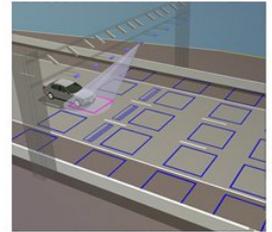
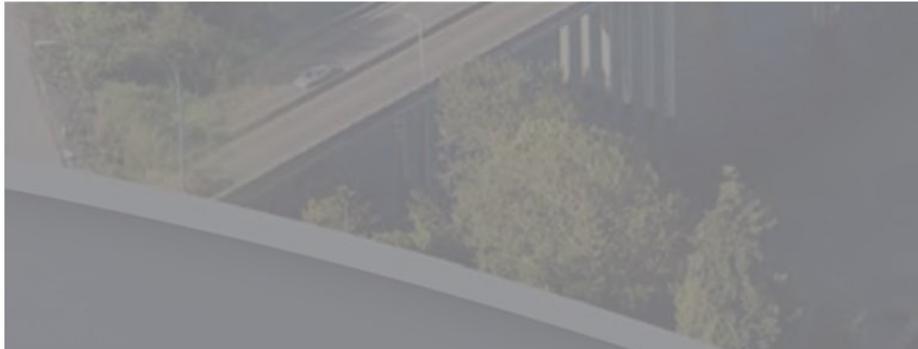




**Washington State  
Department of Transportation**

# Supply, Install, Maintain a Toll Collection System



ETC Oral Presentation  
October 20, 2009



# ***Presentation Agenda***

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- **ETC Team**
- **Project Approach**
- **Proposed Solution**
  - **FMAS**
  - **Network & Security**
  - **Roadside System**
- **Installation & Maintenance**
- **Conclusion**

## ***Introduction of ETC Project And Presentation Team***

### ***Members***

- Tom Owen – Project Manager
- Greg Kocian – Maintenance Manager
- Roy Egeland – Systems Test Manager
- Dave Flores – Manager, Systems Engineering
- Ted Hull-Ryde – Director, Business Development
- Todd Almond – Executive oversight
- Jim Johnson – Valley Electric
- Chad Durand – Environmental Compliance Manager
- Dominic Stordahl – Traffic Control Supervisor

# ***ETC Team – Proven Success – Uniquely Qualified***

## ***Proven Solution, Proven Interfaces, Proven Implementation, Proven Services***

- **Unique collaborative approach supported by ETC's extensive library of documentation and workshop materials**
- **Over 1,300 lanes installed total, over 230 ORT lanes installed since 2003**
- **Proven interface to the Encompass 6 reader (SR 167 HOT Lanes)**
- **Proven ability to interface to third party entities (CSC, VPS, banks, credit card, DMV, etc.)**
- **Proven on time, on budget project delivery**
- **Proven installation management for retrofit and greenfield environments**
- **Experienced with the complete transaction processing, from the lane through the back office. Strong association between the roadside and the back office**
- **Proven full system maintenance support**

