ADRIENNE J. TISSIER, CHAIR
San Mateo County

AMY REIN WORTH, VICE CHAIR
Cities of Contra Costa County

TOM AZUMBRADO
U.S. Department of Housing and Urban Development

TOM BATES
Cities of Alameda County

DAVID CAMPOS
City and County of San Francisco

DAVE CORTESE
Santa Clara County

BILL DODD
Napa County and Cities

DORENE M. GIACOPINI
U.S. Department of Transportation

FEDERAL D. GLOVER
Contra Costa County

MARK GREEN
Association of Bay Area Governments

SCOTT HAGGERTY
Alameda County

ANNE W. HALSTED
San Francisco Bay Conservation and Development Commission

STEVE KINSEY
Marin County and Cities

SAM LICCARDO
Cities of Santa Clara County

JAKE MACKENZIE
Sonoma County and Cities

KEVIN MULLIN
Cities of San Mateo County

BIJAN SARTIPI
State Business, Transportation and Housing Agency

JAMES P. SPERING
Solano County and Cities

SCOTT WIENER
San Francisco Mayor's Appointee

STEVE HEMINGER
Executive Director

ANDREW B. FREMIER
Deputy Executive Director

October 3, 2011

INVITATION FOR BID
Letter of Invitation
For Electronic Toll Collection (FasTrak®) Retail Toll Tags

Dear Supplier:

The Bay Area Toll Authority (BATA) invites your firm to respond to this Invitation for Bid (IFB) for:

Electronic Toll Collection (FasTrak®) Retail Toll Tags

BATA is soliciting bids to furnish and deliver an estimated quantity of 69,000 new sealed-battery, internally-mounted electronic toll collection (ETC) FasTrak® toll tags pre-packaged for retail sales to be delivered between April 1, 2012 and December 31, 2012.

This letter, together with the Instructions to Bidders and Bidding Requirements, General Conditions, Special Conditions, Specifications, Bid and Reference Forms and General Conditions for BATA Purchase Orders comprise the IFB for this project. Responses to the IFB are to be submitted in accordance with the instructions stated herein. Bid shall be considered firm offers to provide services described herein for a period of ninety (90) days from time of submittal.

Bid Submission

Interested bidders must submit their bids in sealed envelopes by 4:00 p.m. on Thursday, October 27, 2011. **Bids received after that date and time will not be considered. All bids must be completed and submitted on the enclosed *Appendix B*, Bid Form, , in order to be considered**. *Appendix C*, Reference Form, must be submitted with the bid. Bidders who do not complete all appendices risk being found non-responsive.

Any addenda to this IFB that may be issued by BATA will be posted at http://www.mtc.ca.gov/jobs/. It is the bidder's responsibility to check for addenda to this IFB and comply with new or revised requirements that may be stated therein.

BATA Point of Contact

Bids and all inquiries relating to this IFB should be submitted to the Project Manager at the address shown below. For telephone inquiries, call (510) 817-5944. Email inquiries may be directed to <sshepard@mtc.ca.gov>.

JOSEPH P. BORT METROCENTER | 101 EIGHTH STREET | OAKLAND, CA 94607-4700
TEL 510.817.5700 | TTY/TDD 510.817.5769 | FAX 510.817.5848 | E-MAIL info@mtc.ca.gov | WEB www.mtc.ca.gov

Scott Shepard, Project Manager
Metropolitan Transportation Commission
Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, California 94607-4700

Background

The San Francisco Bay Area toll bridges consist of eight toll bridges. The seven state-owned bridges, Antioch, Benicia-Martinez, Carquinez, Richmond-San Rafael, Dumbarton, San Mateo Hayward and the San Francisco-Oakland Bay Bridge, are owned and operated by the California Department of Transportation (Caltrans). State toll bridge operations are funded by toll revenues, which are administered by the Metropolitan Transportation Commission, acting as the Bay Area Toll Authority (BATA). The Golden Gate Bridge is operated and funded by the Golden Gate Bridge, Highway and Transportation District (GGBHTD).

Both Caltrans and GGBHTD collect tolls from bridge users either manually at staffed lanes or automatically through an ETC system. Both agencies operate their ETC system in compliance with the California Code of Regulations (Title 21) specifications under the FasTrak® brand. The FasTrak® Customer Service Center is located in San Francisco and services all eight Bay Area bridges. FasTrak® toll tags can be purchased from select retail stores throughout the Bay Area.

Minimum Qualifications

To be eligible to submit a bid, a bidder must have successfully furnished, under three (3) commercial contracts: (a) ETC toll tags that conform to all applicable sections of the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment", or (b) radio-frequency identification (RFID) toll tags used for electronic toll collection and provide independently validated test results demonstrating that the toll tags to be supplied under this IFB meet the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment" and will have no more than 5 tag read errors out of 1,000 tag reads. Bidder shall attach test results to bid package.

Bidders may be required to verify these qualifications prior to the award of contract.

Specifications and Schedule

The specifications and schedule for this project are described in *Appendix A*, Specifications for ETC FasTrak® Retail Toll Tags. Section III of this IFB, Special Conditions, also contains substantive requirements with which you must fully comply in order to guarantee your responsiveness to this IFB.

BATA intends to purchase 69,000 sealed-battery, internally-mounted retail toll tags during the period between April 1, 2012 and December 31, 2012. These tags will be pre-packaged for retail sales in three retail packages (Package A – 49,000 toll tags and Package C – 20,000 toll tags). In addition, BATA will have the option to purchase an additional order, for 10,000 retail toll tags (Package B), under the same terms and conditions in this contract and at the rate specified on the

Bid Form. This option can be exercised at any time through April 30, 2013. Delivery of these toll tags shall occur within 60 days of notification by BATA.

Supplier Selection

Bids will be initially evaluated for responsiveness and adherence to minimum qualifications. Quality and customer service are of the highest importance. In order to ensure superior service, references will be checked, and bidders may be required to provide additional information verifying their experience.

A contract, if awarded, will be to the responsible bidder submitting the lowest responsive bid, as indicated in the "Total Bid Price" space on the *Appendix B*, Bid Form.

It should be noted that the selection of a Supplier does not obligate BATA to order any of the items listed on the bid form.

Bidder Selection Timetable

Thursday, October 20, 2011, 4:00 p.m	Closing date & time protest of IFB specifications.
Thursday, October 27, 2011, 4:00 p.m	Closing date & time for receipt of bids & bid opening.
Wednesday, November 9, 2011	BATA Oversight Committee consideration of recommendation for award
Monday, November 14, 2011 (approximate)	Issuance of Purchase Order

General Conditions

BATA reserves the right to award a contract or to reject all bids.

A signed BATA Purchase Order (refer to *Appendix D* for General Conditions) mailed or delivered to a particular bidder shall constitute a binding contract, which incorporates this IFB and its addenda, if any, and all documents referenced herein, any deviations from the specifications expressly accepted by BATA, and all terms and conditions of the Purchase Order.

Authority to Commit BATA

The Executive Director of BATA will recommend the successful bidder to the BATA Oversight Committee, which will commit BATA to the expenditure of funds in connection with this IFB.

Thank you for your participation.

Sincerely,

Steve Hemlinger
Executive Director

ABF: SS
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INVITATION FOR BID

by

BAY AREA TOLL AUTHORITY

for

ELECTRONIC TOLL COLLECTION (FASTRAK®) RETAIL TOLL TAGS

October 3, 2011

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700

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I. INSTRUCTIONS TO BIDDERS AND BIDDING REQUIREMENTS

A. Directions

This package contains the specifications regarding the work to be done and the delivery schedule. (**See Appendix A**, **Specifications**). **All bids must be completed and submitted on the enclosed Appendix B, Bid Form, in order to be considered. Appendix C, Reference Form,** must also be submitted with the bid. Bidders who do not complete all appendices risk being found non-responsive.

The provisions set forth below specify the standards by which bids will be received and considered by BATA. Bids not complying with these provisions may be considered non-responsive by BATA.

