanes shall be configured to conduct this test. It is also understood that the network connections may be different than the network planned for the Project but all interfaces shall be configured to operate in near-real- time as close to a production environment of the Project as possible. To allow for integration of the Roadside System to the ETC equipment, use of a single ETC reader integrated with the Roadside System is anticipated for the Baseline Test. This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.
TP-022	**BOS Production Readiness Test** The BOS Production Readiness Test shall be the same as the Pre-Production Controlled Test as it relates to the BOS, but shall be conducted with all final components required for revenue service. No simulated interfaces may be used in the BOS Production Readiness Test, except those simulating roadside Transactions. The same test procedures used for the Baseline Test shall be used for the BOS Production Readiness Test, but without the use of simulators. The BOS Production Readiness Test shall verify that the following conditions are met: • The BOS is available and functioning properly, including BOS Hardware and network communications, and each component of the BOS is available to collect revenue,

Req ID	Plans and Testing (Section TP)
	receive information from the Roadside System, process information and Transactions correctly and provide customer service operations. • Transactions successfully processed through the BOS and then successfully moved to the appropriate Transaction route in the BOS solution. The routes the Transactions may take, shall result in a rate assignment for each Transaction and association of the correct customer account for that Transaction, or the BOS shall send the Transaction through the video process to either associate with a known account or proceed to identify the Transaction to an appropriate vehicle owner. The distribution of Transaction types will be agreed upon by the Toll System Provider and the Joint Board. • The methodology pursuant to which the Toll System Provider shall report upon its compliance with the SLAs has been approved by the Joint Board. • BOS-related network communications have been tested and are successfully operating. • All required interfaces and file transfers have been tested and are successfully operating for required interfaces, including interoperable interfaces. • The CSC must be open and operational and able to provide all customer service functions as required in Section CS of the Technical Requirements. The test shall demonstrate that the IVR and Customer Website are operational and comply with Business Rules and PCI DSS compliance rules and regulations. All cash handling operations must be verified and ensure compliance with all rules and regulations as well as all other payment processing procedures. • All Correspondence capabilities shall be reviewed, verified and validated, including the: o Ability to process all types of invoices including pay-by-plate, Violations, collections and final collection, o Ability to process Violations through court documentation preparation and procedures, o Ability to process Customer Website Correspondence, o Ability to process different types of Transactions, payments, and Violations through the IVR, and validate the IVR system, and o Ability to meet all deadlines and response times established in the Contract Documents and Business Rules. • All TCS reporting and monitoring are operational and have begun to collect data from different components of the TCS. Report formatting and report generation are complete. Typical responses to system incidents have been outlined and tested. • Media data submission and reporting have been developed and approved by the Joint Board for daily, weekly and monthly submissions. This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.
TP-023	**System Production Readiness Test** The System Production Readiness Test shall be the same as the Pre-Production Controlled Test but shall be conducted with all final components required for revenue service and using the Project Toll Zones and vehicles and customer accounts at the LSIORB Project Toll Zones in Kentucky or Indiana. No simulated interfaces may be used in the System Production Readiness Test. The same test procedures used for the Baseline Test may be used for the System Production Readiness Test, but without the use of simulators. This test shall be conducted for the Temporary Downtown Traffic Configuration, East End Bridge, and the Final Downtown Traffic Configuration. The System Production Readiness Test shall be performed prior to live traffic conditions to verify that the System is ready to open to traffic and verify preparedness for toll collection activities. The TCS is considered ready to open to traffic and able to collect revenue when the following conditions are met: • The TCS is available and functioning properly, including System Hardware and network communications, and each component of the TCS is available to collect revenue, receive information from the Roadside System, process information/Transactions correctly and provide customer service operations. • The System is able to successfully identify from the Roadside System equipment that a Transaction has occurred through either Transponder identification or license plate identification. The Transaction should successfully process through the Roadside System and then successfully move to the appropriate Transaction route in the BOS solution and the TOC. The route the Transactions may take are varied depending upon the System but should result in a rate assignment for each Transaction, associate the correct customer account for that Transaction, or the System shall send the Transaction through the OCR process to either associate with a known account or proceed to identify the Transaction to an appropriate vehicle owner. The System shall be capable of performing these functions for 1100 Transactions of varying types encompassing all Transaction types prior to Tolling Readiness. The distribution of Transaction types will be agreed upon by the Toll System Provider and the Joint Board.

	The Toll System Provider is prepared to collect data per the agreed upon methodology upon Revenue Service. The methodology to measure SLAs has been established, the methodology to report Performance Requirements and the reporting tools and medium has been agreed upon by the Joint Board and the Toll System Provider Network communications have been tested and are successfully operating. All required interfaces and file transfers have been tested and are successfully operating for required interfaces, including interoperable interfaces. This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.
TP-024	**Operations Tests** The Toll System Provider shall conduct four Operations Tests: i) a BOS, CSC, TOC operations test, ii) Temporary Downtown Traffic Configuration iii) East End Bridge, and the iv) Final Downtown Traffic Configuration. Each Operations Test shall be a live Operations Test of the System using controlled and live test vehicles and accounts to demonstrate that the TCS operates within the approved Business Rules and Technical Requirements. The Toll System Provider shall conduct this operations test for a minimum of 120 days after the commencement of Revenue Service for each Bridge including the BOS. The Operations Test for the BOS, CSC, and TOC shall be conducted after the first bridge commences Revenue Service. The Operations Tests shall verify the following elements on a weekly basis be submitted no more than 2 business days after the conduct of the test. The Operations Test requirements shall be addressed in the MTCP but should include the following at a minimum: 1. ETC and Image Transaction Creation and flow and posting to all 10 test accounts and trace Transactions in at least 10 production accounts selected by the States' Parties to ensure Transactions are created, posted and processed according to requirements. 2. Test IVR to make payments, and exercise the IVR tree to ensure information is available to the customer per the specified Business Rules. 3. Test Customer Website to validate invoice information is available and makes payments and validate that the website is available and operating in accordance with the Business Rules and requirements. 4. Validate payment processing for credit cards, checks, retail centers, and lockbox posting. 5. Validate Violation escalations, invoice information presented on the account, escalation to collections and court. The escalation configurable periods used for collections and court may be manually adjusted but the escalated configurable periods for Customer Statements must use the configured production System times. 6. Confirm all payments and Transactions for test accounts and selected production accounts are reflected properly in the financial reports and any financial records transmitted to the accounting system provided by others. 7. Confirm all interoperable accounts and Transactions are posting in accordance with E-ZPass rules and funds are reconciled within the TCS. 8. Monitor and record all incidents, and report all priority 1 incidents to the Joint Board with resolution plan including a root cause analysis. This test must be successfully completed by the Toll System Provider and approved by the Joint Board before continuing to the next phase of testing.
TP-025	**System Acceptance Test (SAT)** The System Acceptance Test will be performed in live traffic conditions after all the Bridges have been opened for Revenue Service. SAT will be performed to ensure that the TCS functions as required by the Technical Requirements, the Guaranteed Performance Requirements as provided in Exhibit N of the Agreement, and all other requirements of the Contract Documents. The purpose of the SAT is to validate that the Roadside System equipment identifies the Traffic Transactions properly and collects the appropriate data, the BOS solution successfully processes that data, and the customer service operations perform as required to support the needs of the toll patrons while supporting maximum revenue collection with minimum leakage at the required service levels. SAT will be performed after numerous component tests occur as listed in TP 020-025 of the Technical Requirements (Appendix C). SAT will verify that the overall TCS, including Hardware and Software, performs at the required service levels and at the required throughput. In order for SAT to be requested and agreed upon by the Joint Board, SAT will be performed after all outstanding trouble tickets other than those with respect to immaterial items that don't affect System functionality have been resolved; all prior operational component testing is complete as outlined in Technical Requirements TP-020, TP-021, TP-022, TP-023, and TP-024 and accepted; and an established methodologies have been utilized for a first collection of the data required to measure compliance with Performance Requirements. SAT testing will occur after the completion of the Operations Tests and will run for a period of 48 hours of roadside traffic operations and for a period of 60 days for all TCS components and operations.