# Project Team

**ETC** | Electronic  
Transaction  
Consultants

**2KS** consulting  
Structural and Civil Engineering Solutions



**V VALLEY**  
"The Electrical Solution"

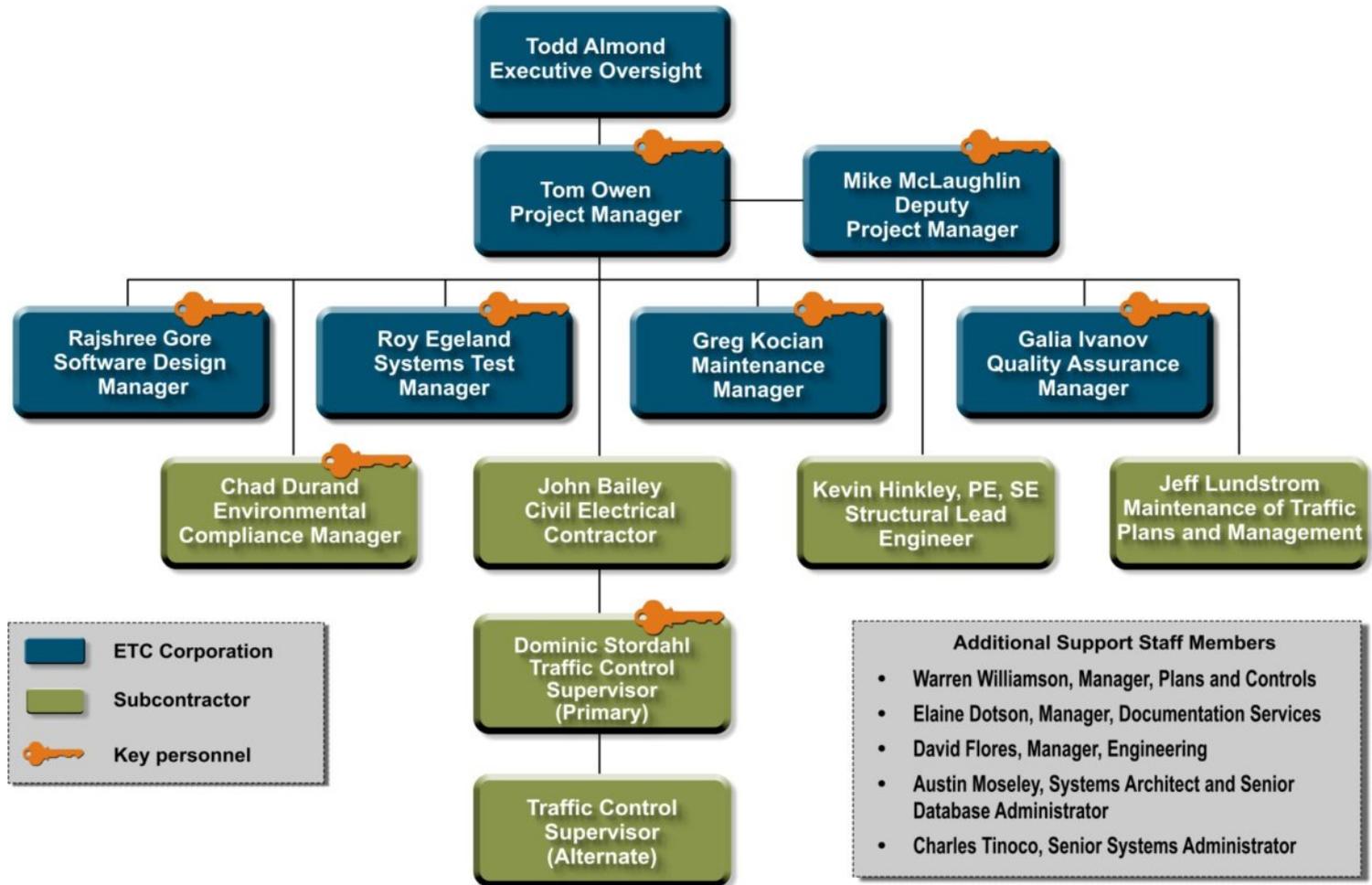
**D DURAND**  
ENVIRONMENTAL



**Pertee**

# Project Approach – Tom Owen

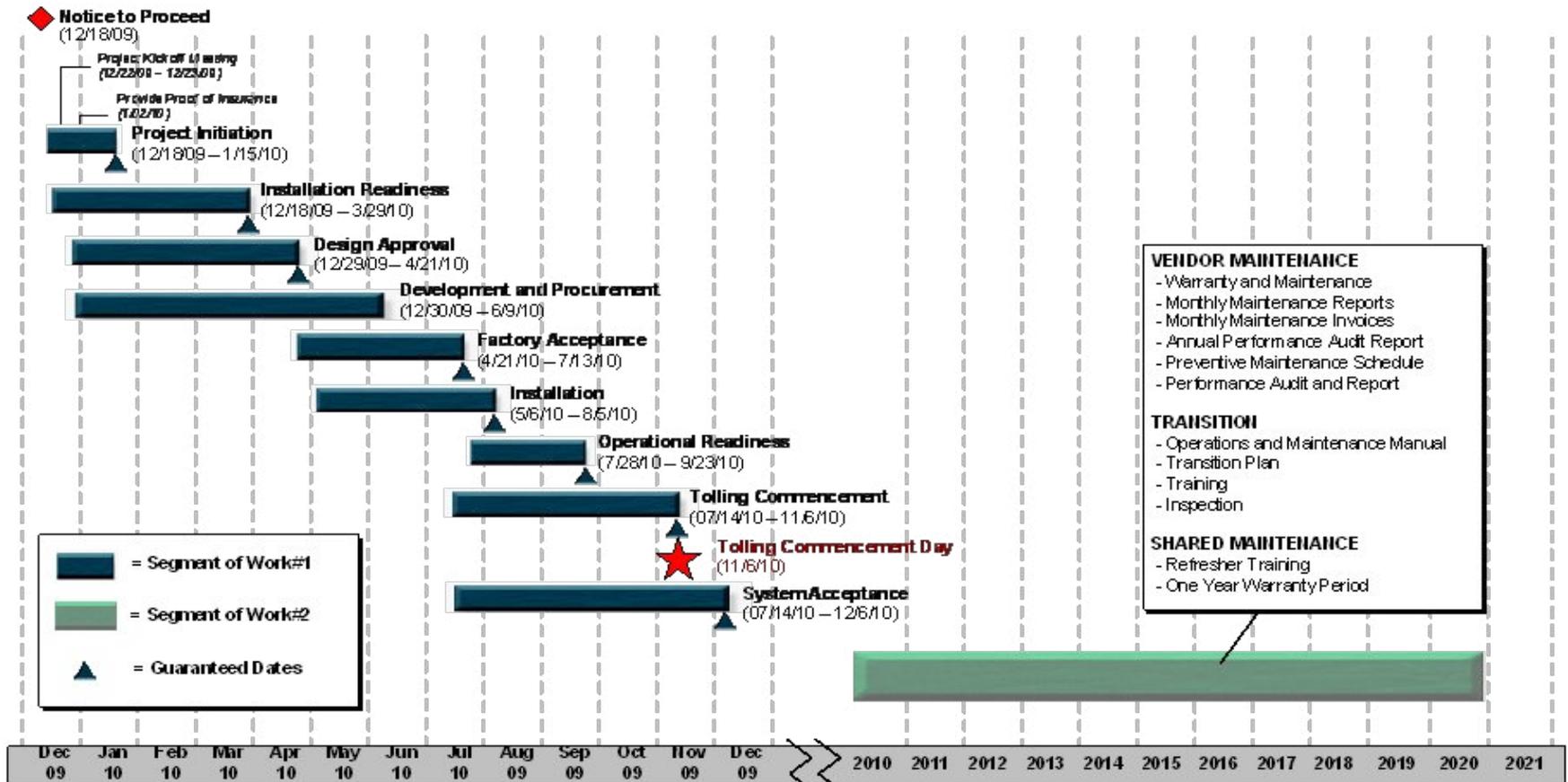
# Project team organization chart



# ***Project Approach***

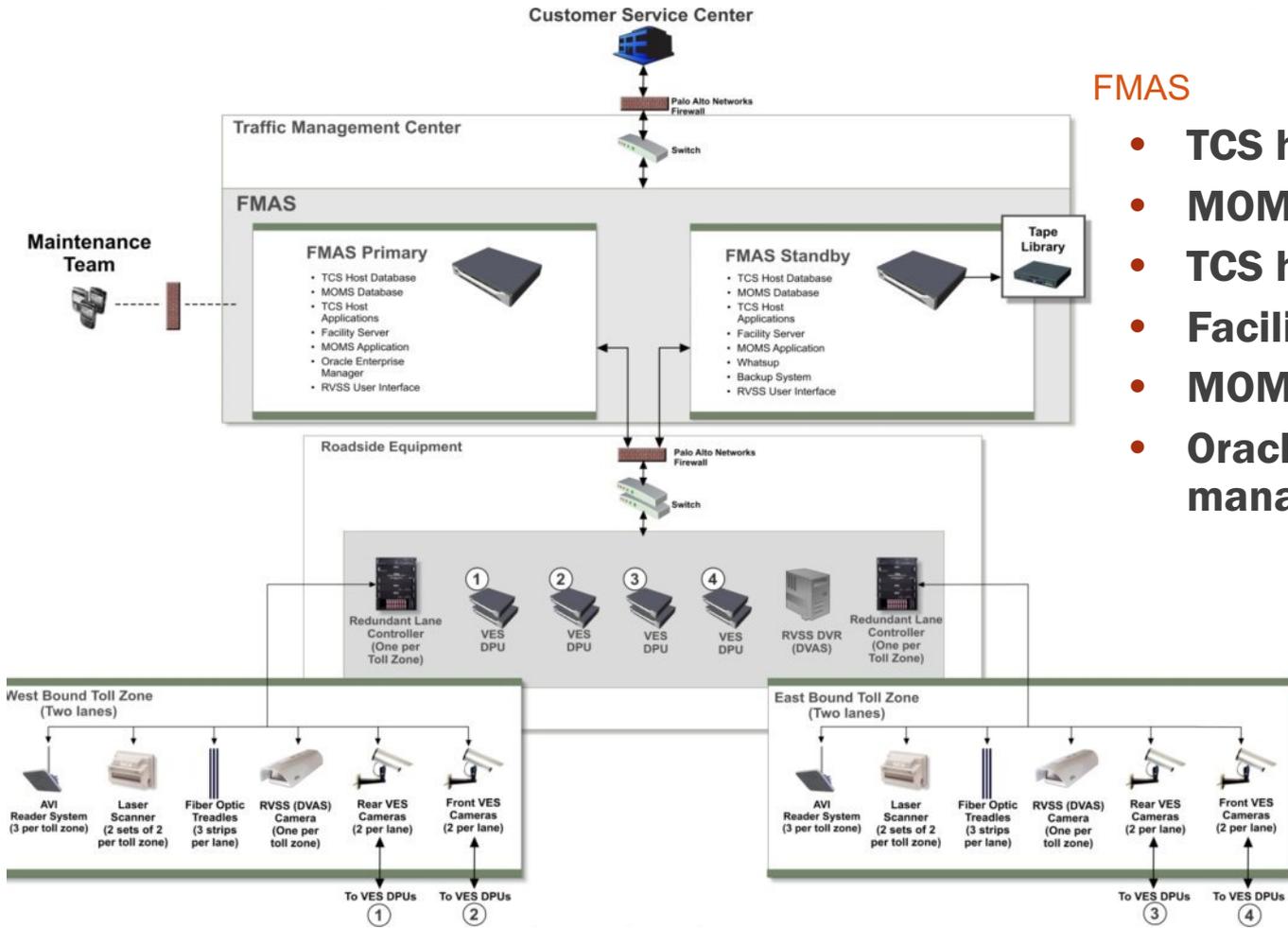
- **Open book communication with the Department's staff**
- **Strong experienced staff – direct working relationship with WSDOT**
- **Weekly progress meetings and reports**
- **Program Management Plan Key Elements**
- **Project Objectives will define the methodology for maintaining schedules, budgets, and technical objectives**
- **Risk Management will define how we assess and mitigate project risks.**