Your bid package shall include the following:

- Signed Bid Form (Appendix B)
- Completed Reference Form (Appendix C)

B. Definitions

1. BATA: Bay Area Toll Authority

2. MTC: Metropolitan Transportation Commission

3. CSC: Customer Service Center

4. Bidder: An individual, firm, partnership, corporation, or combination thereof, submitting a bid.

5. Supplier: The Bidder to whom a purchase order or contract is mailed or otherwise offered.

6. Bid: The forms included in this IFB become a bid when completed properly by a Bidder and submitted to BATA.

7. Contract: A signed BATA Purchase Order (refer to *Appendix D* for General Conditions) mailed or delivered to a particular bidder, shall constitute a binding contract, which incorporates this IFB, and its addenda, if any, all documents referenced herein, any deviations from the specifications expressed and accepted by BATA, and all terms and conditions of the Purchase Order.

C. Preparation of Bid

1. General

All prices and quotations shall be written legibly by computer printer, typewriter or pen and ink. No erasures shall be made. Errors may be crossed out and corrected by typewriter or pen and ink adjacent to the item crossed out. Each correction shall be initialed in ink by the person signing the bid.

2. Bid Price

The bid price shall include all costs of labor, materials, equipment, tools, machinery, utilities, transportation, license or permit fees, overhead, and profit and all other services necessary for proper execution and completion of the work.

3. Taxes

The total bid price shall include full compensation for all applicable federal, state, and local taxes, as may be appropriate.

4. Irregular Bids

Bids may be rejected if they show such irregularities as: any alteration of form, additions not called for, conditional bids, incomplete bids, indefinite or ambiguous bids, obviously unrealistic or unbalanced prices, or a signature by other than an authorized person.

5. Conditional Bids

No condition included in a bid shall be binding upon BATA if in conflict with, inconsistent with, or in addition to the terms and conditions of this IFB, unless expressly accepted in writing by BATA.

6. Addenda and Interpretations

BATA will not be responsible for any oral interpretation of the meaning of the requirements or specifications in this IFB. Every request for such interpretation shall be in writing addressed to: Attention: Project Manager (see Letter of Invitation) MTC, 101 - 8th Street, Oakland, CA 94607-4700. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed and/or faxed with a request for confirmation, to all bidders who have requested addenda. All addenda so issued shall become part of the Contract Documents.

7. Brand Names

Any references to Brand Names or the names of manufacturers and their catalog numbers is only descriptive of the variety and quality of items desired, and is not intended to be restrictive unless specifically indicated otherwise. Bids on items equal to those indicated herein for descriptive purposes will be considered, unless otherwise indicated, provided that a clear and detailed description of the manufacturer and model number of the substitution is given and the manufacturer's specifications are attached to the bid. BATA reserves the right to determine at its sole discretion whether an item proposed is of equal value, utility or merit to the standards established by the Brand Name indicated.

8. Deviations

BATA reserves the right to permit deviations from the specifications if an article offered is deemed by BATA to be of as good quality and as satisfactory for its intended use as an article fully meeting specifications. Unless exceptions are noted by Bidder, the article offered will be assumed to be in accordance with specifications indicated.

9. Examination of Plans, Specifications and Sites

The Bidder shall satisfy him/herself as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a bid shall be *prima facie* evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans and specifications.

10. Submission

Only bids submitted on the furnished bid form will be considered. Bids received after the date and time indicated for receipt of bids will not be considered. Bidders will be solely responsible for the delivery of the bid to BATA by the time, on the date, and at the location indicated for receipt of bids.

11. Withdrawal Before Bid Opening

No bid may be modified; however, a bid may be withdrawn by written request, signed by the individual who signed the bid or his authorized representative, and received by BATA prior to the time indicated for receipt of bid.

12. Protest of Specifications

Prospective bidders may submit written protests of IFB specific specifications on the grounds that the specifications are biased, unduly restrictive, discourage competition, or do not comply with state or local law or regulation no later than seven (7) calendar days prior to the date bids are due. Such protests will be reviewed by BATA and responded to prior to bid opening. If appropriate, the time of bid opening will be extended to accommodate any changes in the IFB.

13. Relief of Bidder after Bid Opening

Unless BATA in its sole discretion elects otherwise, a Bidder shall not be relieved of his bid nor shall any change be made in his bid because of mistake. If a Bidder requests relief and BATA agrees to consider such request, it will be such Bidder's responsibility to establish that:

(a) A mistake was made;

(b) The Bidder gave BATA written notice of the mistake within five (5) days after the opening of bids, specifying in detail how the mistake occurred;

(c) The mistake made the bid materially different than the Bidder intended it to be; and

(d) The mistake was made in filling out the bid and was not due to error in judgment or to carelessness in reading the IFB or referenced documents.

D. Award of Contract

1. Bid Opening

Bids will be opened and announced publicly at MTC's offices, at the address, on the date, and at the hour indicated herein for the receipt of bids. Bidders are invited but not required to be present.

2. Duration of Offer

A signed bid is deemed to be an offer to enter into a contract for services bid and is firm for the period of time stated in the Letter of Invitation, unless extended by the bidder.

3. Discretion of BATA

BATA reserves the right to reject any and all bids and to waive informalities and minor irregularities in bids received, other provisions herein notwithstanding.

4. Selection of Supplier

The award, if an award is made, will be to the responsible Bidder, whose bid, conforming in all material respects to the terms and conditions of this IFB, is the lowest in price for the work requested, as indicated in the Total Bid Price space on the Appendix B, Bid Form. A responsible bidder is one who possesses the ability to perform successfully under the terms and conditions of this IFB, as demonstrated by such areas as contractor integrity, record of past performance, and financial and technical resources.

5. One Bid

If BATA receives only one bid and that bid is made on terms differing from those set forth herein, BATA may, at its discretion, accept such terms as responsive.

6. Selection Disputes

A bidder may protest the selection of a Supplier on the grounds that BATA procedures, the provisions of this IFB, or applicable provisions of state or local law have been violated or inaccurately or inappropriately applied by BATA by submitting to the Project Manager a written explanation of the basis for protest no later than three (3) working days after the date of which the bidder is notified that it was not selected or the date on which contract award is authorized, whichever is later.

Protests of recommended awards must clearly and specifically describe the basis for the protest in sufficient detail for the BATA review officer to recommend a resolution to the BATA Executive Director.

The BATA Executive Director will respond to the protest in writing, based on the recommendation of a staff review officer. Authorization to award a contract to a particular supplier by BATA's Oversight Committee shall be deemed conditional until the expiration of the protest period, or, if a protest is filed, the issuance of a written response to the protest by the Executive Director.

Should the protestor wish to appeal the decision of the Executive Director, it may file a written appeal with the BATA Oversight Committee, no later than three (3) working days after receipt of the written response from the Executive Director. The BATA Oversight Committee's decision will be the final agency decision.

II. GENERAL CONDITIONS

A. Independent Supplier

Supplier is an independent contractor and not an employee or agent of BATA and has no authority to contract or enter into any other agreement in the name of BATA. Supplier has, and hereby retains, full control over the employment, direction, compensation and discharge of all persons employed by Supplier who are assisting in the performance of services under this Agreement. Supplier shall be fully responsible for all matters relating to the payment of its employees, including compliance with social security, withholding tax and all other laws and regulations governing such matters. Supplier shall be responsible for its own acts and those of its agents and employees during the term of this Agreement.

B. Changes to Purchase Order

Any material changes to the terms of the Purchase Order shall require a written amendment to the purchase order, signed by the BATA Executive Director or a designated representative and Supplier. No claim for additional compensation shall be recognized unless contained in a duly executed amendment.

C. Termination

1. Termination for Convenience

BATA may, by written notice stating the extent and effective date, terminate its contract with the Supplier for convenience in whole or in part, at any time. BATA shall pay the Supplier as full compensation for performance until such termination: non-recoverable cost incurred for incomplete deliverables up to the time of termination and reasonable termination costs not to exceed the maximum amount payable for such deliverables. In no event shall BATA be liable for any loss of profits on the portion of the contract so terminated.