SAT will verify that:

- Each component of the TCS is available and performing to the required Performance Requirements in TR Section PR
- All processes and work flows will be verified including but not limited to WF-001 through WF-016.
- Ensure compliance with all Business Rules.
- System network and system architecture requirements have been successfully implemented, completed, tested, verified, validated and performing and are available for use by the Joint Board's TCS. Test and verify timeliness of response to potential network and communications failure.
- Test the disaster recovery systems and test the Disaster Recovery System Plan.
- Ensure Transaction record accuracy has been achieved at all Toll Zones. Traffic Transactions and Event Transactions from each Toll Zone will be reviewed, verified and followed to each end state of the Transaction.
- BOS requirements have been successfully implemented, completed, tested, verified, validated and are performing and available for use by the Joint Board's TCS through account sampling, setup, verification, and validation.
- Toll Operations Center and system monitoring have been successfully implemented, completed, tested, verified, validated and are performing and available for use by the Joint Board's TCS. Test system messaging and response times to different message types and ensure timeliness and responsiveness of operation and maintenance staff.
- All Correspondence capabilities will be reviewed, verified and validated including the ability to process all types of invoicing including registered and unregistered license plate accounts, Violations, collections and final collection process through court documentation preparation and procedures;
- Ability to process Customer Website Correspondence, and the ability to process different types of Transactions by IVR, process payments, process Violations and validate the IVR system.

CSC operations will be fully reviewed to ensure all SLAs are met including all requirements as outlined in Section CS of the Technical Requirements including the additional items below: 1) Verification of live call handling by CSRs, 2) Secret shopping to the Walk-up Centers and remote operations (if implemented), 3) Random spot check and review of lockbox and lockbox compliance with operational procedures and 4) Confirm and test money handling procedures at each retail location and/or remote locations (if applicable).

The SAT will also verify the following:

1. Review HR policies and HR procedures of all staff on the TCS team to ensure the policies and procedures are followed in accordance with the Joint Board approved Toll System Provider policy.

2. Confirm that all transfers of files and interfaces to all outside systems are tested, validated and are functioning according to requirements. Process file transfer in near-real-time and verify transfer of data with outside interfaces

3. Financial transfers of funds are occurring timely with maximum availability of cash funds to the Joint Board on a daily basis with concise, timely, and precise reconciliation of all funds, accounts, sub ledgers, etc.

4. Confirm that all interoperable accounts are handled and processed in a timely manner and ensure all interoperable Transactions are processed according to each interoperable agency's agreed upon Business Rules and operational agreements. 100 interoperable Transactions will be traced and verified and validated throughout the TCS to final financial reconciliation from each interoperable agency.

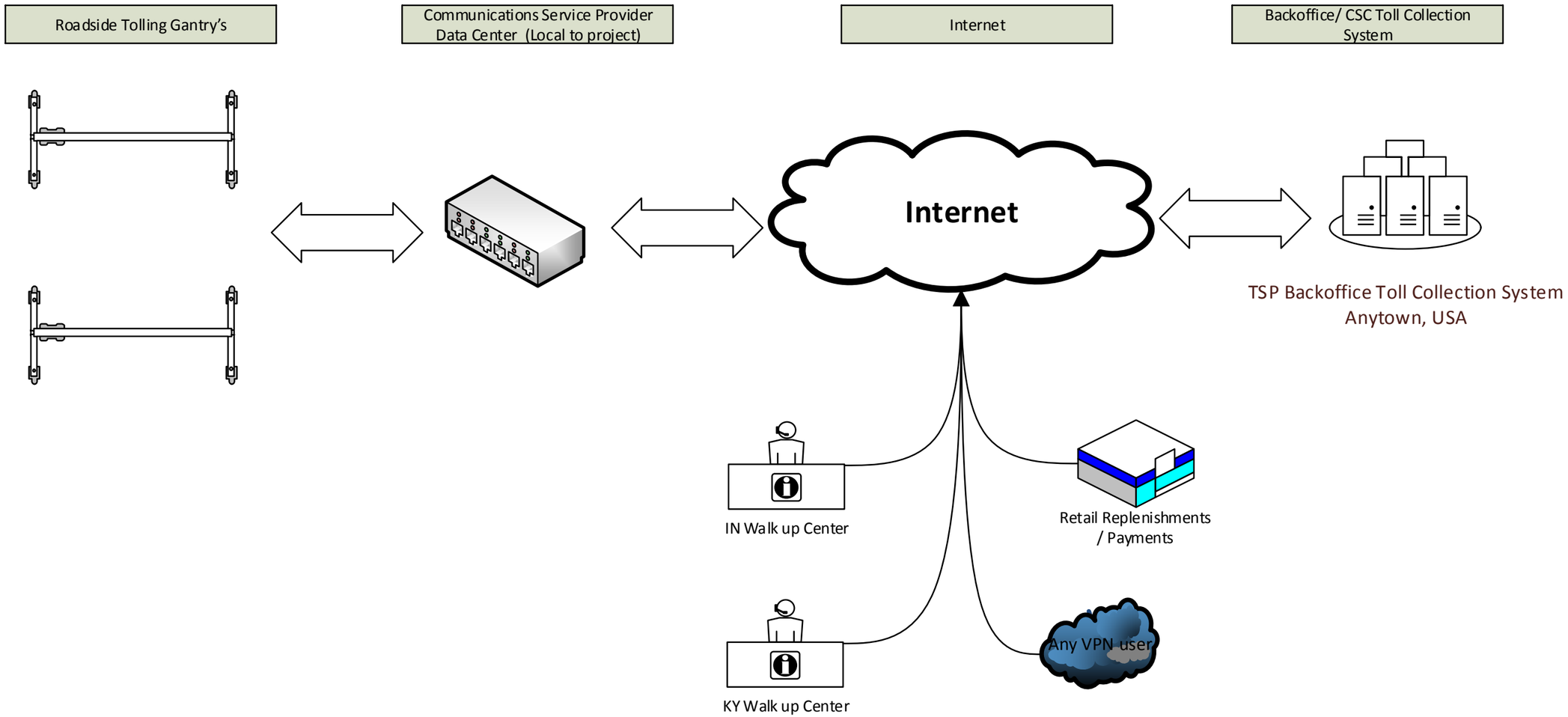
The SAT must be successfully completed by the Toll System Provider and Approved by the Joint Board before being granted Final System Acceptance