- **Organizational Structure will define the project contributors and how ETC will affectively manage them**
- **Communications Plan will define the framework for all formal and informal communications between ETC, DRJTB and their consultants**
- **Software and systems requirements review and confirmation to include software demonstrations**
- **Quality Control and Assurance**

# Timeline



# **Facility Management Accounting System**

# Toll Collection System Architecture



## FMAS

- TCS host database
- MOMS database
- TCS host applications
- Facility server
- MOMS application
- Oracle enterprise manager

## ***User Configurable, Strong Audit Process, Monitoring Dashboard, User Friendly***

- Dual redundant servers
- Currently supports approximately 90% of the RFP requirements
- Automated pre-audit process identifies and stages issues for manual audit via user configurable parameters.
- Configurable unusual occurrence module that flags and provides notification of issues, such as, excessive violations, class mismatch, etc.
- Fare table wizard facilitates management of fare tables. Multiple fare methods also supported, i.e., fixed, time or day, etc.
- Toll Collection System monitoring dashboard
- Two-way transaction reconciliation with the CSC (if supported by the CSC)
- Extensive MOMS reports
- FMAS integration with the Video Surveillance/Audit system for video indexing and review
- WSDOT will receive enterprise wide advanced financial reporting to augment the TCS solution when interfaced to and supported by ETC's proposed RITE Customer Service Center solution.