2. Termination for Default

If Supplier becomes insolvent, assigns or subcontracts the work without BATA approval, does not deliver the work specified in the Contract or fails to perform in the manner called for, or fails to comply with any other material provision of the Contract, BATA may terminate the Contract for default. Termination shall be effected by serving a ten (10) day advance written notice of termination on Supplier, setting forth the manner in which Supplier is in default. If Supplier does not cure the breach or propose a plan and schedule for curing the breach acceptable to BATA within the ten (10) day period, the Contract shall be deemed terminated.

In the event of such termination for default, supplier will be entitled to be reimbursed for costs incurred, in accordance with Section II.C.1 above, offset by any costs incurred by BATA to correct or complete work required under the Contract, including the difference between

Supplier's price for the contract and any higher price paid to another Supplier retained to complete the work.

If it is determined by BATA that Supplier's failure to perform resulted from unforeseeable causes beyond the control of Supplier, such as a strike, fire, flood, earthquake or other event that is not the fault of, or is beyond the control of Supplier, BATA, after setting up a new delivery or performance schedule, may allow Supplier to continue work, or treat the termination as a termination for convenience.

D. Indemnity

Supplier agrees to indemnify, and hold BATA, MTC, their commissioners, officers, employees and agents harmless from all claims, demands, suits, losses, damages, injury, and liability (including any and all costs and expenses in connection therewith), incurred by reason of any negligent or otherwise wrongful act, or failure to act of Supplier, its officers, agents, employees and subcontractors or any of them, under or in connection with this IFB; Supplier agrees at its own cost expense and risk to defend any and all claims, demands, suits, or other legal proceedings brought or instituted against BATA, MTC, their commissioners, officers, agents, and employees, or any of them arising out of such acts or failure to act, and to pay and satisfy any resulting judgments.

E. Assignment

The Supplier shall not assign any right, duty or responsibility in this contract without the prior written consent of BATA thereto; provided however, that claims for money due or to become due to Supplier from BATA under this Contract may be assigned without such approval. Notice of any such assignment shall be furnished promptly to BATA, and any such assignment shall be subject to all authorized withholdings in favor of BATA.

F. Choice of Law

All questions pertaining to the validity and interpretation of this Agreement shall be determined in accordance with the laws of the State of California.

G. Prohibited Intent

No member, officer or employee of BATA during his/her tenure shall have any interest, direct or indirect, in the Contract or the proceeds thereof.

III. SPECIAL CONDITIONS

A. Minimum Qualifications

To be eligible to submit a bid, a bidder must have successfully furnished, under three (3) commercial contracts: (a) ETC toll tags that conform to all applicable sections of the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment", or (b) RFID toll tags used for electronic toll collection and provide independently validated test results demonstrating that the toll tags to be supplied under this IFB meet the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment" and will have no more than 5 tag read errors out of 1,000 tag reads. Bidder shall attach test results to bid package.

Bidders may be required to verify these qualifications prior to the award of contract.

B. Period of Performance

Supplier shall provide the ETC FasTrak® toll tag units according to the schedule specified in *Appendix A* of this IFB. The period of performance concludes on December 31, 2012.

C. Subcontractors

Bidders may not subcontract all or any portion of the work to be performed under the contract, with the exception of the retail toll tag packaging work.

D. Acceptance by BATA

The BATA Project Manager or a designated representative will be responsible for accepting delivery of the toll tag units. Items delivered shall be inspected by the BATA Project Manager or a designated representative for conformance to the specifications. Material that does not meet required specifications will be rejected. BATA may reject any item(s) or an entire shipment, at its discretion, if individual item(s) are not in compliance with these specifications or are in breach of warranty, express or implied, or are otherwise defective. Time required for testing shall not exceed 30 calendar days. The dollar value of the units rejected will be deducted from the Supplier's invoice. Testing will be conducted in accordance with random sampling from each delivery lot.

E. Notices

All notices or other communications to either party by the other shall be deemed given when made in writing and delivered or mailed to such party at their respective addresses as follows:

To BATA:	Attention: Scott Shepard, Project Manager MTC 101 - 8th Street Oakland, CA 94607-4700 Email: sshepard@mtc.ca.gov Fax: 510.817-5848
To Supplier:	Signator of Bid form Supplier Name Address on Bid Form Telephone number on Bid Form Fax number on Bid Form Email address on Bid Form

F. Liquidated Damages

BATA requires that the first shipment of toll tags purchased as a result of this IFB be delivered no later than April 30, 2012. In the event of delay in delivery of the first shipment of toll tags beyond the date set forth in the IFB (see Appendix A, Section 6, Schedule) or authorized extensions of the date, damage will be sustained by BATA. It is impracticable to determine the actual amount of the damage caused by such delay. Therefore, the selected Supplier agrees to pay BATA as liquidated damages, and not as a penalty, the amount of $10,000 per each calendar day of the delay.

APPENDIX A

SPECIFICATIONS FOR ETC FASTRAK® RETAIL TOLL TAGS

1. General

All toll tags purchased as part of this IFB shall be new sealed-battery, internally-mounted toll tags that are pre-packaged for retail sales. There are three different types of retail packaging to accommodate three different retailers, as described in Section 5, Retail Packaging Specifications below.

The sealed-battery toll tags delivered as part of this IFB shall be pre-programmed and shall conform to the specifications described below. These specifications define the requirements for the toll tags and the retail packaging. Under contract, the Supplier shall manufacture and deliver California Code of Regulations (CCR), Title 21-compliant toll tags in accordance with these specifications.

The selection of a Supplier does not obligate BATA to order any of the items listed on the bid form.

2. Environmental Specifications

The FasTrak® toll tags shall comply with the environmental specifications provided below:

Characteristic	Specification	
Operating Temperature:	-25 to +85 degrees Celsius	
Beep:	Zero (0), two (2) or four (4) times, as appropriate	
Storage Temperature:	Low temperature	High temperature
Method	MIL-STD –810	MIL-STD –810, method 501
Duration	1000	1000
Temperature	-40	100
Humidity:		
Method	MIL-STD 810, Method 507.2, Procedure III, Aggravated Screening	
Temperature	60 degrees Celsius	
Humidity	80% RH	
Duration	500 hours	
Vibration:		
Method	MIL-STD 810, Method 514.40	
Frequency	10 to 500 Hz	
Sweep Time:	10g Peak	
Sweep Type:	Logarithmic	

Characteristic	Specification
Mechanical Shock:	
Method	MIL-STD 810, Method 516.3
Acceleration	30g
Duration	10 RMS
Pulse Shape	Half-sine ware
Number of shocks	3/axles
Number of axles	6
Thermal Shock:	
Method	MIL-STD 810, Method 210
Duration	100 cycles
Temperature	Life
Life:	
Method	MIL-STD 810, Method 109
Duration	Eight (8) years
Temperature	0

3. Toll Tag Requirements

Compliance:
Toll tags shall be compatible with Caltrans and GGBHTD toll facilities. Toll tags shall comply with the environmental specifications identified above, and the CCR, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment", Articles 1-4 (see *Appendix A-1*).

Serial Numbers:
Each toll tag shall be pre-programmed, prior to delivery, with a unique number, designated by BATA (based on facility code and ID). Each pre-programmed toll tag number shall be permanently and legibly affixed to the exterior surface of the toll tag in a bar code format. BATA will provide the Supplier with the appropriate serial number ranges.

Audio Indicator:
Each toll tag shall provide an audio indicator for communicating the transaction status to the user.

Dimensions:
Internally-mounted toll tags shall not exceed 4.5 x 3.4 x 1 in.

Velcro Mounting Strips:
Two Velcro strips shall be affixed to the front of each toll tag for mounting purposes.