TP-026	**Document Reviews** The Toll System Provider shall plan for 2 document reviews for submittals and allow for 10 day review cycles by the Joint Board for all documents submitted for Joint Board Review and approval. No new comments are expected after the second cycle but additional review cycles may be required if the Joint Board's comments are not addressed in the first two review cycles to the Joint Board's satisfaction . All documents shall be provided in PDF and native versions including MS Office, AutoCAD, Visio or other similar products.
TP-027	**Maintenance of Traffic Plan** The Toll System Provider shall be responsible for the planning and implementation and removal of lane closures for toll equipment preventative or emergency maintenance. The Toll System Provider shall utilize the most current state traffic control plans and standards applicable to the Toll Zone. The Toll System Provider shall request lane closures in writing and accordance with the applicable state policy. Any preventative maintenance lane closures must be requested in writing at least 14 calendar days in advance. Emergency lane closures shall be requested with 12 hours prior written notice. Notice of any immediate lane closures shall be communicated to the Joint Board representative via phone and email as soon as possible. The Toll System Provider shall include a unit price for each of the traffic control configurations outlined in the price proposal. The Joint Board will reimburse the Toll System Provider for each authorized lane closure required during installation and maintenance of traffic, excluding closures in excess of the limited number of hours established by the Contract for maintenance, unless the reason for closure was outside the Toll System Provider's control.
TP-028	**Incident Management Coordination** States' Parties have two separate, but coordinated traffic management centers (TMC) to manage traffic incidents in each respective state and jointly coordinate incidents that impact both states. INDOT has a state operated traffic management center and KYTC contracts its traffic management services through TRIMARC in the Louisville Metropolitan area. It is anticipated that the designated Traffic Management Centers in KY or IN will notify the Toll System Provider by email and phone of incidents that occur that may impact tolling which may or may not require suspension. INDOT and KYTC TMC's are responsible for all incident management and will notify the Toll System Provider of any incidents within proximity of the Toll Zone by email. The Toll System Provider shall establish, maintain and support a dedicated phone line and maintain the phone system used for coordination with the traffic management centers. This phone number shall be a toll free number and shall be established at least 9 months prior to Tolling Readiness Date. No system to system integration or interface is required for the TMC. Phone, email and one way really simple syndication feeds shall be configured for the TMC operations.
TP-029	**CSC Operations Plan (separate from BOS)** The Toll System Provider shall provide a Security and Access Control Plan for CSC, Lockbox Operation Staffing and Operational Plan, Training Program for CSC staffing, Organizational Chart for all staffing of CSC, Employment Policy for CSC employees and HR Policy and HR Benefits plan **no later than 180 days after NTP.** It is intended that the Toll System Provider provide these plans for the Joint Board review. No approval or comments are anticipated. However, due to federal requirements and funding on the Project, the Joint Board may provide comments on elements that are applicable to federal or state law.
TP-030	**Walk-up Center Build out Plan** The Toll System Provider shall provide a Walk-up Center Plan **no later than 90 days after NTP.** This Walk-up Center Plan shall identify the overall scope and construction and operational opening schedule for the Walk-up Centers as well as lease information, layout functions and deployment approach, and required marketing information needed from the Joint Board.
TP-031	**Monthly Operations and Maintenance Report** Monthly O&M Performance Report that accurately describes the actual System performance as measured against the Performance Requirements section **shall be submitted in writing to the Joint Board each month no later than the 7th business day of the month.** If there is a deviation from the approved Performance Requirements agreements, the Toll System Provider shall identify a corrective action plan for all deviations. The Monthly O&M Performance Report shall also include the inventory levels and performance of all equipment in the TCS. The first Monthly O &M Performance Report shall be delivered 30 days after commencement of the Pre-Toll Operations. The Monthly O&M Performance Report also shall include a statement of the number and type of accounts serviced during such month and the associated staffing levels for each account type during this reporting period. For non-ETC accounts, the Monthly O&M Performance Report shall identify the number of accounts and full time equivalent staff that were serviced for all Customer Statements in each of the following statuses: 1) invoices, 2) Violations, and 3) Collection Status Violations (stated in total and separately for each state). The Toll System Provider shall also indicate the number of accounts and full time equivalent staff used for administrative hearings, and those accounts that were sent to court during the monthly reporting period. The Monthly O&M Performance Report shall specify for each Customer Statement status the number of accounts in such status during the reporting period and the corresponding full time equivalent staff associated with each status on a monthly basis.
TP-032	**Access to TSP Facilities** The Joint Board's Designated Representatives shall have access to the Toll System Provider's facilities and personnel at all times. The TSP shall provide an office for 2

	people at the CSC for the Joint Board's use at any time. This office shall include a network workstation, phone and location for a member of the Joint Board's team to remain on site 100% of their time, if desired by the Joint Board.
TP-033	**Disaster Recovery System Plan** The Toll System Provider shall provide a TCS Disaster Recovery System Plan and subsequent disaster recovery procedures for the TCS and CSC, which shall be reviewed and approved by the Joint Board **no later than 180 days after NTP**. The TCS Disaster Recovery System Plan shall include a description of each system along with a description of how each system in the TCS will be recovered. This plan shall describe all resources required to recover each system to operations. The Disaster Recovery System Plan shall also describe any single failure points in the System and the Toll System Provider's plan to recover the System.