# Network & Security

## Palo Alto

- Superior technology compared to virus scan and traditional firewalls.
- Sorts and filters traffic by application type in addition to port and ip range
- Uses both exclusion and inclusion lists
- Blocks malware and virus traffic
- Emails daily and weekly reports
- Transparent to users and network

## Network Bandwidth

- 100 MB pipe provided by WsDOT is more than adequate
- Review of RVSS images from plaza requires 1 MB
- VES files at 100% violation rate require 0.6 MB
- Transaction file bandwidth requirement is minimal

## TCS Host and backup on 2 Dell servers

- Primary server w/database and applications
- Redundant server with tape backup

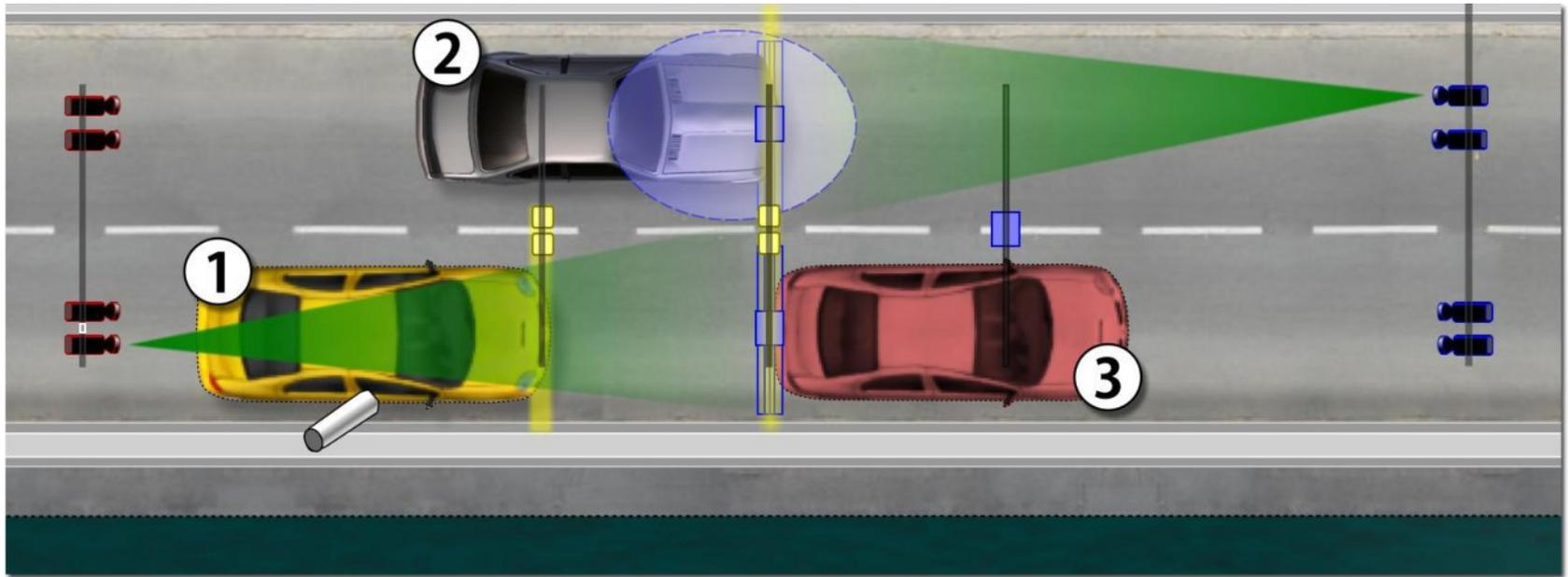


## **Lane Solutions – Dave Flores**

## **ORT Solution**

- **RITE lane controller currently supports more than 1,300 toll lanes, 237 of which use the redundant ORT lane controller**
- **Since 2003 RITE Redundant Lane Controller has not experienced a single incident that resulted in the loss of data or revenue**
- **Laser detector to meet the classification and separation requirements**
- **Measure vehicle shape**
- **Trigger front and rear image capture cameras**
- **Fiber optic treadles count axles, provides AVC**
- **Shallow installation profile (1.25" deep)**
- **Image capture system for front and rear license plate, VES and Video Tolling**