Logo:
The toll tags shall have the FasTrak® logo on the front and back (see *Appendix A-2*). The colors of such logo shall be Purple (Pantone 248) and Teal (Pantone 321), as specified in *Appendix A-2*. The following shall also be printed on the back of the toll tags (as specified in *Appendix A-2*):

If found please return to: FasTrak Customer Service Center P.O. Box 26927 San Francisco, CA 94126 (877) 229-8655	RETURN POSTAGE GUARANTEED

4. Warranty

Supplier shall provide a standard one-year warranty on the toll tags. Should any of the tags prove defective due to failure to conform with specifications or due to otherwise defective workmanship or materials within the specified warranty period, the Supplier agrees to replace or repair said defective items within 30 days of notice by BATA. Supplier shall bear any costs for material, labor, and shipping (including cost for shipping to and from the Supplier) for claims made during the warranty period.

5. Retail Packaging Specifications

There are three different types of retail packages (referred to as "Retail Package A", "Retail Package B", and "Retail Package C") to accommodate three different retailers. The specifications for each are identified below. As retail packaging modifications, including any textural and/or graphics changes to the printed material may be requested by BATA at any time during the term of the Contract (provided 60 days notification to Vendor), it is at the Vendor's risk to procure all retail packaging materials prior to completion of Contract.

a. Retail Package A

Validation Code:
A removable label containing a validation code shall be affixed to each toll tag contained in Retail Package A. The validation code shall be in a standard hexadecimal format using standard conversion methods based on the toll tag serial number. The label shall be affixed to the toll tag such that it is not visible unless package is opened.

Package Dimensions:
Each toll tag shall be pre-packaged in a pre-printed Tyvek® envelope. The dimensions of the Tyvek® envelope shall not exceed 5.0"w x 11.5"h (excluding adhesive flap). The Tyvek envelope shall be white #14 envelope, waterproof and tearproof with peel-and-seal flap, 4-color process. The toll tag shall be placed inside the mylar bag. An electronic file of the artwork will be provided by BATA.

Package Contents:
Each Retail Package A shall include the following items:

- One (1) pre-programmed, sealed-battery, internally-mounted toll tag
- One (1) mylar bag

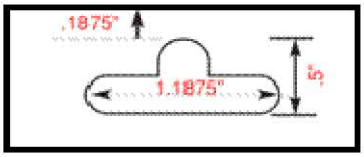
- One (1) FasTrak® Customer Handbook including FasTrak® Privacy Policy that shall be provided by Supplier. Specifications: 4.0”w x 8.0”h; single fold; maximum 70-lb paper; double-stapled; 16 pages, 2 sided printing; 4-color process. An electronic file will be provided by BATA.
- One (1) insert with registration instructions, if applicable

Packaging and Shipment:
Retail toll tags shall be shipped in boxes containing 50 toll tags in each box. To the extent possible, retail tags shall be placed inside each box in numerical order. Each shipment shall contain tags with consecutive serial numbers (i.e., tag serial numbers shall not contain gaps). Each box shall be labeled in numerical sequence for each shipment (e.g. 1 of 50, etc) and serial number tag ranges and corresponding bar codes shall be clearly affixed. Three packages per box shall be left unsealed for testing purposes.

b. Retail Package B
Validation Code:
A removable label containing a validation code shall be affixed to each toll tag contained in Retail Package B. The validation code shall be in a standard hexadecimal format using standard conversion methods based on the toll tag serial number. The label shall be affixed to the toll tag such that it is not visible unless package is opened.

Package Specifications:
Retail Package B shall meet retailer’s specifications, as described below:

- Toll tags shall be pre-packaged in heat-sealed, clear plastic (e.g., polyvinyl chloride (PVC)) clamshell packages.
- Outside dimensions of each package shall not exceed 4.75”w x 6.0”h.
- Each package shall have a j-hook (sombrero cut) hole at the top such that it can be hung from pegs for retail displays. The sombrero cut shall mirror the cutout as shown below:



- The toll tag serial number and barcode label shall be visible for BATA inventory purposes.
- A label containing retailer’s barcode number shall be affixed to the artwork/package for retailer inventory purposes. Retailer’s barcode will be provided to the Supplier by BATA.

Package Contents:
Each Retail Package B shall include the following items:

- Clamshell packaging artwork. BATA may need to work with Supplier to design the clamshell packaging artwork. Upon finalizing, BATA will provide the Supplier with an electronic file of the artwork. Printer specifications: 230gsm art card; 2-side coated; 4-color processing (both sides)

- One (1) pre-programmed, sealed-battery, internally-mounted toll tag
- One (1) mylar bag
- One (1) insert with current FasTrak® Privacy Policy

Packaging and Shipment:
Pre-packaged retail toll tags shall be shipped in boxes containing 50 toll tags in each box. Pre-packaged toll tags shall be shipped in boxes with dividers to create slots/placeholders, and shall be placed into each slot such that the barcode on the toll tag is clearly visible upon opening the shipping box. Each box shall be labeled in numerical sequence for each shipment (e.g. 1 of 50, etc) and serial number tag ranges and corresponding bar codes shall be clearly affixed. A sample box is available upon request.

c. Retail Package C
Validation Code:
A removable label containing a validation code shall be affixed to each toll tag contained in Retail Package C. The validation code shall be in a standard hexadecimal format using standard conversion methods based on the toll tag serial number. The label shall be affixed to the toll tag such that it is not visible unless package is opened.

Package Dimensions:
Each toll tag shall be pre-packaged in a pre-printed Tyvek® envelope. The dimensions of the Tyvek® envelope shall not exceed 5.0”w x 11.5”h (excluding adhesive flap). The Tyvek envelope shall be white #14 envelope, waterproof and tearproof with peel-and-seal flap, 4-color process. The toll tag shall be placed inside the mylar bag. An electronic file of the artwork will be provided by BATA.

Package Contents:
Each Retail Package C shall include the following items:

- One (1) pre-programmed, sealed-battery, internally-mounted toll tag
- One (1) mylar bag, which the toll tag shall be placed inside of.
- One (1) FasTrak® Customer Handbook including FasTrak® Privacy Policy that shall be provided by Supplier. Specifications: 4.0”w x 8.0”h; single fold; maximum 70-lb paper; double-stapled; 16 pages, 2 sided printing; 4-color process. An electronic file will be provided by BATA.
- One (1) insert with registration instructions, if applicable

Packaging and Shipment:
Retail toll tags shall be shipped in boxes containing 50 toll tags in each box. To the extent possible, retail tags shall be placed inside each box in numerical order. Each shipment shall contain tags with consecutive serial numbers, i.e., tag serial numbers shall not contain gaps. Each box shall be labeled in numerical sequence for each shipment (e.g. 1 of 50, etc) and serial number tag ranges and corresponding bar codes shall be clearly affixed Three packages per box shall be left unsealed for testing purposes.

6. <u>Schedule</u>

Delivery of items shall take place according to the quantities and schedule indicated below. BATA retains the right to modify this schedule to either accelerate or delay the delivery schedule, or to modify the quantities ordered within each type of retail toll tag upon 30 days notice to Supplier.

Retail Package A	Retail Package B	Retail Package C	Total Quantity	SHIPMENT MUST ARRIVE No Later Than
5,000	0	2,000	7,000	April 30, 2012
5,000	0	2,000	7,000	May 31, 2012
5,000	0	2,000	7,000	June 30, 2012
5,000	0	2,000	7,000	July 31, 2012
5,000	0	2,000	7,000	August 31, 2012
6,000	0	2,000	8,000	September 30, 2012
6,000	0	2,000	8,000	October 31, 2012
6,000	0	3,000	9,000	November 30, 2012
6,000	0	3,000	9,000	December 31, 2012
49,000	**0**	**20,000**	**69,000**	Subtotal
0	**10,000**	**0**	**10,000**	Option - Date TBD
49,000	**10,000**	**20,000**	**79,000**	Total

Notes: [a] BATA shall have the option to purchase an additional order, for 10,000 retail toll tags (Package B), under the same terms and conditions in this contract and at the rate specified on the Bid Form. This option can be exercised at any time through April 30, 2013. Delivery of these toll tags shall occur within 60 days of notification by BATA.