Attachment C-1 - Network system architecture

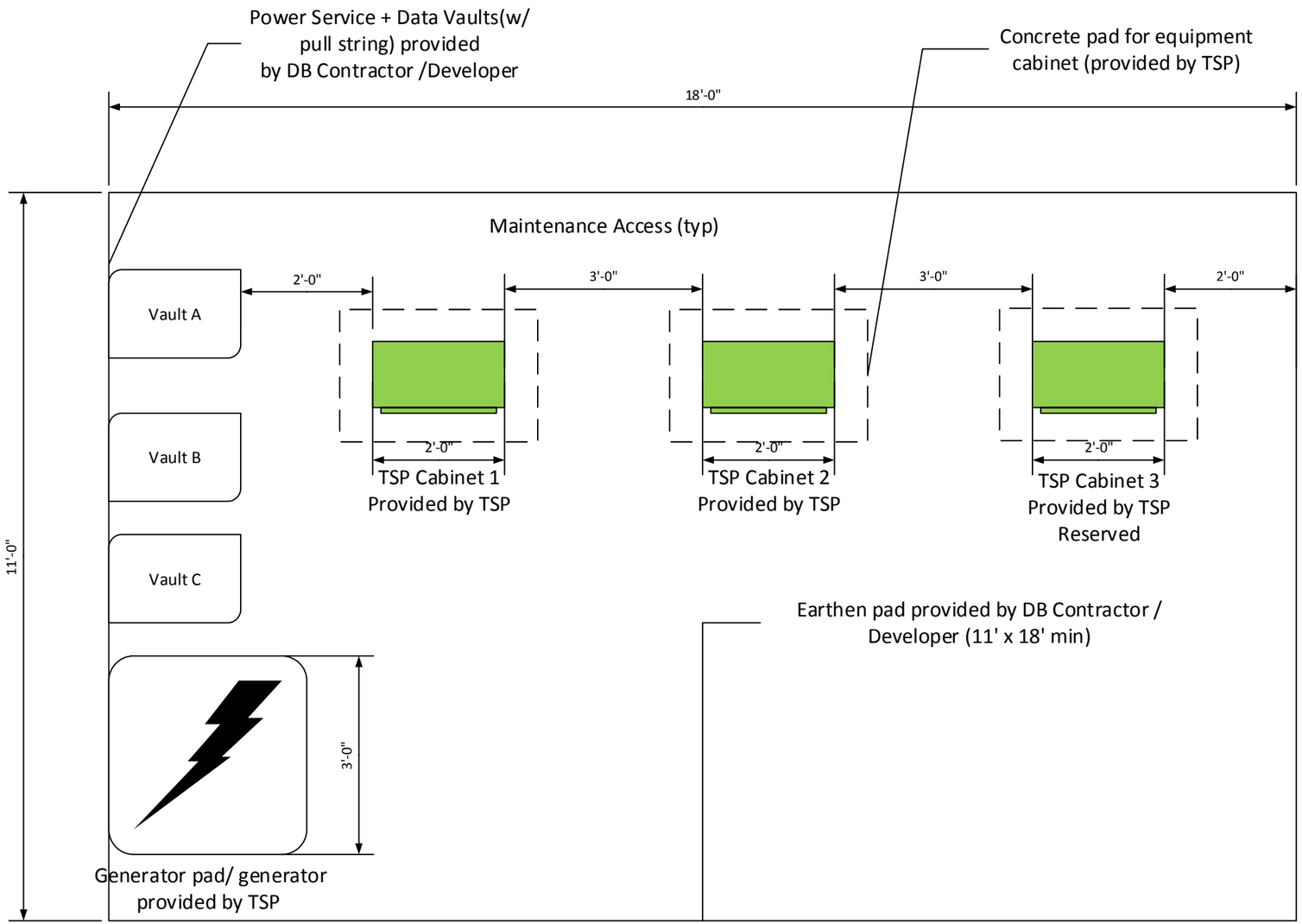
The proposed network TCS architecture is depicted in the diagram below. The Roadside Toll Zone will connect to a local data center via a point to point network (Layer 2 or 3 solution) that has access to communication service provider's facilities to connect the Roadside System to the BOS. The Toll System Provider is responsible for the local area network at the Toll Zone and all costs associated with this work are included in the Contract Price. The Toll System Provider is responsible for contracting with a communication service provider that is responsible to connect the network to an existing backbone and bring the network to an existing data center to then be made available on a leased line to be connected to a BOS solution which will be handled as a Pass-Through Cost Item. Segment 1 below is defined as the network between the roadside Toll Zone and the communications service provider's data center. Segment 2 below is defined as the network between the communication service provider to the Internet to the BOS and CSC of the TCS.



LSIORB Project - Toll Equipment Area – Proposed Equipment layout

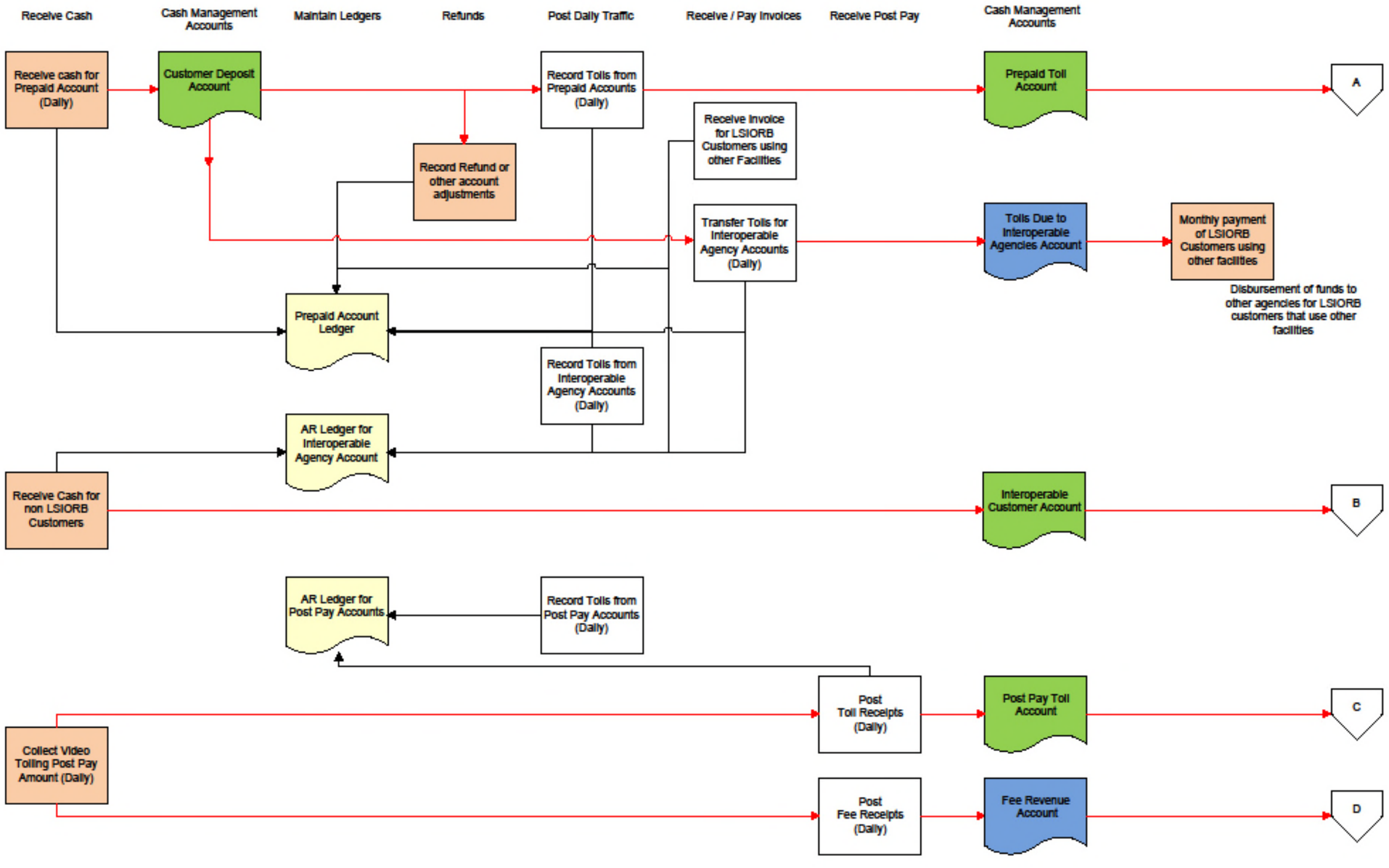
Note: DB Contractor (Downtown Crossing) and Developer(East End) provide vaults and earth pad for TSP to provide equipment and run conduits to cabinets.