# ORT Lane Transaction Sequence



## ◆ 1) Entry laser activation

- ▶ Initial vehicle detection – start of transaction

## ◆ 2) Exit laser activation

- ▶ AVI to vehicle correlation
- ▶ Front VES trigger

## ◆ 3) Exit laser deactivation

- ▶ Axle count to vehicle correlation
- ▶ Rear VES trigger
- ▶ Stripe antenna AVI to vehicle correlation

## ◆ RITE Video Surveillance System (DVAS)

- ▶ Review and audit of lane transactions
- ▶ Web interface review screen allows remote viewing from any workstation on the TCS network
- ▶ Display video and data in real-time
- ▶ playback events and data, based on configurable search criteria
- ▶ Will integrate the Cisco Media Server and cameras with the lane controller toll data via a multi-media application in the FMAS

## ◆ 4 x 2 TB drives for 90 days of video and data storage

## ◆ Cisco video server software

- ▶ Commercial off-the-shelf product
- ▶ API for image review through RITE application
- ▶ All event synchronized with time assurance software on all servers
- ▶ Time sync guaranteed to within 10 ms

Archive



Information	
Plaza/Zone	RVSS Test Plaza
Camera	s1_Cisco_2500_1
Transaction	
Transaction ID	3752455821
Record Type	-22
Lane	167N-15SW-1
Date	10/01/2009
Time	13:19:55.119
Payment Type	8
Tag Agency	1001
Tag ID	1216859

0  
167-15SW-0

1  
167-15SW-1

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Save Clip

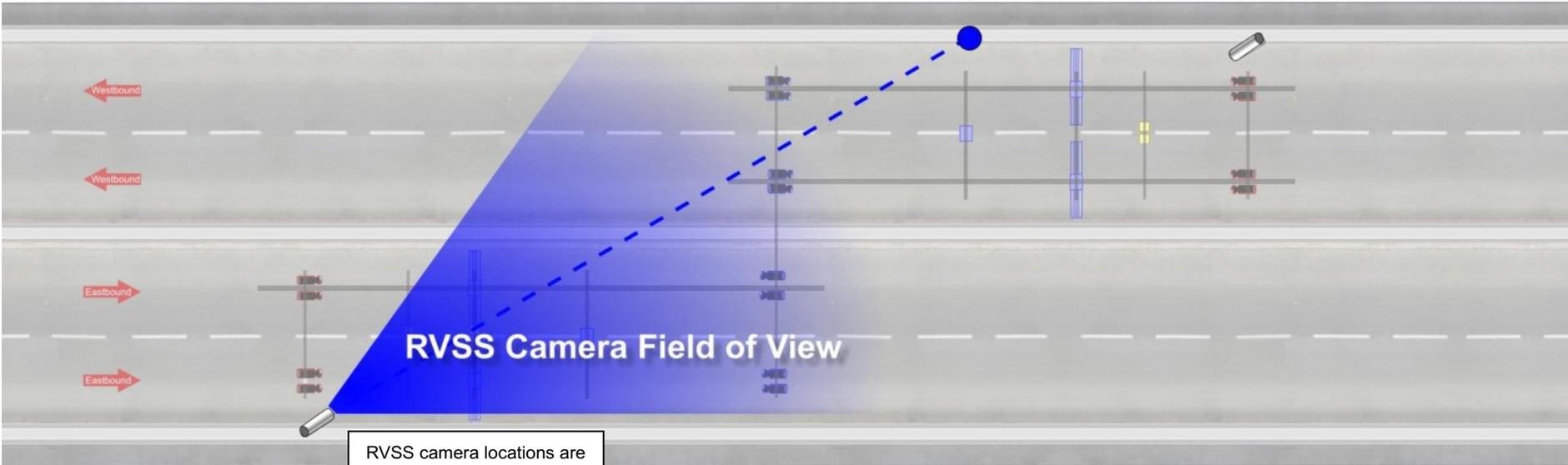
Data

Number	Lane	Record Type	Date/Time	Payment Type	Class	Axles	Tag Agcy	Tag ID	Tag Class	Fare Amt	Speed
1	167N-15SW-0										
2	167N-15SW-1	22	10/01/2009 13:19:55.119	Violation		2	2	1001	1216859	2	0.50 42