Supplier shall provide notice to BATA Project Manager or its designated representative 48 hours in advance of delivery of shipment to allow time to arrange for material handling on-site for unloading. Items for this procurement shall be delivered to the following:

FasTrak® Customer Service Center
455 The Embarcadero, Suite 103
San Francisco, CA 94111
Attn: Bob Van Hoy
(415) 486-2435

APPENDIX A-1

CALIFORNIA CODE OF REGULATIONS, TITLE 21, CHAPTER 16

Article 5. Project Funding

§ 1676. Project Funding.

Funds made available for projects under subsections (b) and (c) of Section 1670 may be used for public transportation projects which are included in a State program of projects for public transportation in areas other than urbanized areas. The Federal share for any construction or capital project under this Section shall not exceed eighty percent(80%) of the net cost of such construction or capital project. The Federal share for any project for the payment of financial assistance for operating expenses as defined by the United States Department of Transportation shall not exceed fifty percent (50%) of the net cost of such operating expense project. At least fifty percent (50%) of the remainder of the net cost for both capital and operating projects shall be provided in cash, or cash equivalent from sources other than Federal funds or revenues from the operation of public mass transportation systems. Up to fifty percent (50%) of the remainder of the net cost may be made up of unrestricted funds from other Federal programs.

NOTE: Authority cited: Section 14031, Government Code; and Section 18 of the Urban Mass Transportation Act of 1964 (49 USC 1614). Reference: Section 14031, Government Code; Section 18 of the Urban Mass Transportation Act of 1964 (49 USC 1614); and Urban Mass Transportation Administration Circular 9040.1.

HISTORY

Amendment filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

§ 1677. Use of Other Federal Funds.

Applicants that have used funds pursuant to Section 5 or Section 9 of the Urban Mass Transportation Act in the past for services that extend into nonurbanized areas shall continue to use these Section 5 or Section 9 funds for these purposes as long as the services are appropriate for the area. Section 18 funds shall be used only for new or expanded services in these nonurbanized areas.

NOTE: Authority cited: Section 14031, Government Code; and Section 18 of the Urban Mass Transportation Act of 1964 (49 USC 1614). Reference: Section 14031, Government Code; Section 18 of the Urban Mass Transportation Act of 1964 (49 USC 1614); and Urban Mass Transportation Administration Circular 9040.1

HISTORY

Amendment filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

Article 6. Planning

NOTE: Authority cited: Sections 14031 and 14033, Government Code. Reference: Sections 14031 and 14033, Government Code.

HISTORY

1. Repealer of Article 6 (Sections 1678 and 1679) filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

Article 7. Programming

NOTE: Authority cited: Sections 14031 and 14033, Government Code. Reference: Sections 14031 and 14033, Government Code.

HISTORY

1. Repealer of Article 7 (Sections 1680 and 1681) filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

Article 8. Implementation

NOTE: Authority cited: Sections 14031 and 14033, Government Code. Reference Sections 14031 and 14033, Government Code.

HISTORY

1. Repealer of Article 8 (Sections 1685 and 1686) filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

Article 9. Accounting, Reporting, and Auditing

NOTE: Authority cited: Sections 14031 and 14033, Government Code. Reference: Sections 14031 and 14033, Government Code.

HISTORY

1. Repealer of Article 9 (Sections 1688 and 1689) filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

Article 10. Settlement of Conflicts

NOTE: Authority cited: Sections 14031 and 14033, Government Code. Reference: Sections 14031 and 14033, Government Code.

HISTORY

1. Repealer of Article 10 (Section 1690) filed 1-17-85; effective thirtieth day thereafter (Register 85, No. 3).

Chapter 16. Compatibility Specifications for Automatic Vehicle Identification Equipment

Article 1. Summary of Key Compatibility Specifications for Automatic Vehicle Identification Equipment

§ 1700. Summary.

The compatibility specifications for automatic vehicle identification (AVI) equipment have been developed around two principal components: a reader and a transponder. The minimum role of the reader is to:

1) trigger or activate a transponder.

2) poll the transponder for specific information, and

3) provide an acknowledge message to the transponder after a valid response to the polling message has been received.

A half-duplex communications system is envisioned where the transponder takes its cues from the reader.

The specification is meant to define a standard two way communications protocol and to further define an initial set of data records.

A summary of the key compatibility specifications found in this Chapter are set forth below:

Reader Specifications:	
Reader Trigger Signal	33 microseconds of unmodulated RF
Reader Send Mode (Downlink)	
Carrier Frequency:	915 ± 13 MHz (subject to FCC assignment)
Carrier Modulation:	Unipolar ASK (Manchester Encoded)
Data Bit Rate:	300 kbps
No. Data Bits:	Application Specific
Field Strength at Transponder Antenna:	500 mV/m (minimum)
Transponder Specifications:	
Technology Type:	Modulated Backscatter
Transponder Antenna Polarization:	Horizontal
Field-of-View:	Operation within 90° conical angle
Location:	Front of Vehicle
Transponder Send Mode (Uplink)	
Carrier Frequency:	Same as Reader Send Mode
Carrier Modulation:	Subcarrier AM
Subcarrier Modulation:	FSK
Subcarrier Frequencies:	600 kHz ± 10% and 1200 kHz ± 10%
Data Bit Rate:	300 kbps
No. Data Bits:	Application Specific
Receiver Field-Strength Threshold:	500 mV/m ± 50 mV/m (minimum)

NOTE: All mV/m specifications are in RMS voltage.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New chapter 16, articles 1-4 and sections 1700-1705.8, not consecutive filed 6-26-92; operative 7-27-92 (Register 92, No. 26).

2. Amendment filed 5-1-98; operative 5-31-98 (Register 98, No. 18).

§ 1701. Definition of Technical Terms.

The following are definitions of technical terms used throughout this Chapter:

(a) AM – Amplitude modulation
(b) ASK – Amplitude shift keying
(c) BCC – Block check character
(d) CRC – Cyclic redundancy check
(e) CW – Continuous wave
(f) EIRP – effective isotropically radiated power = gain x net power
(g) EM – Electromagnetic
(h) FCC – Federal Communications Commission
(i) FSK – Frequency-shift keying
(j) ID – Device identification
(k) kbps – kilobits per second
(l) kHz – kilohertz (10^3 hertz)
(m) kph – kilometer per hour
(n) MHz – megahertz
(o) m/Vm – milliVolts/meter
(p) Reader – A fixed-position reader, associated transmit and receive (Tx/Rx) antenna(s), and modulation and demodulation hardware and software.
(q) RF – Radio frequency
(r) Transponders – Electronic devices that contain information which can be communicated to the reader. The transponders may have the capability to read and write information.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).
2. Amendment of subsections (c)-(e), new subsection (o), subsection relettering, and amendment of newly designated subsection (r) filed 5-1-98; operative 5-31-98 (Register 98, No. 18).

Article 2.0. Introduction

§ 1702.1. Objectives.

This chapter defines the compatibility requirements for automatic vehicle identification (AVI) equipment. Supplemental agency (e.g., toll authority) specifications will detail the technical, environmental, and operational specifics for each site implementation. The immediate mandate for this compatibility specification is for electronic toll collection.

AVI equipment will essentially consist of two functional elements: vehicle-mounted transponders and fixed-position reader units.

The specification is meant to define a standard communications protocol and to further define an initial set of data records. The initial data records are designed for voluntary implementations of electronic toll collection.

It is further envisioned that more complex data records will be developed to handle anonymous transactions, secure funds transfers, information transfers, and other transactions between the reader and the transponder that will be defined as needed. The transponders may have the capability to read and write information. Caltrans shall function as the standards monitoring authority to authorize the use of new record types and to assign record type numbers to newly authorized records. Caltrans shall pass this responsibility to an appropriate standards setting organization when one is established and recognized with Caltrans retaining representation in the standards setting organization.