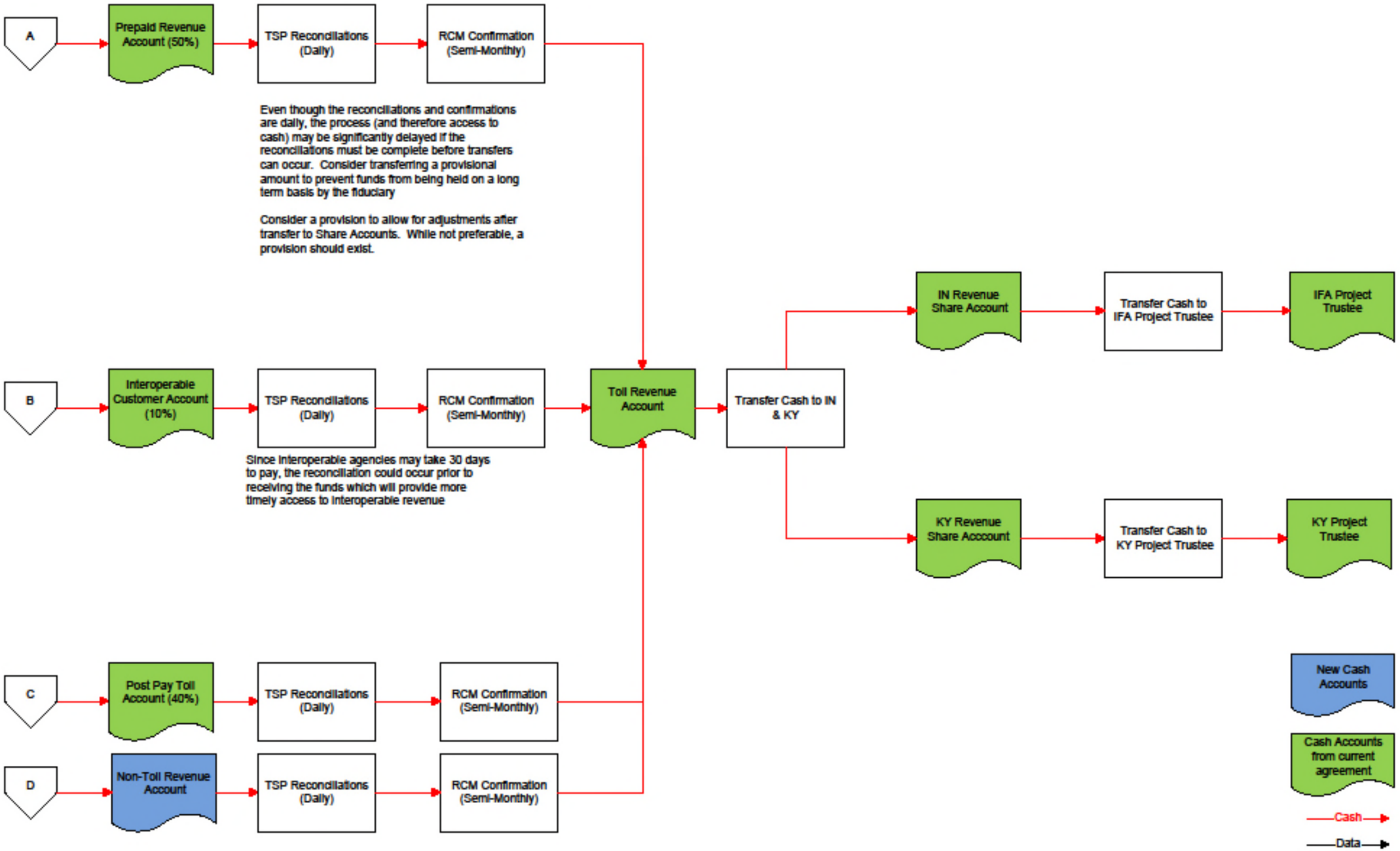
DRAFT – for discussion only not for construction



Attachment C-3 - Flow of Funds

Appendix A – Reconciliation Process Flow



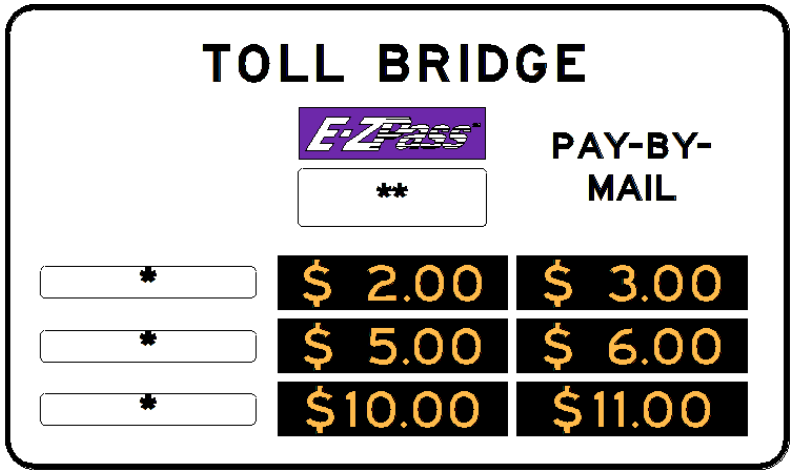

A
Prepaid Revenue Account (50%)
TSP Reconciliations (Daily)
RCM Confirmation (Semi-Monthly)
Even though the reconciliations and confirmations are daily, the process (and therefore access to cash) may be significantly delayed if the reconciliations must be complete before transfers can occur. Consider transferring a provisional amount to prevent funds from being held on a long term basis by the fiduciary
Consider a provision to allow for adjustments after transfer to Share Accounts. While not preferable, a provision should exist.
IN Revenue Share Account
Transfer Cash to IFA Project Trustee
IFA Project Trustee
B
Interoperable Customer Account (10%)
TSP Reconciliations (Daily)
RCM Confirmation (Semi-Monthly)
Toll Revenue Account
Transfer Cash to IN & KY
Since Interoperable agencies may take 30 days to pay, the reconciliation could occur prior to receiving the funds which will provide more timely access to Interoperable revenue
KY Revenue Share Account
Transfer Cash to KY Project Trustee
KY Project Trustee
C
Post Pay Toll Account (40%)
TSP Reconciliations (Daily)
RCM Confirmation (Semi-Monthly)
D
Non-Toll Revenue Account
TSP Reconciliations (Daily)
RCM Confirmation (Semi-Monthly)
New Cash Accounts
Cash Accounts from current agreement
Cash
Data

Attachment C-4 Changeable Message Panel

The Toll System Provider shall provide LED panels and associated controller and controller cabinet for the Toll Rate Sign below. The Toll Rate sign structure and sign panel will be provided by others. The panel shall be an illuminated module placed in a cutout portion of the sign. The panel will require power and a communication element is required for remote control of the sign. A secure commercial wireless modem is acceptable for communications. A commercial power source will be provided by others and available within 100 feet of the Changeable Message Sign with an empty conduit run from the power source to the sign. The approximate toll bridge sign including logos(provided by others) size is 27 feet by 16 feet when changeable message panels (Provided by TSP) are used (this assumes a 15-inch display of rate amounts within the panels). Panel display is an assembly of a 35x7 matrix of light emitting diodes (LEDs).

The Toll System Provider shall also provide a CCTV camera and associated enclosure and wireless communications for the Toll System Provider to monitor and confirm the correct rates on the Toll Rate Sign. A pole within 50 feet, conduit and power source (may be the same as Toll Rate Sign) will be provided by others.