Return

# RVSS camera field of view

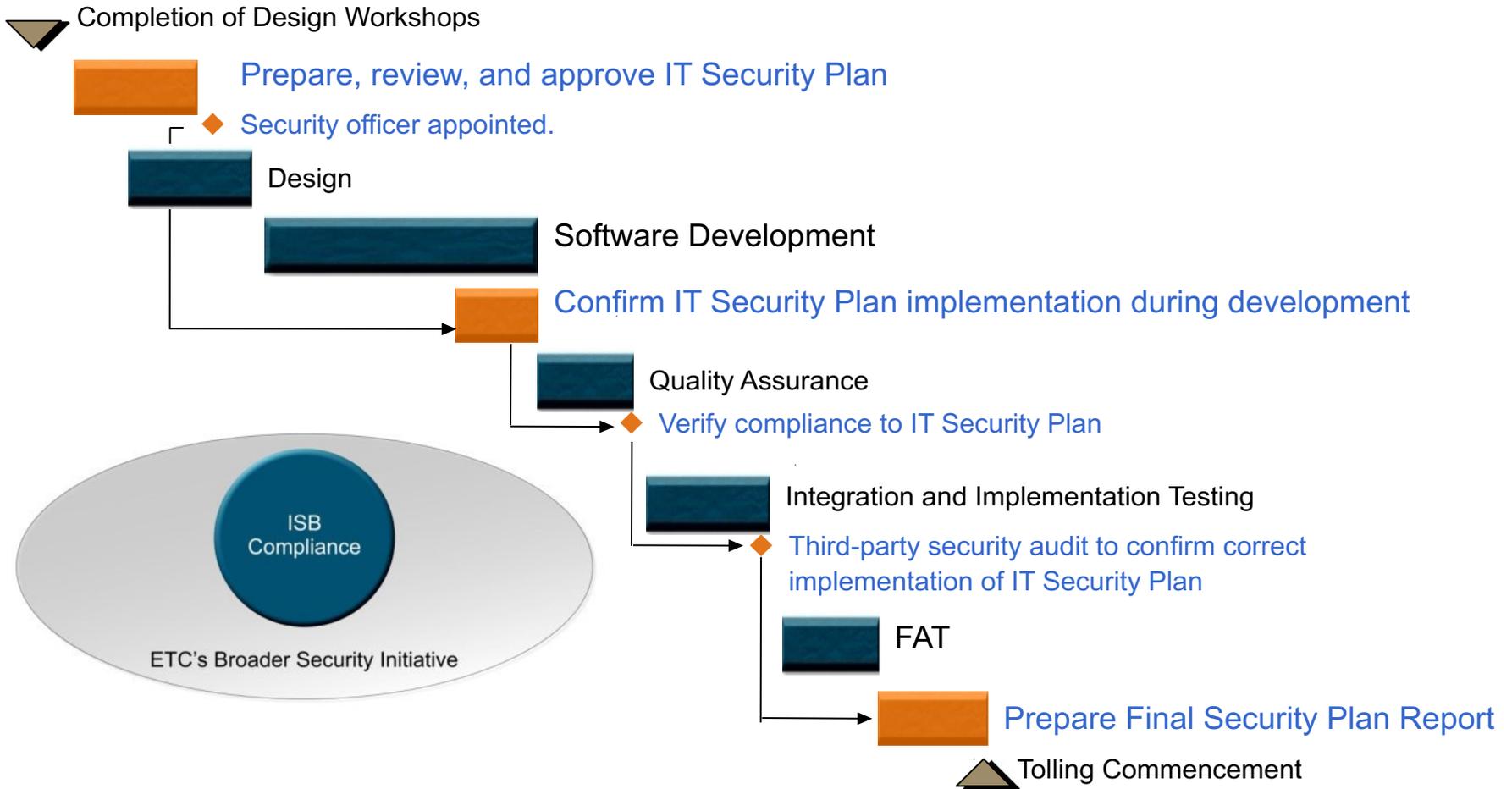
Identical to Eastbound RVSS Camera Field of View



RVSS Camera Field of View

RVSS camera locations are conceptual illustrations only

# Answer Question 25



Note: IT Security Plan tasks are in blue font

# Question 34 continued