Nothing in these regulations shall preclude the addition of functions and technologies to the transponder and/or reader systems.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).
2. Amendment adding last sentence filed 2-16-93; operative 3-18-93 (Register 93, No. 8).
3. Amendment of first and fourth paragraphs filed 5-1-98; operative 5-31-98 (Register 98, No. 18).

§ 1702.2. Organization.

This chapter consists of four articles. An overview and summary of the key specifications is given in Article 1. Article 2 presents the objectives and definitions for data codes. Articles 3 and 4 provide specifications unique to the reader and transponder respectively.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).

§ 1703. Definitions for Data Codes.

(a) Agency Code: This 16-bit code field identifies the agency that has authority to conduct the transaction.

(b) Byte Order: Numeric fields shall be transmitted most significant bit first. If a numeric field is represented as multiple bytes, the most significant bit of the most significant byte is transmitted first. This document represents the most significant and first transmitted to the left on a line and to the top of a multi line tabulation.

(c) Error Detection Code: The error detection code utilized in the defined records is the CRC-CCITT, with a generator polynomial of $X^{16}+X^{12}+X^5+1$. This results in a 16-bit BCC transmitted with each data message. The data field protected by the CRC excludes any preceding header in every case.

(d) Filler Bits: Filler bits are used to adjust the data message length to a desired length and shall be set to zero.

(e) Header Code: The header is the first field in each data message for either reader or transponder transmissions and consists of an 8-bit and a 4-bit word for a total of 12 bits. The header provides a signal that may be used by a receiver to self-synchronize (selsyn) with the data being transmitted, thus the notation selsyn. The selsyn signal has binary and hexadecimal values: 10101010 and AA, respectively.

The header code also provides for a unique, 4 bit flag that is recognized by a receiver decoder as the end of the header with the data message to follow. The flag signal has binary and hexadecimal values: 1100 and C respectively.

(f) Reader ID Number: This 32-bit field is used to uniquely identify the reader conducting the transaction.

(g) Transaction Record Type Code: This 16-bit code uniquely identified a specific type of valid transaction between a reader and a transponder. This code uniquely defines the transponder message fields and functions permissible with the transaction type specified by the polling message as described in Section 1704.5(e)(1). Hexadecimal numbers 1 through 7FFF are set aside for transponder message structures and 8000 through FFFF are dedicated for reader-to-transponder message structures.

(h) Transaction Status Code: Used to provide status information to the transponder.

(i) Transponder ID Number: This 32-bit code uniquely identifies which transponder is responding to a polling request or is being acknowledged.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).
2. Amendment of subsections (a), (c), (e) and (g) filed 5-1-98; operative 5-31-98 (Register 98, No. 18).

Article 3. Reader Specifications

§ 1704.1. General.

The reader will transmit a RF trigger pulse to activate (turn-on) the transponders. After a time delay, the reader then will transmit an encoded signal, referred to as the polling message which, upon detection and decoding by the transponder, will provide initial information to the transponder including the type of transaction the reader wishes to conduct.

The reader will then transmit an unmodulated CW.RF signal for the transponder to modulate with a data message while backscattering to the reader. The reader may repeat the polling-to-backscattering sequence

until it obtains an error free data message from the transponder. The reader will then transmit an encoded acknowledge message to the transponder providing status information and requesting that the transponder not respond to the same polling message again for a fixed time period.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Amendment filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1704.2. RF Carrier Frequency.

The RF carrier frequency shall be taken from the 915 MHz ± 13 MHz range. Specific frequency and bandwidth depend upon pending FCC assignment.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).

§ 1704.3. Reader Antenna Specifications.

(a) Reader Antenna Polarizations.

The reader transmit and receive antennas shall have predominant EM field components that are co–polarized to the horizontal polarization specified for the transponder transmit and receive antennas in section 1705.3(a). Horizontal, linear, circular or elliptical polarizations are allowed.

(b) Reader Antenna Location.

The reader antenna location is site specific.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Amendment of subsection (a) filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1704.4. Reader–to–Transponder Trigger Pulse.

(a) Trigger Pulse Definition.

The reader shall provide a wakeup trigger for the transponder. The trigger shall consist of a 33 microsecond long, RF pulse at the assigned carrier frequency that is modulated with a continuous string of ones. The trigger pulse shall be followed immediately by a delay (i.e., no RF transmission) of 100 microseconds duration. The wakeup pulse is intended to signal a dormant transponder to fully activate itself.

(b) Trigger Pulse Field Strength.

The required horizontal component of field strength produced by the trigger pulse at the maximum downlink range (site dependent) of the reader shall be greater than 500 mV/m.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).

§ 1704.5. Reader Communications Protocol.

(a) AM Modulation Scheme.

The downlink (reader–to–transponder) modulation scheme shall be unipolar ASK of the RF carrier using Manchester encoding. A data bit '1' is transmitted by sending an RF pulse during the first half of the bit period and no signal during the second half, while for a '0' data bit the reverse order is used; i.e., no signal during the first half of the bit period and an RF pulse transmission during the second half.

(b) Data Bit Rates.

The data bit rate for reader–to–transponder messages shall be 300 kbps.

(c) Field Strength.

The field strength of a reader data message at the transponder shall be greater than 500 mV/m.

(d) Standard Reader Data Message Format.

The standard portion of a reader data message shall consist of a header and transaction record type code. The subsequent length, data content, and error detection scheme shall then be established by the definition for that transaction record type.

(e) Reader Data Message Formats for AVI.

There may be several reader–to–transponder data message formats. The format is determined by the transaction record type code sent by the reader. The following is the reader–to–transponder message format presently specified for AVI electronic toll collection applications:

(1) Reader Transaction Record Type 1 (Polling Message).

The polling message (which follows the 100 microsecond delay after the trigger signal) tells the transponder the type of transaction the reader wishes to conduct. For AVI electronic toll collection applications, reader transaction record type 1 (polling message) also would identify the agency or toll authority. For AVI applications, the reader–to–transponder yype 1 polling message shall be structured using the following ordered data bit fields:

Field Definition	*No. Bits*	*Hexadecimal Value*
Header Code		
Selsyn	8	AA
Flag	4	C
Transaction Record Type Code	16	8000
Agency Code	16	
Error Detection Code	16	
	Total: 60	

(2) Reader Transaction Record Type 2 (Acknowledge Message).

A reader–to–transponder acknowledge data message shall be provided to inform specific transponders that they have been successfully processed and to stop responding to further identical reader polling requests. The acknowledge message is used to terminate the transaction, and is only sent if the transaction is successfully completed. Reader transaction record type 2 (acknowledge message) shall consist of the following ordered data bit fields:

Field Definition	*No. Bits*	*Hexadecimal Value*
Header		
Selsyn	8	AA
Flag	4	C
Transaction Record Type Code	16	C000
Transponder ID Number	32	
Reader ID Number	32	
Transaction Status Code	16	
Error Detection Code	16	
	Total: 124	

(f) Reader End–of–Message Frame.

The end–of–message signal for reader–to–transponder data messages shall consist of a minimum of 10 microseconds of no RF carrier signal. Transponder decoders shall have the ability to detect this condition as an invalid Manchester code.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Amendment of subsections (d)–(f) filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1704.6. Reader Field Strength for Modulated Backscattering.

The electric field strength produced by a reader is a function of the EIRP. The EIRP required to detect a modulated backscattered RF signal from a transponder with a reasonably high signal–to–noise ratio is determined by the maximum range to the transponder and the detection sensitivity of the reader receiver plus any gain margin. If the overall gain characteristics of the transponder were held constant, the required EIRP then becomes site dependent.

The electric field strength to accomplish modulated backscattering is expected to be lower than that required for triggering a transponder or for sending a reader data message. Sensitive reader receivers likely will be necessary, however, such as that obtained with homodyne or heterodyne technology.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).

Article 4. Transponder Specifications

§ 1705.1. General Description.