A list of the Toll Rate Signs and anticipated locations for the LSIORB Project are listed below: **Roadway Type**	**Project Section**	**Project Station**	**Sign Reference Number**	**Comments**
I-71 SB Mainline	1	Just East of Beargrass Creek Need stationing.	Not assigned	M.P. 0.45
I-64 WB Mainline	1	Between Mellwood & Story Just North of Bridge A039 Need stationing.	Not assigned	M.P. 3.02EB
I-64 EB Mainline	1	TBD 9th Street Bridge/Ramp or Belvedere Need stationing.	Not assigned	M.P. 6.63EB (M.P. 6.35WB)
I-65 NB Mainline	1	Between Caldwell & Breckenridge	Not assigned	M.P. 134.90
I-65 SB Mainline	3	137+00	IGDO-30	M.P 0.69 (+386')
I-65 SB Mainline	3	217+10	IGDO-31	M.P. 2.20 (+220')
KY-841 NB Mainline	4	56+00	OSS-4	M.P. 36.00
I-265 SB Mainline	6	347+00	Not assigned	M.P 10.38



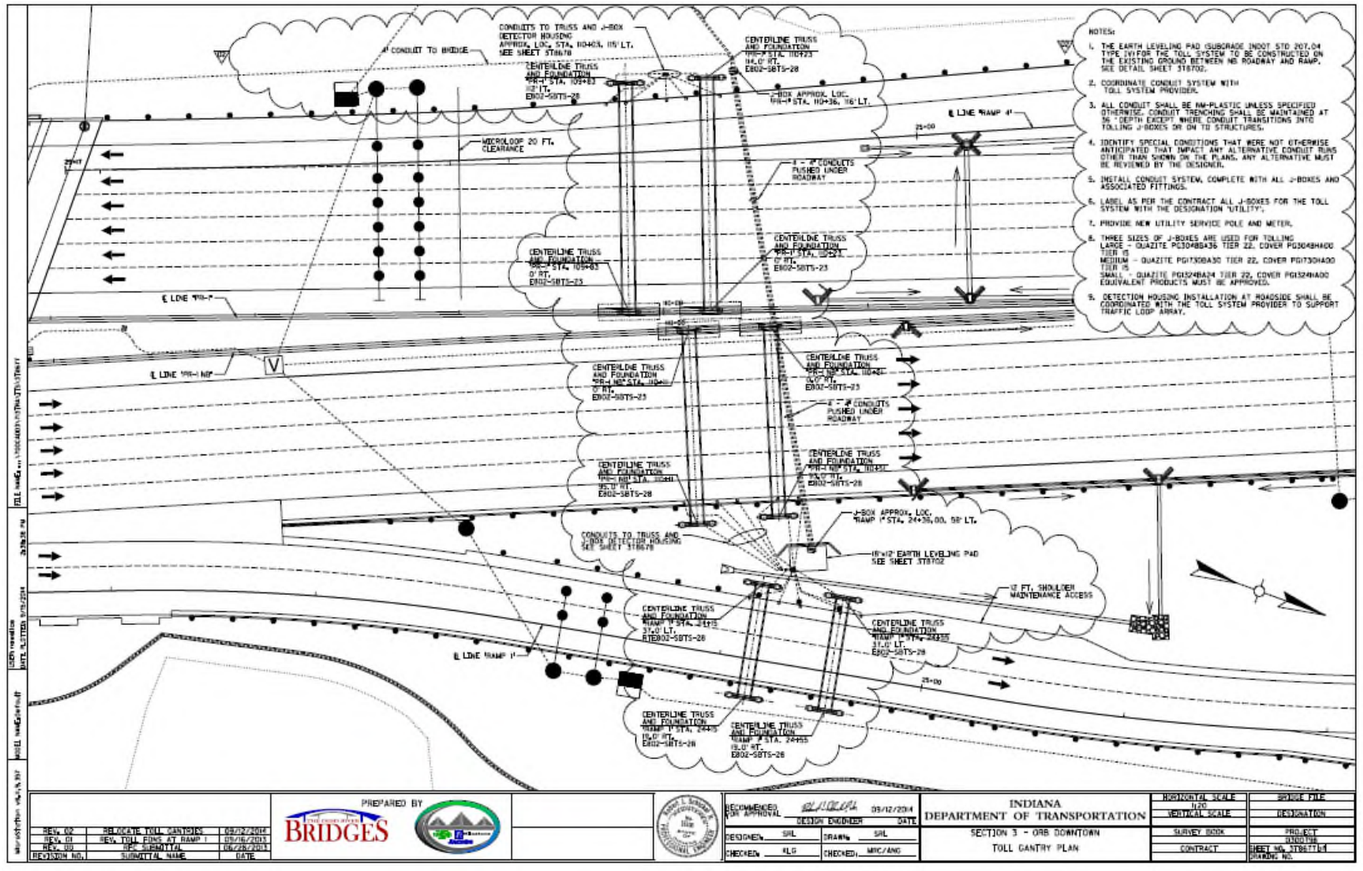
* Reserved space for axle designation or shaped based designation as noted in the figures below.

** Reserve a block sized 78 inches by 24 inches for local branding pictograph of toll collection. Pictograph has not been designed at this time.

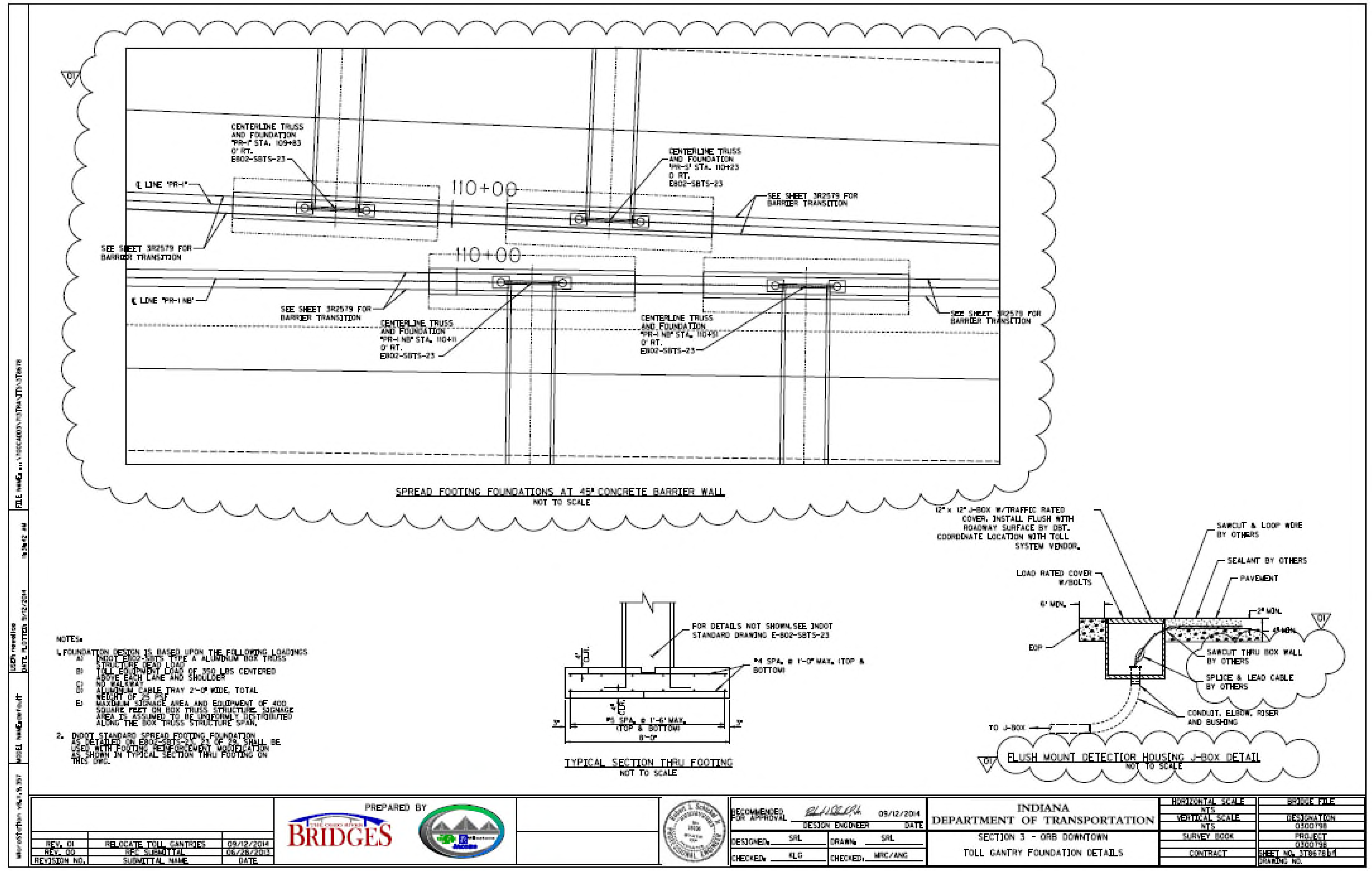
Attachment C-5 - Roadside System Site Plans – THE MEASUREMENTS, LOCATIONS AND DIMENSIONS ON THE FOLLOWING DRAWINGS ARE APPROXIMATIONS ONLY AND SUCH MEASUREMENTS, LOCATIONS AND DIMENSIONS MAY NOT BE ACCURATE AND COMPLETE AND MAY NOT BE RELIED UPON.

Note: For the purpose of the drawings identified in Attachment C-5, TSI or Toll System Integrator shall mean Toll System Provider.

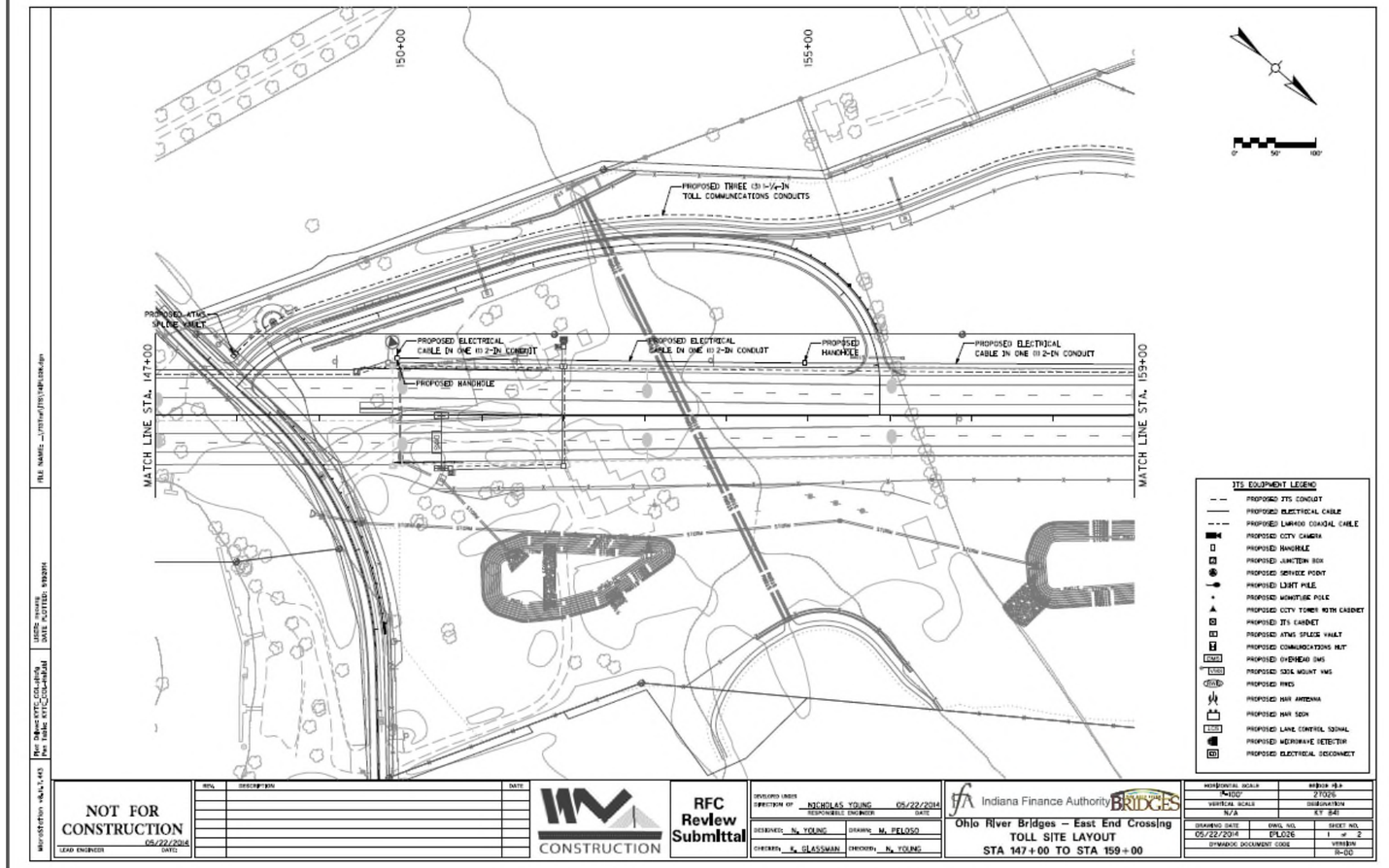
Downtown Crossing Project Sheet 1 of 2

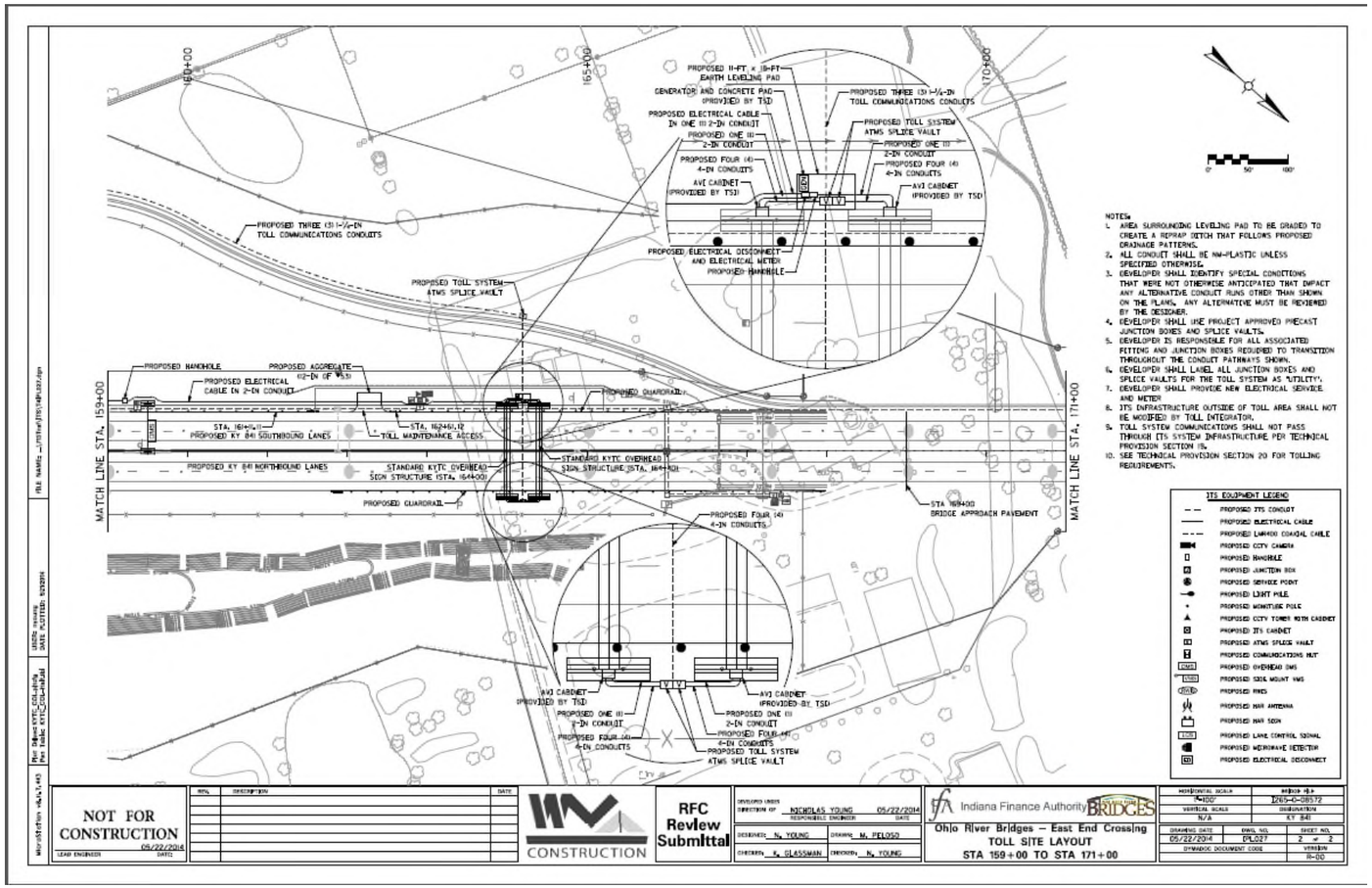


Downtown Crossing Project - Sheet 2 of 2**



East End Crossing Project - Sheet 1 of 2**




MATCH LINE STA. 159+00
MATCH LINE STA. 171+00
165+00
170+00
PROPOSED 11-FT. x 18-FT EARTH LEVELING PAD
GENERATOR AND CONCRETE PAD (PROVIDED BY TSI)
PROPOSED ELECTRICAL CABLE IN ONE (1) 2-IN CONDUIT
PROPOSED ONE (1) 2-IN CONDUIT
PROPOSED FOUR (4) 4-IN CONDUITS
AVI CABINET (PROVIDED BY TSI)
PROPOSED THREE (3) 1-1/4-IN TOLL COMMUNICATIONS CONDUITS
PROPOSED TOLL SYSTEM ATMS SPLICE VAULT
PROPOSED ELECTRICAL DISCONNECT AND ELECTRICAL METER
PROPOSED HANDHOLE
PROPOSED HANDHOLE
PROPOSED AGGREGATE
PROPOSED ELECTRICAL CABLE IN 2-IN CONDUIT
PROPOSED GUARDRAIL
STA. 161+41.11 PROPOSED KY 841 SOUTHBOUND LANES
STA. 162+65.12 TOLL MAINTENANCE ACCESS
PROPOSED KY 841 NORTHBOUND LANES
STANDARD KYTC OVERHEAD SIGN STRUCTURE STA. 164+00
STA 169+00 BRIDGE APPROACH PAVEMENT
NOTES:
1. AREA SURROUNDING LEVELING PAD TO BE GRADED TO CREATE A RIPRAP DITCH THAT FOLLOWS PROPOSED DRAINAGE PATTERNS.
2. ALL CONDUIT SHALL BE NM-PLASTIC UNLESS SPECIFIED OTHERWISE.
3. DEVELOPER SHALL IDENTIFY SPECIAL CONDITIONS THAT WERE NOT OTHERWISE ANTICIPATED THAT IMPACT ANY ALTERNATIVE CONDUIT RUNS OTHER THAN SHOWN ON THE PLANS. ANY ALTERNATIVE MUST BE REVIEWED BY THE DESIGNER.
4. DEVELOPER SHALL USE PROJECT APPROVED PRECAST JUNCTION BOXES AND SPLICE VAULTS.