Transponders will be encoded with unique identification data together with other coded data as described in this section. On passing through any AVI reader zone, the transponder will provide the coded data to the reader only on receipt of a valid reader polling command. Transponders must be capable of being turned on and off as specified herein. transponders must be capable of two–way data communications. Transponders may be portable. The transponders may have the capability to read and write information.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Amendment filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1705.2. Transponder RF Carrier Frequency.

The transponder RF carrier frequency in a backscatter system is identical to that used by the reader; the frequency will be in the range of 915 MHz ± 13 MHz. The transponder shall be capable of operating over the full ± 13 MHz band to allow site flexibility in reader implementation.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).

§ 1705.3. Transponder Transmit and Receive Antennas.

(a) Antenna Polarizations.

The transponder transmit and receive antennas shall have EM field components that are predominantly horizontally polarized transverse to normal traffic flow. Horizontal, linear, circular or elliptical polarizations are allowed.

(b) Antenna Field of Views.

The transponder transmit and receive antennas shall have a field of view which is a 90° cone in front of the vehicle. The projection of the horizontal component of the cone's axis shall be parallel to the lane and the vertical component of the cone's axis shall be 35° horizontal.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Amendment of subsection (a) filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1705.4. Transponder Activation.

(a) Activation Timing.

Within 1 millisecond of entry into the reader's modulated RF field, a transponder shall be fully activated and ready to decode the polling message from the reader within 100 microseconds of receipt of a 33 microsecond long modulated RF trigger pulse from the reader.

(b) Activation Timing for Battery Power Management.

As an alternative to 1705.4(a), a delay of 20 additional milliseconds is permissible for a transponder using multiple–stage activation to conserve battery life. Within 21 milliseconds of entry into the reader's modulated RF field, such a transponder shall be fully activated and ready to decode the polling message from the reader within 100 microseconds of receipt of a 33 microsecond long modulated trigger pulse from the reader.

(c) Activation Field Strength.

The transponder receiver shall be capable of recognizing and acting on a trigger signal and polling message when the free–space field strength at the transponder location exceeds 550 mV/m and will not respond to field strengths below 450 mV/m (Electric field strengths are to be measured in free–spece and in the absence of any vehicle). After completion of the polling message, the transponder shall begin modulating and backscattering RF with continuous zero bits. 100 microseconds after completion of the polling message, the transponder shall begin transmitting its message. If a newly activated transponder does not immediately receive a polling message, it shall remain activated and ready to receive a subsequent reader message for at least 20 milliseconds.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Repealer and new section filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1705.5. Transponder Communications Protocol.

(a) Subcarrier Modulation Scheme.

The transponder–to–reader (uplink) modulation scheme shall be amplitude modulation of an RF carrier backscatter created by varying the reflecting crossection of the antenna as seen by the incident carrier signal. The antenna crossection shall be varied between upper and lower limits with a 50 percent duty cycle and rise and fall times of less than 75 nanoseconds. The transponder baseband message signal shall modulate the subcarrier using FSK modulation with a center frequency of 900 kHz and frequency deviation of ± 300 kHz. The lower and upper subcarrier frequencies correspond to data bits '0' and '1' respectively. The message information is conveyed by the subcarrier modulation frequencies of the transponder backscattered signal and not by amplitude or phase.

(b) Data Bit Rates.

The data bit rate for transponder–to–reader data messages shall be 300 kbps.

(c) Field Strength.

The field strength at which a transponder data message is transmitted using backscatter technology is dependent upon the incident field strength from the reader, the transponder receive and transmit antenna gains, and any RF gain internal to the transponder. The transponder and antenna gain taken together shall effect a change in the backscattering cross section of between 45 and 100 square centimeters.

(d) Standard Transponder Data Message Format.

The standard portion of a transponder data message shall consist of a header and transaction record type code. The subsequent length, data content, and error detection scheme shall then be established by the definition for that transaction record type.

(e) Transponder Data Message Formats for AVI Toll Collection.

There may be numerous transponder–to–reader data message formats. The format is determined by the transaction record type code sent by the transponder. The following is the reader–to–transponder message format presently specified for AVI electronic toll collection applications:

(1) Transponder Transaction Type 1 (Data Message).

Transponder transaction type 1 (data message) allows for unencrypted transponder ID numbers to be transmitted. Type 1 (data messages) shall be structured using the following ordered data bit fields:

Field Definition	*No. Bits*	*Hexadecimal Value*
Header Code		
Selsyn	8	AA
Flag	4	C
Transaction Record Type Code	16	1
Transponder ID Number	32	
Error Detection Code	16	
	Total: 76	

(f) Transponder End–of–Message Frame

The End–of–Message signal for transponder data messages shall consist of a minimum of 10 microseconds of no modulation.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6–26–92; operative 7–27–92 (Register 92, No. 26).
2. Amendment of subsections (d)–(e)(1) filed 5–1–98; operative 5–31–98 (Register 98, No. 18).

§ 1705.6. Transponder Response to Reader Acknowledge Message.

The transponder shall discontinue responding to identical reader polling requests for a period of 10 seconds once a valid reader acknowledgement message has been received. The transponder shall, however, re-

spond to polling messages that are not identical to the polling message that lead to the valid acknowledgement.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).
2. Amendment filed 5-1-98; operative 5-31-98 (Register 98, No. 18).

§ 1705.7. Multiple Transponder Responses to a Reader Polling Message.

Each transponder data message transmittal must be in response to a reader polling message.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).

§ 1705.8. Transponder Positioning.

Transponders shall be positioned at the front of the vehicle with a clear line of sight to the reader antenna without degrading the performance of the reader-transponder system below minimum specified standards. As a minimum, transponders shall operate up to a maximum of 76cm (30") offset from the longitudinal center line of the vehicle.

The front of the vehicle shall be defined as that portion of the vehicle from the driver's eyes forward.

NOTE: Authority cited: Section 27565, Streets and Highways Code. Reference: Sections 27564 and 27565, Streets and Highways Code.

HISTORY

1. New section filed 6-26-92; operative 7-27-92 (Register 92, No. 26).

Chapter 18. Junkyard Control

Article 1. General

§ 2000. Authority.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746(g), 746.3 and 759, Streets and Highways Code.

HISTORY

1. New Subchapter 18 (Articles 1-4, Sections 2000-2041, not consecutive) filed 3-11-80; effective thirtieth day thereafter (Register 80, No. 11).
2. Order of Repeal filed 8-26-82 by OAL pursuant to Government Code Section 11349.7(j) (Register 82, No. 35).

§ 2001. Application Zone.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746(f), (h), (i), and 747, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

Article 2. Definitions

§ 2010. Automobile Wrecker/Autowrecking Yard.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746(e), 746.3 and 759, Streets and Highways Code.

HISTORY

1. Repealer of article 2 (sections 2010-2016) and section filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2011. Highway.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746(f), (h), (i), Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2012. Highway Beautification Easement.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 751, 751.1 and 752, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2013. Owner.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 745-759.3, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2014. Proprietor.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 745-759.3, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2015. Screening.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 747.1, 748, 749, 751 and 755, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2016. Visible.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Section 746.3, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

Article 3. Procedure

§ 2030. Industrial Zone Exception.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746.3 and 747, Streets and Highways Code.

HISTORY

1. Repealer of article 3 (sections 2030-2038) and section filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2031. Legal Yard.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Section 749, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2032. Industrial Zone.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Section 747, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2033. Illegal Yard.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746.3 and 747, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2034. Procedure.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 754, 755, 756 and 757, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2035. Curing Illegality.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746.3 and 747, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2036. Nonconforming Yard.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 748 and 749, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

§ 2037. Configuration.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Sections 746(a), 746.1, 746.2 and 748, Streets and Highways Code.