5. DEVELOPER IS RESPONSIBLE FOR ALL ASSOCIATED FITTING AND JUNCTION BOXES REQUIRED TO TRANSITION THROUGHOUT THE CONDUIT PATHWAYS SHOWN.
6. DEVELOPER SHALL LABEL ALL JUNCTION BOXES AND SPLICE VAULTS FOR THE TOLL SYSTEM AS "UTILITY".
7. DEVELOPER SHALL PROVIDE NEW ELECTRICAL SERVICE AND METER
8. ITS INFRASTRUCTURE OUTSIDE OF TOLL AREA SHALL NOT BE MODIFIED BY TOLL INTEGRATOR.
9. TOLL SYSTEM COMMUNICATIONS SHALL NOT PASS THROUGH ITS SYSTEM INFRASTRUCTURE PER TECHNICAL PROVISION SECTION 15.
10. SEE TECHNICAL PROVISION SECTION 20 FOR TOLLING REQUIREMENTS.
ITS EQUIPMENT LEGEND
PROPOSED ITS CONDUIT
PROPOSED ELECTRICAL CABLE
PROPOSED LMR400 COAXIAL CABLE
PROPOSED CCTV CAMERA
PROPOSED HANDHOLE
PROPOSED JUNCTION BOX
PROPOSED SERVICE POINT
PROPOSED LIGHT MAST
PROPOSED MONOTUBE POLE
PROPOSED CCTV TOWER WITH CABINET
PROPOSED ITS CABINET
PROPOSED ATMS SPLICE VAULT
PROPOSED COMMUNICATIONS HUT
PROPOSED OVERHEAD DMS
PROPOSED SIDE MOUNT VMS
PROPOSED RWIS
PROPOSED HAR ANTENNA
PROPOSED HAR SIGN
PROPOSED LANE CONTROL SIGNAL
PROPOSED MICROWAVE DETECTOR
PROPOSED ELECTRICAL DISCONNECT
NOT FOR CONSTRUCTION
05/22/2014
LEAD ENGINEER DATE
CONSTRUCTION
RFC Review Submittal
DEVELOPED UNDER DIRECTION OF NICHOLAS YOUNG 05/22/2014
RESPONSIBLE ENGINEER DATE
DESIGNED: N. YOUNG DRAWN: M. PELOSO
CHECKED: E. GLASSMAN CHECKED: N. YOUNG
Indiana Finance Authority
Ohio River Bridges – East End Crossing
TOLL SITE LAYOUT
STA 159+00 TO STA 171+00
HORIZONTAL SCALE 1"=100'
VERTICAL SCALE N/A
1265-0-08572
DESIGNATION
KY 841
DRAWING DATE 05/22/2014
DWG. NO. PL027
SHEET NO. 2 of 2
DYNAMIC DOCUMENT CODE
VERSION R-00