HISTORY

1. Repealer filed 9-16-96; operative 10-16-96 (Register 96, No. 38).

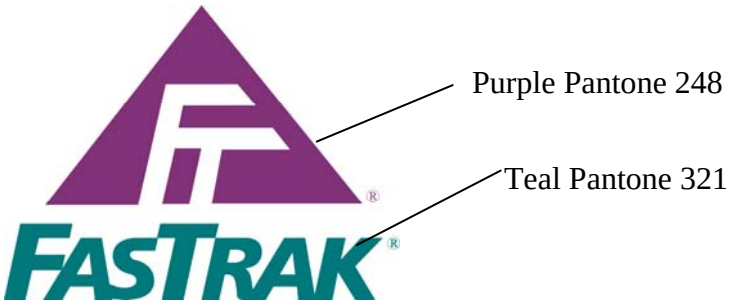
§ 2038. Cessation.

NOTE: Authority cited: Section 759, Streets and Highways Code. Reference: Section 746.2, Streets and Highways Code.

APPENDIX A-2

LOGO FOR INTERNALLY-MOUNTED TOLL TAGS

FRONT



BACK

If found please return to:
FasTrak Customer Service Center
P.O. Box 26927
San Francisco, CA 94126
(877) 229-8655

RETURN
POSTAGE
GUARANTEED

APPENDIX B

BID FORM

Description of Items	Quantity	Unit Price	Extended Price
California Code of Regulations, Title 21 compliant ETC internally-mounted, sealed-battery toll tags **(Retail Package A Toll Tags sealed-battery)**	49,000		
California Code of Regulations, Title 21 compliant ETC internally-mounted, sealed-battery toll tags **(Retail Package C Toll Tag, sealed-battery)**	20,000		
Subtotal	**69,000**		
Applicable Sales Tax (9.5%)		N/A	
TOTAL BID PRICE		**N/A**	

Note: [a] BATA will have the option to purchase an additional order, for 10,000 retail toll tags (Package B), under the same terms and conditions in this contract and at the rate specified on the Bid Form. This option can be exercised at any time prior to December 31, 2012, or in subsequent four months from January 1 to April 30, 2013. Delivery of these toll tags shall occur within 60 days of notification by BATA, in quantities by retail package type to be determined later.

Minimum Qualifications:

Check either yes or no. (NOTE: To be eligible to submit a bid, a bidder must answer Yes to one of the questions listed below).	**Yes**	**No**
Has your company successfully furnished, under three (3) other commercial contracts, ETC toll tags that conform to all applicable sections of the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment"?		
Alternate: Has your company successfully furnished, under three (3) other commercial contracts, RFID toll tags used for electronic toll collection and provided independently validated test results demonstrating that the toll tags to be supplied under this IFB meet the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment" and will have no more than 5 tag read errors out of 1,000 tag reads. Test results are attached to bid package.		

Signature of Authorizing Official:

Name of Proposing Company	
Address	
Address	
Phone Number	
Fax Number	
Email	
License Number and Type	
Representative Name and Title	
Name of Authorizing Official	
By signing below you acknowledge and agree to provide the required services, and comply with all the terms and conditions listed in this IFB.	
Authorized Signature	
Date	

APPENDIX C, SUPPLIER'S REFERENCE FORM

Name of Bidding Company _____

Representative Name & Title _____

Phone Number _____

References must not be relatives of the Supplier's representative or owners. The references given must be for clients with contracts of a similar work scope to this project providing ETC toll tags that conform to all applicable sections of the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment."

Alternatively, references may be provided for RFID toll tags used for electronic toll collection with independently validated test results. Bidder must demonstrate that the toll tags to be supplied under this IFB meet the California Code of Regulations, Title 21, Chapter 16, "Compatibility Specifications for Automatic Vehicle Identification Equipment" and will have no more than five (5) tag read errors out of 1,000 tag reads.

Supplier's References (Provide at least 3)

1. **Client's Name**

Contact Person

Address

City & Zip Code

Phone Number

Email

2. **Client's Name**

Contact Person

Address

City & Zip Code

Phone Number

Email

3. **Client's Name**

Contact Person

Address

City & Zip Code

Phone Number

Email

APPENDIX D

GENERAL CONDITIONS FOR BATA PURCHASE ORDERS

1. DEFINITIONS

a. MTC. Includes the Metropolitan Transportation Commission, the Metropolitan Transportation Commission Service Authority for Freeways and Expressways, or the Bay Area Toll Authority.

b. Supplier. The individual, firm, partnership, corporation or combination thereof to whom a Purchase Order is mailed or otherwise furnished by BATA.

c. Contract. The legal agreement between BATA and the Supplier, which includes the terms of any written solicitation of Bids or Proposals and any deviation from the written specifications expressly accepted by BATA; the Supplier's bid, proposal, or offer; and all terms and conditions set forth in or attached to this Purchase Order. In the event of a conflict between one or more provisions of the Contract, the more specific or stringent provision with respect to Supplier's performance of the work shall apply.

2. ACCEPTANCE OF OFFER

This purchase order constitutes BATA's acceptance of Supplier's offer and becomes a binding contract, as defined above, when it is signed by BATA and mailed to Supplier. No revisions to or assignments of this order shall be valid unless in writing and signed by an authorized representative of BATA.

3. PERFORMANCE OF WORK

Supplier shall accomplish all the work and furnish all materials necessary for the completion of the work in a good, workmanlike and thorough manner and to the satisfaction of BATA, in accordance with the Contract.

4. CONTRACT PRICE

The firm fixed price(s) or other maximum payment set out in this purchase order, which includes full compensation to Supplier for performing all work required by the Contract, including all applicable federal, state and local taxes.

5. VARIATION IN QUANTITY, QUALITY OR PERFORMANCE

Any variation in the quantity, quality or performance of any item or service called for by this order shall be grounds for termination by default by BATA, as provided in 8a, unless approved by BATA in writing.

6. PACKAGING AND CRATING

All items shall be packed by Supplier in suitable containers for protection in shipment and storage. Prices set forth in this order include all charges for Supplier's packing, crating and marking for transportation to f.o.b. point.

7 INSPECTION AND ACCEPTANCE

Inspection and acceptance will be at destination, unless otherwise provided. Until delivery and acceptance, and after any rejections, risk of loss will be on the Supplier.

8. TERMINATION

a. If Supplier fails to comply with any of the provisions of the Contract, or in the event Supplier becomes the subject of a proceeding under state or federal law for relief of creditors, or if Supplier

makes an assignment for the benefit of creditors, BATA shall have the right to hold Supplier in default and cancel this order in whole or in part. In each event, BATA may obtain the items covered by the cancelled order from another Supplier and, if Supplier was selected as a result of a competitive procurement process, Supplier shall reimburse BATA for the excess cost to BATA, if any.

b. Without affecting its right to cancel this order under paragraph (a) above, BATA may terminate this order in whole or in part prior to shipment of goods or provision of services at no cost by providing written notice to the Supplier. In such event, BATA shall reimburse Supplier for non-recoverable costs incurred to date, not to exceed the Contract Price.

9. SCHEDULE
Unless otherwise agreed, material commitments and production arrangements should not be made by Supplier in excess of the amount or in advance of the time necessary to meet the specified delivery schedule. Time is of the essence in filling this order, and it is Supplier's responsibility to comply with BATA's delivery directions and/or schedule. Failure to deliver any item or provide any service called for by the contract within the time called for shall be grounds for termination for default as provided in 8.a.

10. INDEMNIFICATION
Supplier shall indemnify and hold harmless BATA and its officers, agents and employees from and against all claims, demands, suits, loss damage, injury and liability, including any and all costs and expenses incurred in connection therewith, however caused, resulting from, arising out of or in any way connected with Supplier's performance of the Contract, including delivery of materials or equipment to BATA at the time and point of delivery indicated when delivery is an obligation of Supplier under the Contract.

11. INDEPENDENT CONTRACTOR
Supplier is an independent contractor and not an employee or agent of BATA.

12. PAYMENT
Supplier shall submit an invoice to BATA within thirty days after completion of work, unless otherwise specified in purchase order. BATA will pay invoices no later than thirty (30) days after their receipt conditioned upon approval of work done and amount billed. Invoices shall be made in writing and delivered or mailed to BATA as follows: Accounting Section, BATA, Joseph P. Bort MetroCenter, 101 Eighth Street, Oakland, CA 94607-4700.